GOVERNEMNT DEGREE COLLEGE, CHEBROLE

Guntur district, Andhra Pradesh

Affiliated to

Acharya Nagarjuna University

REVISED SYLLABUS
PRESCRIBED
BY THE AFFILIATING UNIVERSITY
FOR
B.A., B.COM., B.SC., COURSES
W.E.F., 2020-21
UNDER CBCS

A.P. STATE COUNCIL OF HIGHER EDUCATION

GUIDELINES FOR THE REVISED CHOICE BASED CREDIT SYSTEM CBCS (W.E.F 2020-21)

I. Preamble:

Choice Based CreditSystem (CBCS) was introduced, under the aegis of Andhra Pradesh State Council of Higher Education (APSCHE), at the insistence of the University Grants Commission, for the general undergraduate programmes, i.e., BA, BCom, BSc, BCA, BBA, UG Honours etc., by the affiliating universities in all government, aided and private degree colleges in the state of Andhra Pradesh in 2015 - 2016.

The system of CBCS has been in vogue for the undergraduate programmes in all the advanced countries for several decades and proved to be advantageous to the students of higher education because of its features like courses in place of papers, availability of diverse courses, scope for choice, weightages with credits, space for multiple kinds of teaching, learning and assessing methods which can effectively cater to the diverse needs of students.

As the existing CBCS would be completing five years by 2019-20, the APSCHE decided to revise and strengthen the scheme while addressing the following issues.

a. Overcoming the shortages in the existing system.
b. Consolidating the system in its true spirit by providing multiple choices in domain as well as general courses.
c. Revising the curricular framework wherever needed.
d. Orienting syllabus to the course outcomes as advised by UGC
e. Updating of syllabus to match to the present needs
f. Replacing papers with courses
g. Introducing better skill-oriented courses to align with the emerging and employment areas.

For carrying out the above task, the APSCHE constituted a Committee for recommending revised curricular framework and updated syllabus of UG Programmes,

i.e., B.A., B.Com., B.Sc., BCA, BBA, UG Honouss etc., under CBCS pattern from the year 2020-21.

Based on the recommendations of the Committee, the following Guidelines are formulated. These Guidelines of Curricular Framework with revised Choice Based Credit System comes into effect from the academic year 2020 – 2021, to be strictly adhered for all Undergraduate Programmes offered in Affiliated Colleges and Autonomous Colleges.

1. The Curricular Framework for UG – Arts; UG – Science and UG – Commerce are appended as Annexures – I, II & III respectively.
2. **Life Skill Courses:** There will be 4 Life Skill Courses in place of earlier 10 foundation courses with the same hours, credits and maximum marks. The objective is to inculcate the required simple life-long skills. While the course in 'Environmental Education' continued to be mandatory, in case of others, students can opt one out of three courses, unlike in the existing system, where no choice is being given to students.
3. **Skill Development Courses:** A new set of 4 Skill Development Courses will be offered with 2 hours of teaching per week, two credits, 50 maximum marks and only external assessment. These courses are intended to train students in broad-based multiple career oriented general skills, in Arts, Commerce and Science streams but open to all students. A wider choice is given to students as they can choose one course from a total of six courses (two from each stream).
4. The preferred departments for teaching LSCs and SDCs are appended.
5. To ensure accountability among the teachers teaching LSCs and SDCs courses, the workload of these is to be reckoned for the calculation of workload of teachers.
6. **Core Courses:** Three core courses of Domain subjects will be in the first three semesters, and the fourth and fifth courses will be in the fourth semester. Two domain SECs will be in the fifth semester. There will be uniformly five Core Courses in each Domain Subject in BA and BSc, and 15 in BCom.

7. **Skill Enhancement Courses:** Two Skill Enhancement Courses will be offered for each domain subject, in Semester V. The two Skill Enhancement Courses of each domain subject will be linked for a wider basic and practical experience to students.
8. Programmes like BCA, BBA, UG Honours etc. will broadly have a similar framework as prescribed for B.Com considering them as single major subject programme.
9. Table-1: Main Features of the Courses in the Revised Curricular Framework.

Subject/Course	Hours / Week Theory	Hours / Week Practicals	Total Hours	Credits	Max Marks Internal Assessment	Max Marks University Exam	Total
Life Skills Course	02	-	02	02	-0-	50	50
Skill Development Course	02	-	02	02	-0-	50	50
Language Subject	04	-	04	03	25	75	100
Domain Arts/Commerce Subject	05	-	05	04	25	75	100
Domain Science Subject	04	02	05	05 (4+1)	25	75	100
Mathematics	06	-	06	05	25	75	100

10. The four courses of LSCs, SDCs and three courses of Languages (as they exist now) will be offered in the first three semesters as shown in the table below. The detailed structure is shown in Tabel-2 below.

Courses of	***Sem-I***	***Sem-II***	***Sem-III***	***Sem-IV***	***Sem-V***
Life Skills	1 (02)	1 (02)	2 (04)		
Skill Development	1 (02)	2 (04)	1 (02)		
Language – 1	C-1 (04)	C-2 (04)	C-3 (04)		
Language – 2	C-1 (04)	C-2 (04)	C-3 (04)		
Domain Sub -1	C-1 (06)	C-2 (06)	C-3 (06)	C-4 (06)	SEC-1(06)

				C-5 (06)	SEC-2 (06)
Domain Sub -2	C-1 (06)	C-2 (06)	C-3 (06)	C-4 (06) C-5 (06)	SEC-1(06) SEC-2 (06)
Domain Sub -3	C-1 (06)	C-2 (06)	C-3 (06)	C-4 (06) C-5 (06)	SEC-1(06) SEC-2 (06)
Total Hours/Week	30	32	32	36	36

* Figures in parenthesis are hours per week of Core Courses of Science. In respect of Arts and Commerce Courses, the hours per week for Core Courses will be 5.
** SEC1 and SEC-2 in Sem-V are C-6 and C-7 respectively.

11. Teaching of two appropriate LSCs/SDCs are to be assigned to the language departments to mitigate the workload shortage for the language subjects, as being done in respect of Foundation Courses in the previous system. The workload for teaching LSCs and SDCs by the respective language department shall be reckoned while calculating their workload.
12. The syllabus was revised and updated keeping the Leaning Outcomes in view for ensuring higher order learning and skills, a requirement in higher education. The Universities and colleges shall make certain that teaching, learning and assessment are outcome oriented.
13. In the affiliation system which imposes limitations in assessing students, the internal assessment is crucial in ensuring the right learning. Universities and colleges may strengthen the internal assessment without disturbing its flexibility.
14. Co-curricular activities play an important role in promoting experiential self-learning and field-based learning in students, especially in learning higher order skills. The measurable pedagogical activities can be a small part of internal assessment.
15. The respective Boards of Studies of the affiliating universities/autonomous colleges may modify the syllabus prepared by the subject committees as mentioned above to a limited extent, without disturbing the Frame work recommended above.
16. In view of the advantages of using ICT in teaching and learning, the universities and colleges may offer ‘online courses’ on extra credits. They may take into consideration the standardized online courses offered by various government/public agencies and also may design their own new online courses following due procedures.

17. Similarly, online programmes such as Webinars, with greater participation of students, may be encouraged in colleges.
18. The system of credit transfer facilitates students getting better training at appropriate places. The universities may discuss and develop a uniform system and guidelines in this regard across the state. The number of credits earned under credit transfer shall, however, be limited to a small number. APSCHE will issue separate guidelines.
19. To ensure inculcating social responsibility and compassionate commitment among the students, the summer vacation in the intervening 1st and 2nd years of study shall be for Community Service. Detailed guidelines on the Community Service will be circulated shortly.
20. To make the students employable, an Apprenticeship / Internship / On the job training shall be undertaken by the students in the intervening summer vacation between the 2nd and 3rd years.
21. During the entire 6th Semester, the student shall undergo Apprenticeship / Internship / On the Job Training. This is to ensure that the students develop hands on technical skills which will be of great help in facing the world of work.
22. APSCHE shall issue guidelines for the implementation and assessment of the Apprenticeship / Internship / On the job Training.

LIST OF LIFE SKILL COURSES

Semester	No. of Courses	Choices	Preferred Teaching Dept.
I	**01**	Computer Applications	Computers
		Human Values and Professional Ethics	English/Telugu/Any Dept
		Entrepreneurship	Commerce
II	**01**	Information and Communication Technology	Computers
		Indian Culture and Science	History/Telugu
		Elementary Statistics	Statistics/Maths/Economics/ Commerce
III	**02**	Health and Hygiene	Zoology/Botany
		Personality Development and Leadership	English/ Any Dept
		Analytical Skills	Maths/Statistics
		Environmental Education	Botany/Zoology/Environmental Sciences/Any Dept.

List of Skill Development Courses along with their Semester-wise allotment with choices. Preferred Teaching Departments are given in the parenthesis.

Sem	No. of Courses	**Stream – A (Arts)**	**Stream – B (Commerce)**	**Stream – C (Science)**
I	**01**	Tourism Guidance (History) Public Relations (Pol Sci /English)	Secretaryship Insurance Promotion	Electrical Appliances (Physics) Plant Nursery (Botany)
II	**02**	Journalistic Reporting (English) Survey & Reporting (Economics/History) Social Work Methods (Pol Sci) Performing Arts (Telugu)	Agricultural Marketing Business Communication (English) Advertising Logistics & Supply Chain	Solar Energy (Physics) Fruit & Vegetable Preservation (Botany) Dairy Techniques (Zoology) Food Adulteration (Chemistry)
III	**01**	Financial Markets (Economics) Disaster Management (English /Telugu)	Online Business Retailing	Environment Audit (Chemistry) Poultry Farming (Zoology)

ANNEXURE - I CBCS CURRICULAR FRAMEWORK (2020 - 21 ONWARDS) - BACHELOR OF ARTS

Subjects		SEM I		SEM II		SEM III		SEM IV		SEM V		SEM VI			
		Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits		
Languages															
English		4	3	4	3	4	3								
Language (H/T/S)		4	3	4	3	4	3								
Life Skill Courses		2	2	2	2	2+2	2+2								
Skill Development Courses		2	2	2+2	2+2	2	2								
Core Papers															
Major 1	Core 1,2,3,& 4	5	4	5	4	5	4	5	4			THIRD PHASE of APPRENTICESHIP Entire 5th / 6th Semester		FIRST and SECOND PHASES (2 spells) of APPRENTICESHIP between 1st and 2nd year and between 2nd and 3rd year (two summer vacations).	
Major 2	Core 1,2,3,& 4	5	4	5	4	5	4	5	4						
Major 3	Core 1,2,3,& 4	5	4	5	4	5	4	5	4						
Major 1	Core -5							5	4						
Major 2	Core -5							5	4						
Major 1	Skill Enhancement Core Courses 6 & 7									5	4				
										5	4				
Major 2	Skill Enhancement Core Courses 6 & 7									5	4				
										5	4				
Major 2	Skill Enhancement Core Courses 6 & 7									5	4				
										5	4				
Hrs/W (Academic Credits)		27	22	29	24	29	24	30	24	30	24	0	12	4	4
Project Work															
Extension Activities (Non Academic Credits)															
NCC/NSS/Sports/Extra Curricular									2						
Yoga							1		1						
Extra Credits															
Hrs/W (Total Credits)		27	22	29	24	29	25	30	27	30	24	0	12	4	4

ANNEXURE - II CBCS CURRICULAR FRAMEWORK (2020 - 21 ONWARDS) - BACHELOR OF SCIENCES

Subjects		SEM I		SEM II		SEM III		SEM IV		SEM V		SEM VI			
		Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits		
Languages															
English		4	3	4	3	4	3								
Language (H/T/S)		4	3	4	3	4	3								
Life Skill Courses		2	2	2	2	2+2	2+2								
Skill Development Courses		2	2	2+2	2+2	2	2								
Major 1	Core 1,2,3,& 4	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1						
Major 2	Core 1,2,3,& 4	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1						
Major 3	Core 1,2,3,& 4	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1						
Major 1	Core -5							4+2	4 + 1						
Major 2	Core -5							4+2	4 + 1						
Major 3	Core -5							4+2	4 + 1						
Major 1	Skill Enhancement Courses (6 & 7)									4+2	4 + 1				
										4+2	4 + 1				
Major 2	Skill Enhancement Courses (6 & 7)									4+2	4 + 1				
										4+2	4 + 1				
Major 3	Skill Enhancement Courses (6 & 7)									4+2	4 + 1				
										4+2	4 + 1				
Hrs/W (Academic Credits)		30	25	32	27	32	27	36	30	36	30		12	4	4
Project Work															
Extension Activities	(Non														
NCC/NSS/Sports/Extra Curricular									2						
Yoga							1		1						
Extra Credits															
Hrs/W (Total Credits)		30	25	32	27	32	28	36	33	36	30		12	4	4

THIRD PHASE of APPRENTICESHIP Entire 5th / 6th Semester

FIRST and SECOND PHASES (2 spells) of APPRENTICESHIP between 1st and 2nd year and between 2nd and 3rd year (two summer vacations).

ANNEXURE - III CBCS CURRICULAR FRAMEWORK (2020 - 21 ONWARDS) - B.Com., BBA, BCA etc.

Subjects	SEM I		SEM II		SEM III		SEM IV		SEM V		SEM VI			
	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits		
Languages														
English	4	3	4	3	4	3								
Language (H/T/S)	4	3	4	3	4	3								
Life Skill Courses	2	2	2	2	2+2	2+2								
Skill Development Courses	2	2	2+2	2+2	2	2								
Core Courses* **														
Core	5	4	5	4	5	4	5	4			THIRD PHASE of APPRENTICESHIP Entire 5th / 6th Semester		FIRST and SECOND PHASES (2 spells) of APPRENTICESHIP between 1st and 2nd year and between 2nd and 3rd year (two summer vacations).	
Core	5	4	5	4	5	4	5	4						
Core	5	4	5	4	5	4	5	4						
Core							5	4						
Core							5	4						
Core							5	4						
(Domain Related) Skill Enhancement Courses** (SECs)**									5	4				
									5	4				
									5	4				
									5	4				
									5	4				
									5	4				
Hrs/W (Academic Credits)	27	22	29	24	29	24	30	24	30	24	0	12	4	4
Project Work														
Extension Activities														
NCC/NSS/Sports/Extra Curricular								2						
Yoga						1		1						
Extra Credits														
Hrs/W (Total Credits)	27	22	29	24	29	25	30	27	30	24	0	12	4	4



ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

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REVISED SYLLABUS OF B.A. /B.Sc. MATHEMATICS UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR B.A. /B.Sc. MATHEMATICS

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Fifteen Courses of 1, 2, 3 & 4 Semesters)

(To be Implemented from 2020-21 Academic Year)

A.P. STATE COUNCIL OF HIGHER EDUCATION

B.A./B.Sc. MATHEMATICS

REVISED SYLLABUS FOR CORE COURSES

CBCS/ SEMESTER SYSTEM

(w.e.f. 2020-21 Admitted Batch)

CORE COURSES STRUCTURE

(Sem-I to Sem-IV)

Course	Subject	Hrs.	Credits	IA	ES	Total
Course -I	Differential Equations & Differential Equations Problem Solving Sessions	6	5	25	75	100
Course -II	Three dimensional analytical Solid geometry & Three dimensional analytical Solid Geometry Problem Solving Sessions	6	5	25	75	100
Course -III	Abstract Algebra & Abstract Algebra Problem Solving Sessions	6	5	25	75	100
Course -IV	Real Analysis & Real Analysis Problem Solving Sessions	6	5	25	75	100
Course -V	Linear Algebra & Linear Algebra Problem Solving Sessions	6	5	25	75	100

COURSE-I

CBCS/ SEMESTER SYSTEM

B.A./B.Sc. MATHEMATICS (w.e.f. 2020-21 Admitted Batch)

DIFFERENTIAL EQUATIONS

SYLLABUS (75 Hours)

Course Outcomes:

After successful completion of this course, the student will be able to;

1. Solve linear differential equations
2. Convertnonexact homogeneous equations to exact differential equations by using integrating factors.
3. Know the methods of finding solutions ofdifferential equations of the firstorder but not of the firstdegree.
4. Solvehigher-order linear differential equations, both homogeneous and non homogeneous, with constant coefficients.
5. Understand the concept and apply appropriate methods for solving differential equations.

Course Syllabus:

UNIT – I (12 Hours)

Differential Equations of first order and first degree:

Linear Differential Equations; Differential equations reducible to linear form; Exact differential equations; Integrating factors; Change of variables.

UNIT – II (12 Hours)

Orthogonal Trajectories

Differential Equations of first order but not of the first degree:

Equations solvable for *p*; Equations solvable for *y*; Equations solvable for *x*; Equations that do not contain x (or y); Equations homogeneous in x and y;Equations of the first degree in *x* and *y* – Clairaut's Equation.

UNIT – III (12 Hours)

Higher order linear differential equations-I:

Solution of homogeneous linear differential equations of order n with constant coefficients; Solution of the non-homogeneous linear differential equations with constant coefficients by means of polynomial operators.General Solution of f(D)y=0.

General Solution of f(D)y=Q when Q is a function of x, $\frac{1}{f(D)}$ is expressed as partial fractions.

P.I. of f(D)y = Q when Q= be^{ax}

P.I. of f(D)y = Q when Q is bsinax or b cos ax.

UNIT – IV (12 Hours)

Higher order linear differential equations-II:

Solution of the non-homogeneous linear differential equations with constant coefficients.

P.I. of f(D)y = Q when Q= bx^k

P.I. of f(D)y = Q when Q= $e^{ax}V$ **,** where V is a function of x.

P.I. of f(D)y = Q when Q= xV **,** where V is a function of x.

of f(D)y = Q when Q= x^mV **,** where V is a function of x.

UNIT –V (12 Hours)

Higher order linear differential equations-III :

Method of variation of parameters; Linear differential Equations with non-constant coefficients; The Cauchy-Euler Equation, Legendre's linear equations.

Co-Curricular Activities(15 Hours)

Seminar/ Quiz/ Assignments/ Applications of Differential Equations to Real life Problem /Problem Solving.

Text Book :

Differential Equations and Their Applications by Zafar Ahsan, published by Prentice-Hall of India Pvt. Ltd, New Delhi-Second edition.

Reference Books :

1. A text book of Mathematics for B.A/B.Sc, Vol 1, by N. Krishna Murthy & others, published by S.Chand & Company, New Delhi.
2. Ordinary and Partial Differential Equations by Dr. M.D,Raisinghania, published by S. Chand & Company, New Delhi.
3. Differential Equations with applications and programs – S. Balachandra Rao & HR Anuradha-Universities Press.
4. Differential Equations -Srinivas Vangala & Madhu Rajesh, published by Spectrum University Press.

COURSE-II

CBCS/ SEMESTER SYSTEM

(w.e.f. 2020-21 Admitted Batch)

B.A./B.Sc. MATHEMATICS

THREE DIMENSIONAL ANALYTICAL SOLID GEOMETRY

Syllabus (75 Hours)

Course Outcomes:

After successful completion of this course, the student will be able to;

1. get the knowledge of planes.
2. basic idea of lines, sphere and cones.
3. understand the properties of planes, lines, spheres and cones.
4. express the problems geometrically and then to get the solution.

Course Syllabus:

UNIT – I (12 Hours)

The Plane :

Equation of plane in terms of its intercepts on the axis, Equations of the plane through the given points, Length of the perpendicular from a given point to a given plane, Bisectors of angles between two planes, Combined equation of two planes, Orthogonal projection on a plane.

UNIT – II (12 hrs)

The Line :

Equation of a line; Angle between a line and a plane; The condition that a given line may lie in a given plane; The condition that two given lines are coplanar; Number of arbitrary constants in the equations of straight line; Sets of conditions which determine a line; The shortest distance between two lines; The length and equations of the line of shortest distance between two straight lines; Length of the perpendicular from a given point to a given line.

UNIT – III (12 hrs)

The Sphere :

Definition and equation of the sphere; Equation of the sphere through four given points; Plane sections of a sphere; Intersection of two spheres; Equation of a circle; Sphere through a given circle;

Intersection of a sphere and a line; Power of a point; Tangent plane; Plane of contact; Polar plane; Pole of a Plane; Conjugate points; Conjugate planes;

UNIT – IV (12 hrs)

The Sphere and Cones :

Angle of intersection of two spheres; Conditions for two spheres to be orthogonal; Radical plane; Coaxial system of spheres; Simplified from of the equation of two spheres.

Definitions of a cone; vertex; guiding curve; generators; Equation of the cone with a given vertex and guiding curve; equations of cones with vertex at origin are homogenous; Condition that the general equation of the second degree should represent a cone;

UNIT – V (12 hrs)

Cones :

Enveloping cone of a sphere; right circular cone: equation of the right circular cone with a given vertex, axis and semi vertical angle: Condition that a cone may have three mutually perpendicular generators; intersection of a line and a quadric cone; Tangent lines and tangent plane at a point; Condition that a plane may touch a cone; Reciprocal cones; Intersection of two cones with a common vertex.

Co-Curricular Activities(15 Hours)

Seminar/ Quiz/ Assignments/Three dimensional analytical Solid geometry and its applications/ Problem Solving.

Text Book :

Analytical Solid Geometry by Shanti Narayan and P.K. Mittal, published by S. Chand & Company Ltd. 7th Edition.

Reference Books :

1. A text book of Mathematics for BA/B.Sc Vol 1, by V Krishna Murthy & Others, published by S. Chand & Company, New Delhi.
2. A text Book of Analytical Geometry of Three Dimensions, by P.K. Jain and Khaleel Ahmed, published by Wiley Eastern Ltd., 1999.
3. Co-ordinate Geometry of two and three dimensions by P. Balasubrahmanyam, K.Y. Subrahmanyam, G.R. Venkataraman published by Tata-MC Gran-Hill Publishers Company Ltd., New Delhi.
4. Solid Geometry by B.Rama Bhupal Reddy, published by Spectrum University Press.

COURSE-III

CBCS/ SEMESTER SYSTEM

(w.e.f. 2020-21 Admitted Batch)

B.A./B.Sc. MATHEMATICS

ABSTRACT ALGEBRA

SYLLABUS (75 Hours)

Course Outcomes:

After successful completion of this course, the student will be able to;

1. acquire the basic knowledge and structure of groups, subgroups and cyclic groups.
2. get the significance of the notation of a normal subgroups.
3. get the behavior of permutations and operations on them.
4. study the homomorphisms and isomorphisms with applications.
5. understand the ring theory concepts with the help of knowledge in group theory and to prove the theorems.
6. understand the applications of ring theory in various fields.

Course Syllabus:

UNIT – I (12 Hours)

GROUPS :

Binary Operation – Algebraic structure – semi group-monoid – Group definition and elementary properties Finite and Infinite groups – examples – order of a group, order of an element, Composition tables with examples.

UNIT – II (12 Hours)

SUBGROUPS :

Complex Definition – Multiplication of two complexes Inverse of a complex-Subgroup definition- examples-criterion for a complex to be a subgroups. Criterion for the product of two subgroups to be a subgroup-union and Intersection of subgroups.

Co-sets and Lagrange's Theorem :

Cosets Definition – properties of Cosets–Index of a subgroups of a finite groups–Lagrange's Theorem.

UNIT –III (12 Hours)

NORMAL SUBGROUPS :

Definition of normal subgroup – proper and improper normal subgroup–Hamilton group – criterion for a subgroup to be a normal subgroup – intersection of two normal subgroups – Sub group of index 2 is a normal sub group –quotient group – criteria for the existence of a quotient group.

HOMOMORPHISM :

Definition of homomorphism – Image of homomorphism elementary properties of homomorphism – Isomorphism – automorphism definitions and elementary properties–kernel of a homomorphism – fundamental theorem on Homomorphism and applications.

UNIT – IV (12 Hours)

PERMUTATIONS AND CYCLIC GROUPS :

Definition of permutation – permutation multiplication – Inverse of a permutation – cyclic permutations – transposition – even and odd permutations – Cayley's theorem.

Cyclic Groups :- Definition of cyclic group – elementary properties – classification of cyclic groups.

UNIT – V (12 Hours)

RINGS :

Definition of Ring and basic properties, Boolean Rings, divisors of zero and cancellation laws Rings, Integral Domains, Division Ring and Fields, The characteristic of a ring - The characteristic of an Integral Domain, The characteristic of a Field. Sub Rings, Ideals

Co-Curricular Activities(15 Hours)

Seminar/ Quiz/ Assignments/ Group theory and its applications / Problem Solving.

Text Book :

A text book of Mathematics for B.A. / B.Sc. by B.V.S.S. SARMA and others, published by S.Chand & Company, New Delhi.

Reference Books :

1. Abstract Algebra by J.B. Fraleigh, Published by Narosa publishing house.
2. Modern Algebra by M.L. Khanna.
3. Rings and Linear Algebra by Pundir & Pundir, published by Pragathi Prakashan.

COURSE-IV

CBCS/ SEMESTER SYSTEM

(w.e.f. 2020-21 Admitted Batch)

B.A./B.Sc. MATHEMATICS

REAL ANALYSIS

SYLLABUS (75 Hours)

Course Outcomes:

After successful completion of this course, the student will be able to

1. get clear idea about the real numbers and real valued functions.
2. obtain the skills of analyzing the concepts and applying appropriate methods for testing convergence of a sequence/ series.
3. test the continuity and differentiability and Riemann integration of a function.
4. know the geometrical interpretation of mean value theorems.

Course Syllabus:

UNIT – I (12 Hours)

REAL NUMBERS :

The algebraic and order properties of R, Absolute value and Real line, Completeness property of R, Applications of supremum property; intervals. (No question is to be set from this portion).

Real Sequences:

Sequences and their limits, Range and Boundedness of Sequences, Limit of a sequence and Convergent sequence. The Cauchy's criterion, properly divergent sequences, Monotone sequences, Necessary and Sufficient condition for Convergence of Monotone Sequence, Limit Point of Sequence, Subsequences and the Bolzano-weierstrass theorem – Cauchy Sequences – Cauchy's general principle of convergence theorem.

UNIT –II (12 Hours)

INFINITIE SERIES :

Series : Introduction to series, convergence of series. Cauchy's general principle of convergence for series tests for convergence of series, Series of Non-Negative Terms.

1. P-test and Comparison tests
2. Cauchy's n^{th} root test or Root Test.

3. D'-Alemberts' Test or Ratio Test.

4. Alternating Series – Leibnitz Test.

Absolute convergence and conditional convergence.

UNIT – III (12 Hours)

CONTINUITY :

Limits : Real valued Functions, Boundedness of a function, Limits of functions. Some extensions of the limit concept, Infinite Limits. Limits at infinity. (No question is to be set from this portion).

Continuous functions : Continuous functions, Combinations of continuous functions, Continuous Functions on intervals, uniform continuity.

UNIT – IV (12 Hours)

DIFFERENTIATION AND MEAN VALUE THEORMS :

The derivability of a function, on an interval, at a point, Derivability and continuity of a function, Graphical meaning of the Derivative, Mean value Theorems; Rolle's Theorem, Lagrange's Theorem, Cauchy's Mean value Theorem

UNIT – V (12 Hours)

RIEMANN INTEGRATION :

Riemann Integral, Riemann integral functions, Darboux theorem. Necessary and sufficient condition for R – integrability, Properties of integrable functions, Fundamental theorem of integral calculus, integral as the limit of a sum, Mean value Theorems.

Co-Curricular Activities(15 Hours)

Seminar/ Quiz/ Assignments/ Real Analysis and its applications / Problem Solving.

Text Book:

Introduction to Real Analysis by Robert G.Bartle and Donlad R. Sherbert, published by John Wiley.

Reference Books:

1. A Text Book of B.Sc Mathematics by B.V.S.S. Sarma and others, published by S. Chand & Company Pvt. Ltd., New Delhi.
2. Elements of Real Analysis as per UGC Syllabus by Shanthi Narayan and Dr. M.D. Raisinghania, published by S. Chand & Company Pvt. Ltd., New Delhi.

COURSE-V

CBCS/ SEMESTER SYSTEM

(w.e.f. 2020-21 Admitted Batch)

B.A./B.Sc. MATHEMATICS

LINEAR ALGEBRA

SYLLABUS (75 Hours)

Course Outcomes:

After successful completion of this course, the student will be able to;

1. understand the concepts of vector spaces, subspaces, basises, dimension and their properties
2. understand the concepts of linear transformations and their properties
3. apply Cayley- Hamilton theorem to problems for finding the inverse of a matrix and higher powers of matrices without using routine methods
4. learn the properties of inner product spaces and determine orthogonality in inner product spaces.

Course Syllabus:

UNIT – I (12 Hours)

Vector Spaces-I:

Vector Spaces, General properties of vector spaces, n-dimensional Vectors, addition and scalar multiplication of Vectors, internal and external composition, Null space, Vector subspaces, Algebra of subspaces, Linear Sum of two subspaces, linear combination of Vectors, Linear span Linear independence and Linear dependence of Vectors.

UNIT –II (12 Hours)

Vector Spaces-II:

Basis of Vector space, Finite dimensional Vector spaces, basis extension, co-ordinates, Dimension of a Vector space, Dimension of a subspace, Quotient space and Dimension of Quotient space.

UNIT –III (12 Hours)

Linear Transformations:

Linear transformations, linear operators, Properties of L.T, sum and product of LTs, Algebra of Linear Operators, Range and null space of linear transformation, Rank and Nullity of linear transformations – Rank – Nullity Theorem.

UNIT –IV (12 Hours)

Matrix :

Matrices, Elementary Properties of Matrices, Inverse Matrices, Rank of Matrix, Linear Equations, Characteristic equations, Characteristic Values & Vectors of square matrix, Cayley – Hamilton Theorem.

UNIT –V (12 Hours)

Inner product space :

Inner product spaces, Euclidean and unitary spaces, Norm or length of a Vector, Schwartz inequality, Triangle Inequality, Parallelogram law, Orthogonality, Orthonormal set, complete orthonormal set, Gram – Schmidt orthogonalisation process. Bessel's inequality and Parseval's Identity.

Co-Curricular Activities(15 Hours)

Seminar/ Quiz/ Assignments/ Linear algebra and its applications / Problem Solving.

Text Book:

Linear Algebra by J.N. Sharma and A.R. Vasista, published by Krishna Prakashan Mandir, Meerut- 250002.

Reference Books :

1. Matrices by Shanti Narayana, published by S.Chand Publications.
2. Linear Algebra by Kenneth Hoffman and Ray Kunze, published by Pearson Education (low priced edition),New Delhi.
3. Linear Algebra by Stephen H. Friedberg et. al. published by Prentice Hall of India Pvt. Ltd. 4th Edition, 2007.

Recommended Question Paper Patterns and Models

BLUE PRINT FOR QUESTION PAPER PATTERN

COURSE-I, DIFFERENTIAL EQUATIONS

Unit	**TOPIC**	**S.A.Q**(including choice)	**E.Q**(including choice)	**Total Marks**
I	Differential Equations of 1st order and 1st degree	2	2	30
II	Orthogonal Trajectories, Differential Equations of 1st order but not of 1st degree	2	2	30
III	Higher Order Linear Differential Equations (with constant coefficients) – I	1	2	25
IV	Higher Order Linear Differential Equations (with constant coefficients) – II	2	2	30
V	Higher Order Linear Differential Equations (with non constant coefficients)	1	2	25
TOTAL		8	10	140

S.A.Q. = Short answer questions (5 marks)

E.Q. = Essay questions (10 marks)

Short answer questions : 5 X 5 M = 25 M

Essay questions : 5 X 10 M = 50 M

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Total Marks = 75 M

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CBCS/ SEMESTER SYSTEM

(W.e.f 2020-21 Admitted Batch)

B.A./B.Sc. MATHEMATICS

COURSE-I, DIFFERENTIAL EQUATIONS

MATHEMATICS MODEL PAPER

Time: 3Hrs **Max.Marks:75M**

SECTION - A

Answer any <u>FIVE</u> questions. Each question carries <u>FIVE</u> marks5 X 5 M=25 M

1. Solve $(1 + e^{x/y})\, dx + e^{x/y} \left(1 - \frac{x}{y}\right) dy = 0.$
2. Solve $(y - e^{\sin^{-1} x}) \frac{dx}{dy} + \sqrt{1 - x^2} = 0$
3. Solve $y + px = p^2x^4$.
4. Solve $(px - y)(py + x) = 2p$
5. Solve $(D^2 - 3D + 2) = \cosh x$
6. Solve $(D^2 - 4D + 3)y = \sin 3x \cos 2x.$
7. Solve $\frac{d^2y}{dx^2} - 6\frac{dy}{dx} + 13y = 8e^{3x} \sin 2x.$
8. Solve $x^2y'' - 2x(1 + x)y' + 2(1 + x)y = x^3$

SECTION - B

Answer <u>ALL</u> the questions. Each question carries <u>TEN</u> marks. 5 X 10 M = 50 M

9 a) Solve $x\frac{dy}{dx} + y = y^2 \log x.$

(Or)

9 b) Solve $(y + \frac{1}{3}y^3 + \frac{1}{2}x^2)\, dx + \frac{1}{4}(x + xy^2)\, dy = 0.$

10 a) Solve $p^2 + 2py\cot x = y^2.$

(Or)

10 b) Find the orthogonal trajectories of the family of curves $x^{2/3} + y^{2/3} = a^{2/3}$ where 'a' is the parameter.

11 a) Solve $(D^3 + D^2 - D - 1)y = \cos 2x$.

(Or)

11 b) Solve $(D^2 - 3D + 2)y = \sin e^{-x}$.

12 a) Solve $(D^2 - 2D + 4)y = 8(x^2 + e^{2x} + \sin 2x)$

(Or)

12 b) $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = xe^x \sin x$

13 a) Solve $(D^2 - 2D)y = e^x \sin x$ by the method of variation of parameters.

(Or)

13 b) Solve $3x^2 \frac{d^2y}{dx^2} + x\frac{dy}{dx} + y = x$

BLUE PRINT FOR QUESTION PAPER PATTERN

COURSE-II, THREE DIMENSIONAL ANALYTICAL SOLID GEOMETRY

Unit	**TOPIC**	**S.A.Q**(including choice)	**E.Q**(including choice)	**Total Marks**
I	The Plane	2	2	30
II	The Right Line	2	2	30
III	The Sphere	2	2	30
IV	The Sphere & The Cone	1	2	25
V	The Cone	1	2	25
TOTAL		8	10	140

S.A.Q. = Short answer questions (5 marks)

E.Q. = Essay questions (10 marks)

Short answer questions : 5 X 5 M = 25 M

Essay questions : 5 X 10 M = 50 M

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Total Marks = 75 M

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CBCS/ SEMESTER SYSTEM

(w.e.f. 2020-21 Admitted Batch)

B.A./B.Sc. MATHEMATICS

COURSE-II, THREE DIMENSIONAL ANALYTICAL SOLID GEOMETRY

Time: 3Hrs **Max.Marks:75 M**

SECTION - A

Answer any FIVE questions. Each question carries FIVE marks 5 X 5 M=25 M

1. Find the equation of the plane through the point (-1,3,2) and perpendicular to the planes x+2y+2z=5 and 3x+3y+2z=8.
2. Find the bisecting plane of the acute angle between the planes 3x-2y-6z+2=0, -2x+y-2z-2=0.
3. Find the image of the point (2,-1,3) in the plane 3x-2y+z =9.
4. Show that the lines $2x + y - 4 = 0 = y + 2z$ and $x + 3z - 4 = 0$, $2x + 5z - 8 = 0$ are coplanar.
5. A variable plane passes through a fixed point (a, b, c). It meets the axes in A,B,C. Show that the centre of the sphere OABC lies on $ax^{-1}+by^{-1}+cz^{-1}=2$.
6. Show that the plane 2x-2y+z+12=0 touches the sphere $x^2+y^2+z^2-2x-4y+2z-3=0$ and find the point of contact.
7. Find the equation to the cone which passes through the three coordinate axes and the lines $\frac{x}{1} = \frac{y}{-2} = \frac{z}{3}$ and $\frac{x}{2} = \frac{y}{1} = \frac{z}{1}$
8. Find the equation of the enveloping cone of the sphere $x^2 + y^2 + z^2 + 2x - 2y = 2$ with its vertex at (1, 1, 1).

SECTION - B

Answer ALL the questions. Each question carries TEN marks. 5 X 10 M = 50 M

9(a) A plane meets the coordinate axes in A, B, C. If the centroid of ΔABC is (a,b,c), show that the equation of the plane is $\frac{x}{a}+\frac{y}{b}+\frac{z}{c}=3$.

(OR)

(b) A variable plane is at a constant distance p from the origin and meets the axes in A,B,C. Show that the locus of the centroid of the tetrahedron OABC is $x^{-2}+y^{-2}+z^{-2}=16p^{-2}$.

10(a) Find the shortest distance between the lines

$\frac{x-3}{3}=\frac{y-8}{-1}=\frac{z-3}{1}$; $\frac{x+3}{-3}=\frac{y+7}{2}=\frac{z-6}{4}$.

(OR)

(b) Prove that the lines $\frac{x-1}{2}=\frac{y-2}{3}=\frac{z-3}{4}$; $\frac{x-2}{3}=\frac{y-3}{4}=\frac{z-4}{5}$ are coplanar. Also find their point of intersection and the plane containing the lines.

11 (a) Show that the two circles $x^2+y^2+z^2-y+2z=0$, $x-y+z=2$; $x^2+y^2+z^2+x-3y+z-5=0$, $2x-y+4z-1=0$ lie on the same sphere and find its equation.

(OR)

(b) Find the equation of the sphere which touches the plane $3x+2y-z+2=0$ at $(1,-2,1)$ and cuts orthogonally the sphere $x^2+y^2+z^2-4x+6y+4=0$.

12 (a) Find the limiting points of the coaxial system of spheres $x^2+y^2+z^2-8x+2y-2z+32=0$, $x^2+y^2+z^2-7x+z+23=0$.

(OR)

(b) Find the equation to the cone with vertex is the origin and whose base curve is $x^2+y^2+z^2+2ux+d=0$.

13 (a) Prove that the equation $\sqrt{fx}\pm\sqrt{gy}\pm\sqrt{hz}=0$ represents a cone that touches the coordinate planes and find its reciprocal cone.

(OR)

(b) Find the equation of the sphere $x^2+y^2+z^2-2x+4y-1=0$ having its generators parallel to the line $x=y=z$.

BLUE PRINT FOR QUESTION PAPER PATTERN

COURSE-III, ABSTRACT ALGEBRA

Unit	**TOPIC**	**S.A.Q**(including choice)	**E.Q**(including choice)	**Total Marks**
I	Groups	2	2	30
II	Subgroups, Cosets & Lagrange's theorem	1	2	25
III	Normal Subgroups and Homomorphism	1	2	25
IV	Permutations and Cyclic groups	2	2	30
V	Rings	2	2	30
Total		8	10	140

S.A.Q. = Short answer questions (5 marks)

E.Q. = Essay questions (10 marks)

Short answer questions : 5 X 5 M = 25 M

Essay questions : 5 X 10 M = 50 M

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Total Marks = 75 M

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CBCS/ SEMESTER SYSTEM

(w.e.f. 2020-21 Admitted Batch)

B.A./B.Sc. MATHEMATICS

COURSE-III, ABSTRACT ALGEBRA

Time: 3Hrs **Max.Marks:75M**

SECTION - A

Answer any FIVE questions. Each question carries FIVE marks 5 X 5 M=25 M

1. Show that the set G=$\{x/x = 2^a 3^b \text{ and } a,b \in Z\}$ is a group under multiplication

2. Define order of an element. In a group G, prove that if $a \in G$ then $O(a) = O(a)^{-1}$.

3. If H and K are two subgroups of a group G, then prove that HK is a subgroup $\Leftrightarrow$ HK=KH

4.If G is a group and H is a subgroup of index 2 in G then prove that H is a normal subgroup.

5. Examine whether the following permutations are even or odd

i) $\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 1 & 4 & 3 & 2 & 5 & 7 & 8 & 9 \end{pmatrix}$

ii) $\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ 3 & 2 & 4 & 5 & 6 & 7 & 1 \end{pmatrix}$

6. Prove thata group of prime order is cyclic.

7.Prove that the characteristic of an integral domain is either prime or zero.

8. If F is a field then prove that $\{0\}$ and F are the only ideals of F.

SECTION - B

Answer ALL the questions. Each question carries TEN marks. 5 X 10 M = 50 M

9 a) Show that the set of nth roots of unity forms an abelian group under multiplication.

(Or)

9 b) In a group G, for $a,b \in G$, O(a)=5, b ≠ e and $aba^{-1} = b^2$. Find O(b).

10 a) The Union of two subgroups is also a subgroup $\Leftrightarrow$ one is contained in the other.

(Or)

b) State and prove Langrage's theorem.

11 a) Prove that a subgroup H of a group G is a normal subgroup of G iff the product of two right cosets of H in G is again a right coset of H in G.

(Or)

11 b) State and prove fundamental theorem of homomorphisms of groups.

12 a) Let S_n be the symmetric group on n symbols and let A_n be the group of even permutations. Then show that A_n is normal in S_n and $O(A_n) = \frac{1}{2}(n!)$

(Or)

12 b)prove thatevery subgroup of cyclic group is cyclic.

13 a) Prove that every finite integral domain is a field.

(Or)

13 b) Define principal idea. Prove that every ideal of Z is a principal ideal.

BLUE PRINT FOR QUESTION PAPER PATTERN

COURSE-IV, REAL ANALYSIS

Unit	**TOPIC**	**S.A.Q**(including choice)	**E.Q**(including choice)	**Total Marks**
I	Real Number System and Real Sequence	2	2	30
II	Infinite Series	1	2	25
III	Limits and Continuity	1	2	25
IV	Differentiation and Mean Value Theorem	2	2	30
V	Riemann Integration	2	2	30
	TOTAL	8	10	140

S.A.Q. = Short answer questions (5 marks)

E.Q. = Essay questions (10 marks)

Short answer questions : 5 X 5 M = 25 M

Essay questions : 5 X 10 M = 50 M

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Total Marks = 75 M

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CBCS/ SEMESTER SYSTEM

(w.e.f. 2020-21 Admitted Batch)

B.A./B.Sc. MATHEMATICS

COURSE-IV, REAL ANALYSIS

Time: 3Hrs **Max.Marks:75M**

SECTION - A

Answer any FIVE questions. Each question carries FIVE marks 5 X 5 M=25 M

1.Prove that every convergent sequence is bounded.

2. Show that $\lim\left(\frac{1}{(n+1)^2}+\frac{1}{(n+2)^2}+\text{----------}+\frac{1}{(n+n)^2}\right)=0$.

3. Test the convergenceof the series $\sum_{n=1}^{\infty}\left(\sqrt[3]{n^3+1}-n\right)$.

4. Examine for continuity of the function *f* defined by $f(x)=|x|+|x-1|$ at x=0 and 1.

5. Show that $f(x)=x\sin\frac{1}{x},\ x\neq 0; f(x)=0, x=0$ is continuous but not derivable at x=0.

6.Verify Rolle's theorem for the function f(x) = x^3- $6x^2$+11x-6 on $[1,3]$.

7. If $f(x)-x^2\ \forall\, x\in[0,1]$ and $p-\{0,\frac{1}{4},\frac{2}{4},\frac{3}{4},1\}$ then find L(p, f) and U(p, f).

8.prove that if $f:[a,b]\to R$ is continuous on [a, b] then f is R- integrable on [a, b].

SECTION –B

Answer ALL the questions. Each question carries TEN marks. 5 X 10 M = 50 M

9.(a)If $s_n=1+\frac{1}{2!}+\frac{1}{3!}+-\,-\,-\,-\,-\,-+\frac{1}{n!}$ then show that $\{s_n\}$ converges.

(OR)

(b) State and prove Cauchy's general principle of convergence.

10.(a) State and Prove Cauchy's nth root test.

(OR)

(b) Test the convergence of $\sum \frac{x^n}{x^n+a^n}$ $(x > 0, a > 0)$.

11.(a) Let f: R$\rightarrow$ $\mathbb{R}$ be such that

$$f(x) = \frac{\sin(a+1)x+\sin x}{x} \text{ for } x < 0$$

$$= c \qquad \text{for } x = 0$$

$$= \frac{(x+bx^2)^{1/2}-x^{1/2}}{bx^{3/2}} \text{ for } x > 0$$

Determine the values of a, b, c for which the function f is continuous at x=0.

(OR)

(b) Define uniform continuity, If a function f is continuous on [a b] then f is uniformly continuous on [a b]

12.(a) Using Lagrange's theorem, show that $x > \log(1+x) > \frac{x}{(1+x)} \forall\, x > 0$.

(OR)

(b) State and prove Cauchy's mean value theorem.

13.(a) State and prove Riemman's necessary and sufficient condition for R- integrability.

(OR)

(b) Prove that $\frac{\pi^3}{24} \leq \int_0^{\pi} \frac{x^2}{5+3\cos x}\,dx \leq \frac{\pi^3}{6}$.

BLUE PRINT FOR QUESTION PAPER PATTERN

COURSE-V, LINEAR ALGEBRA

Unit	TOPIC	S.A.Q (including choice)	E.Q (including choice)	Marks Allotted
I	Vector spaces - I	2	2	30
II	Vector spaces - II	1	2	25
III	Linear Transformation	2	2	30
IV	Char. values and char. vectors	1	2	25
V	Inner product spaces	2	2	30
Total		8	10	140

S.A.Q. = Short answer questions (5 marks)

E.Q. = Essay questions (10 marks)

Short answer questions : 5 X 5 M = 25 M

Essay questions : 5 X 10 M = 50 M

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Total Marks = 75 M

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CBCS/ SEMESTER SYSTEM

(w.e.f. 2020-21 Admitted Batch)

B.A./B.Sc. MATHEMATICS

COURSE-V, LINEAR ALGEBRA

Time: 3Hrs **Max.Marks:75M**

SECTION - A

Answer any FIVE questions. Each question carries FIVE marks 5 X 5 M=25 M

1. Let p, q, r be fixed elements of a field F. Show that the set W of all triads (x, y, z) of elements of F, such that px+qy+rz=0 is a vector subspace of $V_3(R)$.

2. Define linearly independent &linearly dependent vectors in a vector space. If α, β, γ are linearly independent vectors of $V(R)$ then show that $\alpha+\beta, \beta+\gamma, \gamma+\alpha$ are also linearly independent.

3. Prove that every set of $(n+1)$ or more vectors in an n dimensional vector space is linearly dependent.

4. The mapping T : $V_3(R) \rightarrow V_3(R)$ is defined by T(x,y,z) = (x-y,x-z). Show that T is a linear transformation.

5. Let $T: R^3 \rightarrow R^2$ and $H: R^3 \rightarrow R^2$ be defined by T (x, y, z)= (3x, y+z) and H (x, y, z)= (2x-z, y). Compute i) T+H ii) 4T-5H iii) TH iv) HT.

6. If the matrix A is non-singular, show that the eigen values of A^{-1} are the reciprocals of the eigen values of A.

7. State and prove parallelogram law in an inner product space V(F).

8. Prove that the set S = $\left\{\left(\frac{1}{3},\frac{-2}{3},\frac{-2}{3}\right),\left(\frac{2}{3},\frac{-1}{3},\frac{2}{3}\right),\left(\frac{2}{3},\frac{2}{3},\frac{-1}{3}\right)\right\}$ is an orthonormal set in the inner product space $R^3(R)$ with the standard inner product.

SECTION - B

Answer ALL the questions. Each question carries TEN marks. 5 X 10 M = 50 M

9(a)) Define vector space. Let V (F) be a vector space. Let W be a non empty sub set of V. Prove that the necessary and sufficient condition for W to be a subspace of V is $a, b \in F$ and $\alpha, \beta \in V \Rightarrow a\alpha + b\beta \in W$.

(OR)

(b) Prove that the four vectors (1,0,0), (0,1,0), (0,0,1) and (1,1,1) of $V_3(C)$ form linearly dependent set, but any three of them are linearly independent.

10(a)Define dimension of a finite dimensional vector space. If W is a subspace of a finite dimensional vector space V(F) then prove that W is finite dimensional and dim W$\leq n$.

(OR)

(b) If W be a subspace of a finite dimensional vector space V(F) then Prove that $\dim V/W = \dim V - \dim W$.

11(a) Find T (x, y, z) where $T: R^3 \rightarrow R$ is defined by T (1, 1, 1) =3, T (0, 1, -2) =1, T (0, 0, 1) = -2

(OR)

(b) State and prove Rank Nullity theorem.

12(a) Find the eigen values and the corresponding eigen vectors of the matrix

A= $\begin{pmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{pmatrix}$.

(OR)

(b) State and prove Cayley-Hamilton theorem.

13(a) State and prove Schwarz's inequality in an Inner product space V(F).

(OR)

(b) Given $\{(2,1,3),(1,2,3),(1,1,1)\}$ is a basis of R^3(R).Construct an orthonormal basis using Gram-Schmidt orthogonalisation process.

SUBJECT EXPERTS

Prof. GVR Babu
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Govt. Degree College,
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Dept of Mathematics,
S V University,
Tirupati

ANDHRAPRADESHSTATECOUNCILOFHIGHEREDUCATION

(A Statutory body of the Government of Andhra Pradesh)

REVISED UG SYLLABUS UNDER CBCS

(Implemented from Academic Year - 2020-21)

PROGRAMME: FOUR YEAR B.A. /B.Sc. (Hons)

Domain Subject: MATHEMATICS

Skill Enhancement Courses (SECs) for Semester V, from 2022-23 (Syllabus with Learning Outcomes, References, Co-curricular Activities & Model Q.P. Pattern)

Structure of SECs for Semester–V

(To choose One pair from the Three alternate pairs of SECs)

Univ Code	Course Number 6&7	Name of Course	Hours/ Week	Credits	Marks	
					IA–20 Filed Work 05	Sem End
	6A	Numerical Methods	6	5	25	75
	7A	Mathematical Special Functions	6	5	25	75

OR

	6B	Multiple integrals and Applications of Vector Calculus	6	5	25	75
	7B	Integral transforms with Applications	6	5	25	75

OR

	6C	Partial Differential Equations and Fourier Series	6	5	25	75
	7C	Number theory	6	5	25	75

Note-1: For Semester–V, for the domain subject Mathematics, any one of the three pairs of SECs shall be chosen as courses 6 and 7, i.e., (6A & 7A) or (6B & 7B) or (6C & 7C),the pair shall not be broken. A, B, C allotment is random, not on any priority basis.

Note-2: One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate skills related to the domain subject in students. The syllabus of SEC will be partially skill oriented. Hence, teachers shall also impart practical training to students on the skills embedded in the syllabus citing related real field situations.

CHAIRPERSON
UG BOS IN MATHEMATICS
ACHARYA NAGARJUNA UNIVERSITY

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.A. /B.Sc. (Hons)
Domain Subject: **MATHEMATICS**
IV Year B.A./B.Sc.(Hons)– Semester – V

Max Marks: 100

Course-6A: Numerical Methods

(Skill Enhancement Course (Elective), 5 credits)

1. Learning Outcomes:

Students after successful completion of the course will be able to

1. understand the subject of various numerical methods that are used to obtain approximate solutions
2. Understand various finite difference concepts and interpolation methods.
3. Work out numerical differentiation and integration whenever and wherever routine methods are not applicable.
4. Find numerical solutions of ordinary differential equations by using various numerical methods.
5. Analyze and evaluate the accuracy of numerical methods.

II. Syllabus :(Hours: Teaching: 75 (incl. unit tests etc. 05), Training: 15)

Unit – 1: Finite Differences and Interpolation with Equal intervals (15h)

1. Introduction, Forward differences, Backward differences, Central Differences, Symbolic relations, nth Differences of Some functions,
2. Advancing Difference formula, Differences of Factorial Polynomial, Summation of Series.
3. Newton's formulae for interpolation. Central Difference Interpolation Formulae.

Unit – 2: Interpolation with Equal and Unequal intervals (15h)

1. Gauss's Forward interpolation formulae, Gauss's backward interpolation formulae, Stirling's formula, Bessel's formula.
2. Interpolation with unevenly spaced points, divided differences and properties, Newton's divided differences formula.
3. Lagrange's interpolation formula, Lagrange's Inverse interpolation formula.

Unit – 3: Numerical Differentiation (15h)

1. Derivatives using Newton's forward difference formula, Newton's back ward difference formula,
2. Derivatives using central difference formula, Stirling's interpolation formula,
3. Newton's divided difference formula, Maximum and minimum values of a tabulated function.

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Unit – 4: Numerical Integration (15h)

1. General quadrature formula one errors, Trapezoidal rule,
2. Simpson's1/3– rule, Simpson's 3/8 – rule, and Weddle's rules,
3. Euler – McLaurin Formula of summation and quadrature, The Euler transformation.

Unit – 5: Numerical solution of ordinary differential equations (15h)

1. Introduction, Solution by Taylor's Series,
2. Picard's method of successive approximations,
3. Euler's method, Modified Euler's method, Runge – Kutta methods.

III. References:

1. S.S.Sastry, Introductory Methods of Numerical Analysis, Prentice Hall of India Pvt. Ltd., New Delhi-110001, 2006.
2. P.Kandasamy, K.Thilagavathy, Calculus of Finite Differences and Numerical Analysis.
   S. Chand & Company, Pvt. Ltd., Ram Nagar, New Delhi-110055.
3. R.Gupta, Numerical Analysis, Laxmi Publications (P) Ltd., New Delhi.
4. H.C Saxena, Finite Differences and Numerical Analysis, S. Chand & Company Pvt. Ltd., Ram Nagar, New Delhi-110055.
5. S.Ranganatham, Dr.M.V.S.S.N.Prasad, Dr.V.Ramesh Babu, Numerical Analysis,
   S. Chand & Company Pvt. Ltd., Ram Nagar, New Delhi-110055.
6. Web resources suggested by the teacher and college librarian including reading material.

IV. Co-Curricular Activities:

A) Mandatory:

1. For Teacher: Teacher shall train students in the following skills for 15 hours, by taking relevant outside data (Field/Web).

1. Applications of Newton's forward and back ward difference formulae.
2. Applications of Gauss forward and Gauss back ward, Stirling's and Bessel's formulae.
3. Applications of Newton's divided differences formula and Lagrange's interpolation formula.
4. Various methods to find the approximation of a definite integral.
5. Different methods to find solutions of Ordinary Differential Equations.

2. For Student: Fieldwork/Project work; Each student individually shall undertake Fieldwork/Project work and submit a report not exceeding 10 pages in the given format on the work-done in the areas like the following, by choosing any one of the aspects.

1. Collecting the data from the identified sources like Census department or Electricity department, by applying the Newton's, Gauss and Lagrange's interpolation formula, making observations and drawing conclusions. (Or)

2. Selection of some region to find the area by applying Trapezoidal rule, Simpson's1/3– rule, Simpson's 3/8 – rule, and Weddle's rules. Comparing the solutions with analytical solution and concluding which one is the best method. (Or)

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3.Findingsolutionof the ODE by Taylor's Series, Picard's method of successive approximations, Euler's method, Modified Euler's method, Runge–Kutta methods. Comparing the solutions with analytical solution, selecting the best method.

3. Max. Marks for Fieldwork/Project work Report: 05.

4. **Suggested Format for Fieldwork/Project work Report**: Title page, Student Details, Index page, Stepwise work-done, Findings, Conclusions and Acknowledgements.

5. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Assignments/collection of data, Seminar, Quiz, Group discussions/Debates
2. Visits to research organizations, Statistical Cells, Universities, ISI etc.
3. Invited lectures and presentations on related topics by experts in the specified area.

V. Suggested Question Paper Pattern:

Max.Marks:75 **Time:3 hrs**

SECTION – A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)

SECTION - B (Total: 5 X 5=25Marks)

(Answer any **five questions**. Each answer carries **5 Marks)**

(At least 1 question should be given from each Unit)

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SECTION - C (Total: 5 X 8 = 40 Marks)

(Answer ALL the questions. Each question carries **8 Marks)**

1.	(a) or (b)
2.	(a) or (b)
3.	(a) or (b)
4.	(a) or (b)
5.	(a) or (b)

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B.A. /B.Sc. **MATHEMATICS**
Skill Enhancement Courses for Semester – V

Max.Marks:75 **Time:3 hrs**

SECTION – A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)
Answer any **five questions**. Each answer carries **2 Marks**
(At least 1 question should be given from each Unit)

1.	
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SECTION - B (Total: 5 X 5=25Marks)
(Answer any **five questions**. Each answer carries **5 Marks)**
(At least 1 question should be given from each Unit)

1.	
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SECTION - C (Total: 5 X 8 = 40 Marks)
(Answer ALL the questions. Each question carries **8 Marks)**

1.	(a) or (b)
2.	(a) or (b)
3.	(a) or (b)
4.	(a) or (b)
5.	(a) or (b)

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ACHARYA NAGARJUNA UNIVERSITY

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.A. /B.Sc. (Hons)
Domain Subject: **MATHEMATICS**
IV Year B.A./B.Sc.(Hons)– Semester – V

Max Marks: 100

Course-7A: Mathematical Special Functions

(Skill Enhancement Course (Elective), 5 credits)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand the Beta and Gamma functions, their properties and relation between these two functions, understand the orthogonal properties of Chebyshev polynomials and recurrence relations.
2. Find power series solutions of ordinary differential equations.
3. solve Hermite equation and write the Hermite Polynomial of order (degree) n, also find the generating function for Hermite Polynomials, study the orthogonal properties of Hermite Polynomials and recurrence relations.
4. Solve Legendre equation and write the Legendre equation of first kind, also find the generating function for Legendre Polynomials, understand the orthogonal properties of Legendre Polynomials.
5. Solve Bessel equation and write the Bessel equation of first kind of order n, also find the generating function for Bessel function understand the orthogonal properties of Bessel unction.

II. Syllabus: (Hours: Teaching: 75 (incl. unit tests etc. 05), Training: 15)

Unit – 1: Beta and Gamma functions, Chebyshev polynomials (15h)

1. Euler's Integrals-Beta and Gamma Functions, Elementary properties of Gamma Functions,

Transformation of Gamma Functions.

2. Another form of Beta Function, Relation between Beta and Gamma Functions.
3. Chebyshev polynomials, orthogonal properties of Chebyshev polynomials, recurrence relations, generating functions for Chebyshev polynomials.

Unit – 2: Power series and Power series solutions of ordinary differential equations (15h)

1. Introduction, summary of useful results, power series, radius of convergence, theorems on Power series
2. Introduction of power series solutions of ordinary differential equation
3. Ordinary and singular points, regular and irregular singular points, power series solution.

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Unit – 3: Hermite polynomials (15h)

1. Hermite Differential Equations, Solution of Hermite Equation, Hermite polynomials, generating function for Hermite polynomials.
2. Other forms for Hermite Polynomials, Rodrigues formula for Hermite Polynomials, to find first few Hermite Polynomials.
3. Orthogonal properties of Hermite Polynomials, Recurrence formulae for Hermite Polynomials.

Unit – 4: Legendre polynomials (15h)

1. Definition, Solution of Legendre's equation, Legendre polynomial of degree n, generating function of Legendre polynomials.
2. Definition of $P_n(x)$ and $Q_n(x)$, General solution of Legendre's Equation (derivations not required) to show that $Pn(x)$ is the coefficient of h^n, in the expansion of $(1 - 2xh + h^2)^{\frac{-1}{2}}$
3. Orthogonal properties of Legendre's polynomials, Recurrence formulas for Legendre's Polynomials.

Unit – 5: Bessel's equation (15h)

1. Definition, Solution of Bessel's equation, Bessel's function of the first kind of order n, Bessel's function of the second kind of order n.
2. Integration of Bessel's equation in series form=0, Definitionof $J_n(x)$, recurrence for mulae for $J_n(x)$.
3. Generating function for $J_n(x)$, orthogonally of Bessel functions.

II. Reference Books:

1. Dr.M.D.Raisinghania, Ordinary and Partial Differential Equations, S. Chand & Company Pvt. Ltd., Ram Nagar, New Delhi-110055.
2. J.N.Sharma and Dr.R.K.Gupta, Differential equations with special functions, Krishna Prakashan Mandir.
3. Shanti Narayan and Dr.P.K.Mittal, Integral Calculus, S. Chand & Company Pvt. Ltd., Ram Nagar, New Delhi-110055.
4. George F.Simmons, Differential Equations with Applications and Historical Notes, Tata McGRAW-Hill Edition, 1994.
5. Shepley L.Ross, Differential equations, Second Edition, John Willy & sons, New York, 1974.
6. Web resources suggested by the teacher and college librarian including reading material.

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IV. Co-Curricular Activities:

A) Mandatory:

1. For Teacher: Teacher shall train students in the following skills for 15 hours, by taking relevant outside data (Field/Web).

1. Beta and Gamma functions, Chebyshev polynomials.
2. Power series, power series solutions of ordinary differential equations,
3. Procedures of finding series solutions of Hermite equation, Legendre equation and Bessel equation.
4. Procedures of finding generating functions for Hermite polynomials, Legendre Polynomials and Bessel's function.

2. For Student: Fieldwork/Project work; Each student individually shall undertake Fieldwork/Project work, make observations and conclusions and submit a report not exceeding 10 pages in the given format on the work-done in the areas like the following, by choosing any one of the aspects.

1. Going through the web sources like Open Educational Resources on the properties of Beta and Gamma functions, Chebyshev polynomials, power series solutions of ordinary differential equations. (or)

2. Going through the web sources like Open Educational Resources on the properties of series solutions of Hermite equation, Legendre equation and Bessel equation.

3. Max. Marks for Fieldwork/Project work Report: 05.

4. **Suggested Format for Fieldwork/Project work Report**: Title page, Student Details, Index page,
Stepwise work-done, Findings, Conclusions and Acknowledgements.

5. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Assignments/collection of data, Seminar, Quiz, Group discussions/Debates
2. Visits to research organizations, Statistical Cells, Universities, ISI etc.
3. Invited lectures and presentations on related topics by experts in the specified area.

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V. Suggested Question Paper Pattern:

Max.Marks:75 **Time:3 hrs**

SECTION – A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)

SECTIONB (Total: 5 X 5=25Marks)

(Answer any **five questions**. Each answer carries **5 Marks)**

(At least 1 question should be given from each Unit)

1.	
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SECTIONC (Total: 5 X 8 = 40 Marks)

(Answer ALL the questions. Each question carries **8 Marks)**

1.	(a) or (b)
2.	(a) or (b)
3.	(a) or (b)
4.	(a) or (b)
5.	(a) or (b)

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B.A. /B.Sc. **MATHEMATICS**
Skill Enhancement Courses for Semester – V

Max.Marks:75 **Time:3 hrs**

SECTION – A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)
Answer any **five questions**. Each answer carries **2 Marks**
(At least 1 question should be given from each Unit)

1.	
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SECTION - B (Total: 5 X 5=25Marks)
(Answer any **five questions**. Each answer carries **5 Marks)**
(At least 1 question should be given from each Unit)

1.	
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SECTION - C (Total: 5 X 8 = 40 Marks)
(Answer ALL the questions. Each question carries **8 Marks)**

1.	(a) or (b)
2.	(a) or (b)
3.	(a) or (b)
4.	(a) or (b)
5.	(a) or (b)

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UG BOS IN MATHEMATICS
ACHARYA NAGARJUNA UNIVERSITY

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.A. /B.Sc. (Hons)
Domain Subject: **MATHEMATICS**
IV Year B.A./B.Sc.(Hons)– Semester – V

Max Marks: 100

Course-6B: Multiple integrals and applications of Vector calculus
(Skill Enhancement Course (Elective), 5 credits)

I. Learning Outcomes:

Students after successful completion of the course will be able to

1. Learn multiple integrals as a natural extension of definite integral to a function of two variables in the case of double integral / three variables in the case of triple integral.
2. Learn applications in terms of finding surface area by double integral and volume by triple integral.
3. Determine the gradient, divergence and curl of a vector and vector identities.
4. Evaluate line, surface and volume integrals.
5. understand relation between surface and volume integrals (Gauss divergence theorem), relation between line integral and volume integral (Green's theorem), relation between line and surface integral (Stokes theorem)

II. Syllabus: (Hours: Teaching: 75 (incl. unit tests etc.05), Training: 15)

Unit – 1: Multiple integrals-I (15h)

1. Introduction, Double integrals, Evaluation of double integrals, Properties of double integrals.
2. Region of integration, double integration in Polar Co-ordinates,
3. Change of variables in double integrals, change of order of integration.

Unit – 2: Multiple integrals-II (15h)

1. Triple integral, region of integration, change of variables.
2. Plane areas by double integrals, surface area by double integral.
3. Volume as a double integral, volume as a triple integral.

Unit – 3: Vector differentiation (15h)

1. Vector differentiation, ordinaryderivatives of vectors.
2. Differentiability, Gradient, Divergence, Curl operators,
3. Formulae involving the separators.

Unit – 4: Vector integration (15h)

1. Line Integrals with examples.
2. Surface Integral with examples.
3. Volume integral with examples.

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Unit – 5: Vector integration applications (15h)

1. Gauss theorem and applications of Gauss theorem.
2. Green's theorem in plane and applications of Green's theorem.
3. Stokes's theorem and applications of Stokes theorem.

III. Reference Books:

1. Dr.M Anitha, Linear Algebra and Vector Calculus for Engineer, Spectrum University Press, SR Nagar, Hyderabad-500038, INDIA.
2. Dr.M.Babu Prasad, Dr.K.Krishna Rao, D.Srinivasulu, Y.AdiNarayana, Engineering Mathematics-II, Spectrum University Press, SR Nagar, Hyderabad-500038,INDIA.
3. V.Venkateswararao, N. Krishnamurthy, B.V.S.S.Sarma and S.Anjaneya Sastry, A text Book of B.Sc., Mathematics Volume-III, S. Chand & Company, Pvt. Ltd., Ram Nagar,NewDelhi-110055.
4. R.Gupta,Vector Calculus, Laxmi Publications.
5. P.C.Matthews, Vector Calculus, Springer Verlag publications.
6. Web resources suggested by the teacher and college librarian including reading material.

IV. Co-Curricular Activities:

A) Mandatory:

1. For Teacher: Teacher shall train students in the following skills for 15 hours, by taking Relevant outside data (Field/Web).

1. The methods of evaluating double integrals and triple integrals in the class room and train to evaluate

These integrals of different functions over different regions.

2. Applications of line integral, surface integral and volume integral.

3. Applications of Gauss divergence theorem, Green's theorem and Stokes's theorem.

2. For Student: Fieldwork/Project work Each student individually shall undertake Fieldwork/Project work and submit a

report not exceeding 10 pages in the given format on the work-done in the areas like the following, by choosing any one of the following aspects.

1. Going through the web sources like Open Educational Resources to find the values of double and triple integrals of specific functions in a given region and make conclusions. (or)

2. Going through the web sources like Open Educational Resources to evaluate line integral, surface integral and volume integral and apply Gauss divergence theorem, Green's theorem and Stokes theorem and make conclusions.

3. Max. Marks for Fieldwork/Project work Report: 05.

4. **Suggested Format for Fieldwork/Project work Report**: Title page, Student Details, Index page,
Stepwise work-done, Findings, Conclusions and Acknowledgements.

4. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Assignments/collection of data, Seminar, Quiz, Group discussions/Debates.
2. Visits to research organizations, Statistical Cells, Universities, ISI etc.

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3. Invited lectures and presentations on related topics by experts in the specified are

V. Suggested Question Paper Pattern:

Max.Marks:75 **Time:3 hrs**

SECTION – A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)

SECTION - B (Total: 5 X 5=25Marks)

(Answer any **five questions**. Each answer carries **5 Marks)**

(At least 1 question should be given from each Unit)

1.	
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SECTION - C (Total: 5 X 8 = 40 Marks)

(Answer ALL the questions. Each question carries **8 Marks)**

1.	(a) or (b)
2.	(a) or (b)
3.	(a) or (b)
4.	(a) or (b)
5.	(a) or (b)

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B.A. /B.Sc. **MATHEMATICS**
Skill Enhancement Courses for Semester – V

Max.Marks:75 **Time:3 hrs**

SECTION – A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)
Answer any **five questions**. Each answer carries **2 Marks**
(At least 1 question should be given from each Unit)

1.	
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SECTION - B (Total: 5 X 5=25Marks)
(Answer any **five questions**. Each answer carries **5 Marks)**
(At least 1 question should be given from each Unit)

1.	
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6.	
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8.	

SECTION - C (Total: 5 X 8 = 40 Marks)
(Answer ALL the questions. Each question carries **8 Marks)**

1.	(a) or (b)
2.	(a) or (b)
3.	(a) or (b)
4.	(a) or (b)
5.	(a) or (b)

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UG BOS IN MATHEMATICS
ACHARYA NAGARJUNA UNIVERSITY

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.A. /B.Sc. (Hons)
Domain Subject: **MATHEMATICS**
IV Year B.A./B.Sc.(Hons)– Semester – V

Max Marks: 100

Course-7B: Integral transforms with applications
(Skill Enhancement Course (Elective), 5 credits)

I. Learning Outcomes:

Students after successful completion of the course will be able to

1. Evaluate Laplace transforms of certain functions, find Laplace transforms of derivatives and of integrals.
2. Determine properties of Laplace transform which may be solved by application of special functions namely Dirac delta function, error function, Bessel function and periodic function.
3. Understand properties of inverse Laplace transforms, find inverse Laplace transforms of derivatives and of integrals.
4. Solve ordinary differential equations with constant/ variable coefficients by using Laplace transform method.
5. Comprehend the properties of Fourier transforms and solve problems related to finite Fourier transforms.

II. Syllabus :(Hours: Teaching: 75 (incl. unit tests etc.05), Training: 15)

Unit – 1: Laplace transforms- I (15h)

1. Definition of Laplace transform, linearity property-piecewise continuous function.
2. Existence of Laplace transform, functions of exponential order and of class A.
3. First shifting theorem, second shifting theorem and change of scale property.

Unit – 2: Laplace transforms- II (15h)

1. Laplace Transform of the derivatives, initial value theorem and final value theorem. Laplace transforms of integrals.
2. Laplace transform of t^n. f (t), division by t, evolution of integrals by Laplace transforms.
3. Laplace transform of some special functions-namely Dirac delta function, error function, Bessel function and Laplace transform of periodic function.

Unit – 3: Inverse Laplace transforms (15h)

1. Definition of Inverse Laplace transform, linear property, first shifting theorem, second shifting theorem, change of scale property, use of partial fractions.
2. Inverse Laplace transforms of derivatives, inverse, Laplace transforms of integrals, multiplication by powers of 'p', division by 'p'.
3. Convolution, convolution theorem proof and applications.

Unit – 4: Applications of Laplace transforms (15h)

1. Solutions of differential equations with constants coefficients, solutions of differential equations with variable coefficients.
2. Applications of Laplace transforms to integral equations- Abel's integral equation.
3. Converting the differential equations into integral equations, converting the integral equations into differential equations.

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Unit – 5: Fourier transforms (15h)

1. Integral transforms, Fourier integral theorem (without proof), Fourier sine and cosine integrals.
2. Properties of Fourier transforms, change of scale property, shifting property, modulation theorem. Convolution.
3. Convolution theorem for Fourier transform, Parseval's Identify, finite Fourier transforms.

III. Reference Books:

1. Dr. S.Sreenadh, S.Ranganatham, Dr.M.V.S.S.N.Prasad, Dr. V.Ramesh Babu, Fourier series and Integral Transforms, S. Chand & Company, Pvt. Ltd., Ram Nagar, New Delhi-110055.
2. A.R. Vasistha, Dr. R.K. Gupta, Laplace Transforms, Krishna Prakashan Media Pvt. Ltd. Meerut.
3. M.D.Raisinghania, H.C. Saxsena , H.K. Dass, Integral Transforms, S. Chand & Company Pvt. Ltd., Ram Nagar, New Delhi-110055.
4. Dr. J.K. Goyal, K.P. Gupta, Laplace and Fourier Transforms, Pragathi Prakashan, Meerut.
5. Shanthi Narayana , P.K. Mittal, A Course of Mathematical Analysis, S. Chand & Company Pvt.Ltd. Ram Nagar, New Delhi-110055.
6. Web resources suggested by the teacher and college librarian including reading material.

IV. Co-Curricular Activities:

A) Mandatory:

1. For Teacher: Teacher shall train students in the following skills for 15 hours, by taking Relevant outside data (Field/Web).

1. Demonstrate on sufficient conditions for the existence of the Laplace transform of a function.

2. Evaluation of Laplace transforms and methods of finding Laplace transforms.

3. Evaluations of Inverse Laplace transforms and methods of finding Inverse Laplace transforms.

4. Fourier transforms and solutions of integral equations.

2. For Student: Fieldwork/Project work; Each student individually shall undertake Fieldwork/Project work and submit a report not exceeding 10 pages in the given format on the work-done in the areas like the following, by choosing any one of the aspects.

1. Going through the web sources like Open Educational Resources on Applications of Laplace transforms and Inverse Laplace transforms to find solutions of ordinary differential equations with constant /variable coefficients and make conclusions. (or)
2. Going through the web sources like Open Educational Resources on Applications of convolution theorem to solve integral equations and make conclusions. (or)
3. Going through the web source like Open Educational Resources on Applications of Fourier transforms to solve integral equations and make conclusions.

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4. **Max. Marks for Fieldwork/Project work Report: 05.**

4. **Suggested Format for Fieldwork/Project work Report**: Title page, Student Details, Index page,
Stepwise work-done, Findings, Conclusions and Acknowledgements.

5. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Assignments/collection of data, Seminar, Quiz, Group discussions/Debates
2. Visits to research organizations, Statistical Cells, Universities, ISI etc.
3. Invited lectures and presentations on related topics by experts in the specified area.

V. Suggested Question Paper Pattern:

Max.Marks:75 **Time:3 hrs**

SECTION – A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)

SECTION - B (Total: 5 X 5=25Marks)

(Answer any **five questions**. Each answer carries **5 Marks)**

(At least 1 question should be given from each Unit)

1.	
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SECTION - C (Total: 5 X 8 = 40 Marks)

(Answer ALL the questions. Each question carries **8 Marks)**

1.	(a) or (b)
2.	(a) or (b)
3.	(a) or (b)
4.	(a) or (b)
5.	(a) or (b)

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B.A. /B.Sc. **MATHEMATICS**
Skill Enhancement Courses for Semester – V

Max.Marks:75 **Time:3 hrs**

SECTION – A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)
Answer any **five questions**. Each answer carries **2 Marks**
(At least 1 question should be given from each Unit)

1.	
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SECTION - B (Total: 5 X 5=25Marks)
(Answer any **five questions**. Each answer carries **5 Marks)**
(At least 1 question should be given from each Unit)

1.	
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SECTION - C (Total: 5 X 8 = 40 Marks)
(Answer ALL the questions. Each question carries **8 Marks)**

1.	(a) or (b)
2.	(a) or (b)
3.	(a) or (b)
4.	(a) or (b)
5.	(a) or (b)

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ACHARYA NAGARJUNA UNIVERSITY

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.A. /B.Sc. (Hons)
Domain Subject: **MATHEMATICS**
IV Year B.A./B.Sc.(Hons)– Semester – V

Max Marks: 100

Course-6C: Partial differential equations & Fourier series
(Skill Enhancement Course (Elective), 5 credits)

1. Learning Outcomes:

Students after successful completion of the course will be able to

1. Classify partial differential equations, formation of partial differential equations and solve Cauchy's problem for first order equations.
2. Solve Lagrange's equations by various methods, find integral Surface passing through a given curve and Surfaces orthogonal to a given system of Surfaces.
3. Find solutions of nonlinear partial differential equations of order one by using Char pit's method.
4. Find solutions of nonlinear partial differential equations of order one by using Jacobi's method.
5. Understand Fourier series expansion of a function f(x) and Parseval's theorem.

II. Syllabus: (Hours: Teaching: 75 (incl. unit tests etc.05), Training: 15)

Unit – 1: Introduction of partial differential equations (15h)

1. Partial Differential Equations, classification of first order partial differential equations, Rule I, derivation of a partial differential equations by the elimination of arbitrary constants
2. Rule II, derivation of a partial differential equation by the elimination of arbitrary function φ from the equations $\emptyset(u, v) = 0$ where u and v are functions of x, y and z.
3. Cauchy's problem for first order equations

Unit – 2: Linear partial differential equations of order one (15h)

1. Lagrange's equations, Lagrange's method of solving Pp+Qq=R, where P, Q and R are functions of x, y and z, type 1 based on Rule I for solving $\frac{dx}{p} = \frac{dy}{Q} = \frac{dz}{R}$,type 2 based on Rule II for solving $\frac{dx}{p} = \frac{dy}{Q} = \frac{dz}{R}$.
2. Type 3 based on Rule III for solving $\frac{dx}{p} = \frac{dy}{Q} = \frac{dz}{R}$, type 4 based on Rule IV for solving $\frac{dx}{p} = \frac{dy}{Q} = \frac{dz}{R}$.
3. Integral Surface passing through a given curve, the Cauchy problem, Surfaces orthogonal to a given system of Surfaces.

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Unit – 3: Non-linear partial differential equations of order one-I (15h)

1. Complete integral, particular integral, singular integral and general integral, geometrical interpretation of integrals of f (x, y, z, p, q) = 0, method of getting singular integral from the PDE of first order, compatible system of first order equations.
2. Char pit's method, Standard form I, only p and q present.
3. Standard form II, Clairaut equations.

Unit – 4: Non-linear partial differential equations of order one-II (15h)

1. Standard Form III, only p, q and z present.
2. Standard Form IV, equation of the form $f_1(x, p) = f_2(y, q)$.
3. Jacobi's method, Jacobi's method for solving partial differential equations with three or more independent variables, Jacobi's method for solving a non-linear first order partial differential equations in two independent variables.

Unit – 5: Fourier series (15h)

1. Introduction, Euler's formulae for Fourier series expansion of a function f(x), Dirichlet's conditions for Fourier series, convergence of Fourier series.
2. Functions having arbitrary periods. Change of interval, Half range series.
3. Parseval's theorem, illustrative examples based on Parseval's theorem, some particular series.

III. Reference Books:

1. Dr.M.D.Raisinghania, Ordinary and Partial Differential Equations, S. Chand & Company Pvt. Ltd., Ram Nagar, New Delhi-110055.
2. Dr. S.Sreenadh, S.Ranganatham, Dr.M.V.S.S.N.Prasad, Dr. V.Ramesh Babu, Fourier Series and Integral Transforms, S. Chand & Company Pvt. Ltd., Ram Nagar, New Delhi-110055.
3. Prof T.Amaranath, An Elementary Course in Partial Differential Equations Second Edition, Narosa Publishing House, New Delhi.
4. Fritz John, Partial Differential Equations, Narosa Publishing House, New Delhi, 1979.
5. I.N.Sneddon, Elements of Partial Differential Equations by McGraw Hill, International Edition, Mathematics series.
6. Web resources suggested by the teacher and college librarian including reading material.

IV. Co-Curricular Activities:

A) Mandatory:

1. For Teacher: Teacher shall train students in the following skills for 15 hours, by taking Relevant outside data (Field/Web).

1. On classification of first order partial differential equations, formation of partial differential equations.

2. Various methods of finding solutions of partial differential equations.

3. Integral Surface passing through a given curve and Surfaces orthogonal to a give system of Surfaces.

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b) For Student: Fieldwork/Project work; Each student individually shall undertake Fieldwork/Project work and submit a report not exceeding 10 pages in the given format on the work-done in the areas like the

Following, by choosing any one of the aspects.

1. Going through the web source like Open Educational Resources to find solutions of partial differential equations by using Lagrange's method, Charpit's method and Jacobi's method and make conclusions. (or)
2. Going through the web source like Open Educational Resources to find Integral Surface passing through a given curve and Surfaces orthogonal to a given system of Surfaces and make conclusions. (or)
3. Going through the web source like Open Educational Resources to find Fourier series expansions of some functions and applications of Parseval's theorem and make conclusions.

3. Max. Marks for Fieldwork/Project work Report: 05.

4. **Suggested Format for Fieldwork/Project work Report**: Title page, Student Details, Index page,
Stepwise work-done, Findings, Conclusions and Acknowledgements.

5. Unit tests (IE).

b) Suggested Co-Curricular Activities

1. Assignments/collection of data, Seminar, Quiz, Group discussions/Debates
2. Visits to research organizations, Statistical Cells, Universities, ISI etc.
3. Invited lectures and presentations on related topics by experts in the specified area.

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V. Suggested Question Paper Pattern:

Max.Marks:75 **Time:3 hrs**

SECTION – A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)

SECTION - B (Total: 5 X 5=25Marks)

(Answer any **five questions**. Each answer carries **5 Marks)**

(At least 1 question should be given from each Unit)

1.	
2.	
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6.	
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8.	

SECTION - C (Total: 5 X 8 = 40 Marks)

(Answer ALL the questions. Each question carries **8 Marks)**

1.	(a) or (b)
2.	(a) or (b)
3.	(a) or (b)
4.	(a) or (b)
5.	(a) or (b)

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B.A. /B.Sc. **MATHEMATICS**
Skill Enhancement Courses for Semester – V

Max.Marks:75 **Time:3 hrs**

SECTION – A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)
Answer any **five questions**. Each answer carries **2 Marks**
(At least 1 question should be given from each Unit)

1.	
2.	
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4.	
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6.	
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8.	

SECTION - B (Total: 5 X 5=25Marks)
(Answer any **five questions**. Each answer carries **5 Marks)**
(At least 1 question should be given from each Unit)

1.	
2.	
3.	
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5.	
6.	
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8.	

SECTION - C (Total: 5 X 8 = 40 Marks)
(Answer ALL the questions. Each question carries **8 Marks)**

1.	(a) or (b)
2.	(a) or (b)
3.	(a) or (b)
4.	(a) or (b)
5.	(a) or (b)

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UG BOS IN MATHEMATICS
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A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.A. /B.Sc. (Hons)
Domain Subject: **MATHEMATICS**
IV Year B.A./B.Sc.(Hons)– Semester – V

Max Marks: 100

Course-7C: Number theory
(Skill Enhancement Course (Elective), 5 credits)

1. **Learning Outcomes:**

Students after successful completion of the course will be able to

1. Find quotients and remainders from integer division, study divisibility properties of integers and the distribution of primes.
2. Understand Dirichlet multiplication which helps to clarify interrelationship between various arithmetical functions.
3. Comprehend the behaviour of some arithmetical functions for large n.
4. Understand the concepts of congruencies, residue classes and complete residues systems.
5. Comprehend the concept of quadratic residues mod p and quadratic non residues mod p.

I. **Syllabus:** (Hours: Teaching:75 (incl. unit tests etc.05), Training:15)

Unit – 1: Divisibility (15h)

1. Introduction, Divisibility, Greatest Common Divisor.
2. Prime numbers, The fundamental theorem of arithmetic, The series of reciprocals of the primes.
3. The Euclidean algorithm, The greatest common divisor of more than two numbers.

Unit – 2: Arithmetical Functions and Dirichlet Multiplication (15h)

1. Introduction, The Mobius function$\mu(n)$, The Euler totient function$\varphi(n)$, A relation connecting φ and μ , A product formula for $\varphi(n)$.
2. The Dirichlet product of arithmetical functions, Dirichlet inverses and Mobius inversion formula, The Mangoldt function$\Lambda(n)$.
3. Multiplicative functions, Multiplicative functions and Dirichlet multiplication, The inverse of a completely multiplicative function, Liouville's function $\lambda(n)$, The divisor functions $\sigma_\alpha(n)$.

Unit – 3: Averages of Arithmetical Functions (15h)

1. Introduction, The big oh notation. Asymptotic equality of functions, Euler's summation formula, some elementary asymptotic formulas.
2. The average order of $d(n)$, The average order of the divisor functions$\sigma_\alpha(n)$, The average order of $\varphi(n)$.
3. The average order of $\mu(n)$ and $\Lambda(n)$, The partial sum of a Dirichlet product, Applications of $\mu(n)$ and $\Lambda(n)$.

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Unit – 4: Congruences (15h)

1. Definition and basic properties of congruences, Residue classes and complete residue systems.
2. Linear congruences, reduced residue systems and the Euler-Fermat theorem. Polynomial congruences modulo p. Lagrange's theorem.
3. Applications of Lagrange's theorem, Simultaneous linear congruences. The Chinese remainder theorem. Applications of the Chinese remainder theorem.

Unit – 5: Quadratic Residues and the Quadratic Reciprocity Law (15h)

1. Quadratic Residues, Legendre's symbol and its properties, Evaluation of (-1/p) and (2/p), Gauss lemma,
2. The Quadratic reciprocity law, Applications of the reciprocity law, The Jacobi Symbol.
3. Gauss sums and the quadratic reciprocity law, the reciprocity law for quadratic Gauss sums. Another proof of the quadratic reciprocity law.

III. Reference Books:

1. Tom M.Apostol, Introduction to Analytic Number theory, Springer International Student Edition.
2. David, M. Burton, Elementary Number Theory, 2nd Edition UBS Publishers.
3. Hardy & Wright, Number Theory, Oxford Univ, Press.
4. Dence, J. B & Dence T.P, Elements of the Theory of Numbers, Academic Press.
5. Niven , Zuckerman &Montgomery, Introduction to the Theory of Numbers.
6. Web resources suggested by the teacher and college librarian including reading material.

IV. Co-Curricular Activities:

A) Mandatory:

1. For Teacher: Teacher shall train students in the following skills for 15 hours, by taking Relevant outside data (Field/Web).

1. Finding quotient and numbers from integer division and the method of solving congruences. Further problems related to the theory of quadratic residues.
2. Applications of Lagrange's theorem.
3. Applications of the Chinese remainder theorem.
4. Applications of the reciprocity law.

2.For Student: Fieldwork/Project work; Each student individually shall undertake Fieldwork/Project work and submit a report not exceeding 10 pages in the given format on the work-done in the areas like the following, by choosing any one of the aspects.

1. Going through the web sources like Open Educational Resources and list out Applications of Lagrange's theorem, and make conclusions.(or)
2. Going through the web sources like Open Educational Resources and list out Applications of the Chinese remainder theorem and make conclusions.(or)
3. Going through the web sources like Open Educational Resource and list out Applications of the reciprocity law and make conclusions.

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3. Max. Marks for Fieldwork/Project work Report: 05.

4. **Suggested Format for Fieldwork/Project work Report**: Title page, Student Details, Index page,
Stepwise work-done, Findings, Conclusions and Acknowledgements.

5. Unit tests (IE).

b) Suggested Co-Curricular Activities

1. Assignments/collection of data, Seminar, Quiz, Group discussions/Debates
2. Visits to research organizations, Statistical Cells, Universities, ISI etc.
3. Invited lectures and presentations on related topics by experts in the specified area.

V. Suggested Question Paper Pattern:

Max.Marks:75 **Time:3 hrs**

SECTION - A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)

SECTION - B (Total: 5 X 5=25Marks)

(Answer any **five questions**. Each answer carries **5 Marks)**

(At least 1 question should be given from each Unit)

1.	
2.	
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SECTION - C (Total: 5 X 8 = 40 Marks)

(Answer ALL the questions. Each question carries **8 Marks)**

1.	(a) or (b)
2.	(a) or (b)
3.	(a) or (b)
4.	(a) or (b)
5.	(a) or (b)

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B.A. /B.Sc. **MATHEMATICS**
Skill Enhancement Courses for Semester – V

Max.Marks:75 **Time:3 hrs**

SECTION – A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)
Answer any **five questions**. Each answer carries **2 Marks**
(At least 1 question should be given from each Unit)

1.	
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8.	

SECTION - B (Total: 5 X 5=25Marks)
(Answer any **five questions**. Each answer carries **5 Marks)**
(At least 1 question should be given from each Unit)

1.	
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SECTION - C (Total: 5 X 8 = 40 Marks)
(Answer ALL the questions. Each question carries **8 Marks)**

1.	(a) or (b)
2.	(a) or (b)
3.	(a) or (b)
4.	(a) or (b)
5.	(a) or (b)

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ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

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Web: www.apsche.org **Email**: acapsche@gmail.com

REVISED SYLLABUS OF B.Sc. PHYSICS
(FOR MATHEMATICS COMBINATIONS)
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR B.Sc.

(Physics for Mathematics Combinations)

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Fifteen Courses of 1, 2, 3 & 4 Semesters)

(To be Implemented from 2020-21 Academic Year)

AP STATE COUNCIL OF HIGHER EDUCATION

B.Sc. PHYSICSSYLLABUS UNDER CBCS

[For Mathematics combinations]

w.e.f. 2020-21 (Revised in May 2020)

First Semester

Course I: Mechanics, Waves and Oscillations

Practical Course I (Lab-1)

Second Semester

Course II: Wave Optics

Practical Course II (Lab-2)

Third Semester

Course III: Heat and Thermodynamics

Practical Course III (Lab-3)

Fourth Semester

Course IV: Electricity, Magnetism and Electronics

Practical Course IV (Lab- 4)

Course V:Modern Physics

Practical Course V (Lab-V)

B.Sc.PHYSICS COURSE STRUCTURE UNDER CBCS

Year	***Semester***	***Course***	***Title of the Course***	***Marks***	***No.ofHrs /Week***	***No.of Credits***
I	I	I	Mechanics, Waves and Oscillations	100	4	03
			Practical Course- I	50	2	02
	II	II	Wave Optics	100	4	03
			Practical Course – II	50	2	02
II	III	III	Heat and Thermodynamics	100	4	03
			Practical Course – III	50	2	02
	IV	IV	Electricity, Magnetism and Electronics	100	4	03
			Practical Course – IV	50	2	02
		V	Modern Physics	100	4	03
			Practical Course –V	50	2	02
Total No. of Courses : **05 (Five)**						

B.Sc. PHYSICS SYLLABUS UNDER CBCS

For Mathematics Combinations

[2020-21 Batch onwards]

I Year B.Sc.-Physics:I Semester

Course I: MECHANICS, WAVES AND OSCILLATIONS

Work load:60 hrs per semester **4 hrs/week**

Course outcomes:

On successful completion of this course, the students will be able to:

- *Understand Newton's laws of motion and motion of variable mass system and its application to rocket motion and the concepts of impact parameter, scattering cross section.*
- *Apply the rotational kinematic relations, the principle and working of gyroscope and itapplicationsand the precessional motion of a freely rotating symmetric top.*
- *Comprehend the general characteristics of central forces and the application of Kepler's laws to describe the motion of planets and satellite in circular orbit through the study of law of Gravitation.*
- *Understand postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence.*
- *Examinephenomena of simple harmonic motionand the distinction between undamped, damped and forced oscillations and the concepts of resonance and quality factor with reference to damped harmonic oscillator.*
- *Appreciate the formulation of the problem of coupled oscillations and solve them to obtain normal modes of oscillation and their frequencies in simple mechanical systems.*
- *Figure outthe formation of harmonics and overtones in a stretched string and acquire the knowledge on Ultrasonic waves, their production and detection and their applications in different fields.*

UNIT-I:

1. Mechanics of Particles (5 hrs)

Review of Newton's Laws of Motion, Motion of variable mass system, Motion of a rocket, Multistage rocket, Concept of impact parameter, scattering cross-section, Rutherford scattering-Derivation.

2. Mechanics of Rigid bodies (7 hrs)

Rigid body, rotational kinematic relations, Equation of motion for a rotating body, Angular momentum and Torque Moment of inertia tensor, Euler equations, Precession of a spinning top, Gyroscope, Precession of the equinoxes

Unit-II:

3. Motion in a Central Force Field (12hrs)

Central forces, definition and examples, characteristics of central forces, conservative nature of central forces, Equation of motion under a central force, Kepler's laws of planetary motion-Proofs, Motion of satellites, Basic idea of Global Positioning System (GPS), weightlessness, Physiological effects of astronauts

UNIT-III:

4. Relativistic Mechanics (12hrs)

Introduction to relativity, Frames of reference, Galilean transformations, Michelson-Morley experiment, negative result, Postulates of Special theory of relativity, Lorentz transformation, time dilation, length contraction, variation of mass with velocity, Einstein's mass-energy relation

Unit-IV:

5. Undamped, Damped and Forced oscillations: (07 hrs)

Simple harmonic oscillator and solution of the differential equation, Damped harmonic oscillator, Forced harmonic oscillator – Their differential equations and solutions, Resonance, Logarithmic decrement, Relaxation time and Quality factor.

6. Coupled oscillations: (05 hrs)

Coupled oscillators-Introduction, Two coupled oscillators, Normal coordinates and Normal modes- N-coupled oscillators and wave equation

Unit-V:

7. Vibrating Strings: (07 hrs)

Transverse wave propagation along a stretched string, General solution of wave equation and its significance, Modes of vibration of stretched string clamped at ends, Overtones and Harmonics,Melde's strings.

8. Ultrasonics: (05 hrs)

Ultrasonics, General Properties of ultrasonic waves, Production of ultrasonics by piezoelectric and magnetostriction methods, Detection of ultrasonics, Applications of ultrasonic waves, SONAR

REFERENCE BOOKS:

- B. Sc. Physics, Vol.1, Telugu Academy, Hyderabad
- Fundamentals of Physics Vol. I - Resnick, Halliday, Krane ,Wiley India 2007
- College Physics-I. T. Bhimasankaram and G. Prasad. Himalaya Publishing House.
- University Physics-FW Sears, MW Zemansky& HD Young,Narosa Publications, Delhi
- Mechanics, S.G.Venkatachalapathy, Margham Publication, 2003.
- Waves and Oscillations. N. Subramanyam and Brijlal, VikasPulications.
- Unified Physics - Waves and Oscillations, Jai PrakashNath&Co.Ltd.
- Waves & Oscillations. S.Badami, V. Balasubramanian and K.R. Reddy, Orient Longman.
- The Physics of Waves and Oscillations, N.K.Bajaj, Tata McGraw Hill
- Science and Technology of Ultrasonics- Baldevraj, Narosa, New Delhi,2004

Practical Course 1: Mechanics, Waves and Oscillations

Work load: 30 hrs per semester **2 hrs/week**

Course outcomes (Practicals):

On successful completion of this practical course, the student will be able to;

- Perform experiments on Properties of matter such as the determination of moduli of elasticity *viz.*, Young's modulus, Rigidity modulus of certain materials; Surface tension of water , Coefficient of viscosity of a liquid , Moment of inertia of some regular bodies by different methods and compare the experimental values with the standard values.
- Know how to determine the acceleration due to gravity at a place using Compound pendulum and Simple pendulum.
- Notice the difference between flat resonance and sharp resonance in case of volume resonator and sonometer experiments respectively.
- Verify the laws of transverse vibrations in a stretched string using sonometer and comment on the relation between frequency, length and tension of a stretched string under vibration.
- Demonstrate the formation of stationary waves on a string in Melde's string experiment.
- Observe the motion of coupled oscillators and normal modes.

Minimum of 6 experiments to be done and recorded:

1. Young's modulus of the material of a bar (scale) by uniform bending
2. Young's modulus of the material a bar (scale) by non- uniform bending
3. Surface tension of a liquid by capillary rise method
4. Viscosity of liquid by the flow method (Poiseuille's method)
5. Bifilar suspension –Moment of inertia of a regular rectangular body.
6. Fly-wheel -Determination of moment of inertia
7. Rigidity modulus of material of a wire-Dynamic method (Torsional pendulum)
8. Volume resonator experiment
9. Determination of 'g' by compound/bar pendulum
10. Simple pendulum- normal distribution of errors-estimation of time period and the error of the mean by statistical analysis
11. Determination of the force constant of a spring by static and dynamic method.

12. Coupled oscillators
13. Verification of laws of vibrations of stretched string –Sonometer
14. Determination of frequency of a bar –Melde's experiment.
15. Study of a damped oscillation using the torsional pendulum immersed in liquid-decay constant and damping correction of the amplitude.

RECOMMENDED CO-CURRICULAR ACTIVITIES:

MEASURABLE

- Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
- Student seminars (on topics of the syllabus and related aspects (individual activity)
- Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams)
- Field studies (individual observations and recordings as per syllabus content and related areas (Individual or team activity)
- Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

GENERAL

- Group Discussion
- Visit to Research Stations, Science Museum Centres to understand the basic principles of mechanics with live examplesand related industries
- Visit to Satellite launching station at Sri Harikota.

RECOMMENDED ASSESSMENT METHODS

Some of the following suggested assessment methodologies could be adopted;

- The oral and written examinations (Scheduled and surprise tests)
- Problem-solving exercises
- Practical assignments and Observation of practical skills
- Individual and group project reports
- Efficient delivery using seminar presentations
- Viva voce interviews.

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B.Sc. PHYSICS SYLLABUS UNDER CBCS

For Mathematics Combinations

[2020-21 Batch onwards]

I Year B.Sc.-Physics: II Semester

Course-II: WAVE OPTICS

Work load:60 hrs per semester **4 hrs/week**

Course outcomes:

On successful completion of this course, the student will be able to:

- *Understand the phenomenon of interference of light and its formation in (i) Lloyd's single mirror due to division of wave front and (ii) Thin films, Newton's rings and Michelson interferometer due to division of amplitude.*
- *Distinguish between Fresnel's diffraction and Fraunhoffer diffraction and observe the diffraction patterns in the case of single slit and the diffraction grating.*
- *Describe the construction and working of zone plate and make the comparison of zone plate with convex lens.*
- *Explain the various methods of production of plane, circularly and polarized light and their detection and the concept of optical activity..*
- *Comprehend the basic principle of laser, the working of He-Ne laser and Ruby lasers and their applications in different fields.*
- *Explain about the different aberrations in lenses and discuss the methods of minimizing them.*
- *Understand the basic principles of fibreoptic communication andexplore the field of Holography and Nonlinear optics and their applications.*

UNIT-I Interference of light: (12hrs) Introduction, Conditions for interference of light, Interference of light by division of wave front and amplitude,Phase change on reflection-Stokes' treatment, Lloyd's single mirror,Interference in thin films: Plane parallel and wedge-shaped films, colours in thin films, Newton's rings in reflected light-Theory and experiment,

Determination of wavelength of monochromatic light, Michelson interferometer and determination of wavelength.

UNIT-II Diffraction of light:(12hrs)

Introduction, Types of diffraction: Fresnel and Fraunhoffer diffractions, Distinction between Fresnel and Fraunhoffer diffraction,Fraunhoffer diffraction at a single slit, Plane diffraction grating,Determination of wavelength of light using diffraction grating, Resolving power of grating, Fresnel's half period zones, Explanation of rectilinear propagation of light, Zone plate, comparison of zone plate with convex lens.

UNIT-III Polarisation of light:(12hrs)

Polarized light: Methods of production of plane polarized light, Double refraction, Brewster's law, Malus law, Nicol prism, Nicol prism as polarizer and analyzer, Quarter wave plate, Half wave plate, Plane, Circularly and Elliptically polarized light-Production and detection, Optical activity, Laurent's half shade polarimeter: determination of specific rotation, Basic principle of LCDs

UNIT-IV Aberrations and Fibre Optics: (12hrs)

Monochromatic aberrations, Spherical aberration, Methods of minimizing spherical aberration, Coma, Astigmatism and Curvature of field, Distortion; Chromatic aberration-the achromatic doublet; Achromatism for two lenses (i) in contact and (ii) separated by a distance.

Fibre optics: Introduction to Fibers, different types of fibers, rays and modes in an optical fiber, Principles of fiber communication (qualitative treatment only), Advantages of fiber optic communication.

UNIT-V Lasersand Holography:(12hrs)

Lasers: Introduction, Spontaneous emission, stimulated emission, Population Inversion, Laser principle, Einstein coefficients, Types of lasers-He-Ne laser, Ruby laser, Applications of lasers; Holography: Basic principle of holography, Applications of holography

REFERENCE BOOKS:

- BSc Physics, Vol.2, Telugu Akademy, Hyderabad
- A Text Book of Optics-N Subramanyam, L Brijlal, S.Chand& Co.
- Optics-Murugeshan, S.Chand& Co.

- Unified Physics Vol.IIOptics, Jai PrakashNath&Co.Ltd., Meerut
- Optics,F.A. Jenkins and H.G.White, McGraw-Hill
- Optics, AjoyGhatak,TataMcGraw-Hill.
- Introduction of Lasers – Avadhanulu, S.Chand& Co.
- Principles of Optics- BK Mathur, Gopala Printing Press, 1995

Practical Course II: Wave Optics

Work load:30hrs **2 hrs/week**

Course outcomes (Practicals):

On successful completion of this practical course the student will be able to,

1. *Gain hands-on experience of using various optical instruments like spectrometer, polarimeterand making finer measurements of wavelength of light using Newton Ringsexperiment, diffraction grating etc.*
2. *Understand the principle of working of polarimeter and the measurement of specific rotatory power of sugar solution*
3. *Know the techniques involved in measuring the resolving power of telescope and dispersive power of the material of the prism.*
4. *Be familiar with the determination of refractive index of liquid by Boy's methodand the determination of thickness of a thin wire by wedge method.*

Minimum of 6 experiments to be done and recorded

1. Determination of radius of curvature of a given convex lens-Newton's rings.
2. Resolving power of grating.
3. Study of optical rotation –polarimeter.
4. Dispersive power of a prism.
5. Determination of wavelength of light using diffraction grating-minimum deviation method.
6. Determination of wavelength of light using diffraction grating-normal incidence method.
7. Resolving power of a telescope.
8. Refractive index of a liquid-hallow prism
9. Determination of thickness of a thin wire by wedge method
10. Determination of refractive index of liquid-Boy's method.
11. Determination of wavelength of Laser Light by using diffraction granting

RECOMMENDED CO-CURRICULAR ACTIVITIES:

MEASURABLE

- Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)

- Student seminars (on topics of the syllabus and related aspects (individual activity)
- Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams)
- Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

GENERAL

- Group Discussion
- Visit to Research Stations/laboratories and related industries

RECOMMENDED ASSESSMENT METHODS

Some of the following suggested assessment methodologies could be adopted;

- The oral and written examinations (Scheduled and surprise tests),
- Practical assignments and laboratory reports,
- Efficient delivery using seminar presentations,
- Viva voce interviews.

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B.Sc. PHYSICS SYLLABUS UNDER CBCS

For Mathematics Combinations

[2020-21 Batch onwards]

II Year B.Sc.-Physics: III Semester

Course-III: HEAT AND THERMODYNAMICS

Work load:60hrs per semester **4 hrs/week**

Course outcomes:

On successful completion of this course, the student will be able to:

- *Understand the basic aspects of kinetic theory of gases, Maxwell-Boltzman distribution law, equipartition of energies, mean free path of molecular collisions and the transport phenomenon in ideal gases*
- *Gain knowledge on the basic concepts of thermodynamics, the first and the second law of thermodynamics, the basic principles of refrigeration,the concept of entropy,the thermodynamic potentials and their physical interpretations.*
- *Understand the working of Carnot's ideal heat engine, Carnot cycle and its efficiency*
- *Develop critical understanding of concept of Thermodynamic potentials,the formulation of Maxwell's equations and its applications.*
- *Differentiate between principles and methods to produce low temperature and liquefy air and also understand the practical applications of substances at low temperatures.*
- *Examine the nature of black body radiations and the basic theories.*

UNIT-I: Kinetic Theory of gases: **(12 hrs)**

Kinetic Theory of gases-Introduction, Maxwell's law of distribution of molecular velocities (qualitative treatment only) and its experimental verification,Mean free path, Degrees of freedom, Principle of equipartition of energy (Qualitative ideas only), Transport phenomenon in ideal gases: viscosity, Thermal conductivity and diffusion of gases.

UNIT-II: Thermodynamics: **(12hrs)**

Introduction- Isothermal and Adiabatic processes, Reversible and irreversible processes, Carnot's engine and its efficiency, Carnot's theorem, Thermodynamic scale of temperature

and its identity with perfect gas scale, Second law of thermodynamics: Kelvin's and Clausius statements, Principle of refrigeration, Entropy, Physical significance, Change in entropy in reversible and irreversible processes; Entropy and disorder-Entropy of Universe; Temperature-Entropy (T-S) diagram and its uses ; change of entropy when ice changes into steam.

UNIT-III: Thermodynamic Potentials and Maxwell's equations: (12hrs)

Thermodynamic potentials-Internal Energy, Enthalpy, Helmholtz Free Energy, Gibb's Free Energy and their significance, Derivation of Maxwell's thermodynamic relations from thermodynamic potentials, Applications to (i) Clausius-Clayperon's equation (ii) Value of C_P-C_V (iii) Value of C_P/C_V (iv) Joule-Kelvin coefficient for ideal and Van der Waals' gases

UNIT-IV: Low temperature Physics: (12hrs)

Methods for producing very low temperatures, Joule Kelvin effect, Porous plug experiment , Joule expansion, Distinction between adiabatic and Joule Thomson expansion, Expression for Joule Thomson cooling, Liquefaction of air by Linde's method, Production of low temperatures by adiabatic demagnetization (qualitative), applications of substancesat low temperatures.

UNIT-V: Quantum theory of radiation: (12 hrs)

Blackbody and its spectral energy distribution of black body radiation, Kirchoff's law, Wein's displacement law, Stefan-Boltzmann's law and Rayleigh-Jean's law (No derivations), Planck's law of black body radiation-Derivation, Deduction of Wein's law and Rayleigh-Jean's law from Planck's law, Solar constant and its determination using Angstrom pyroheliometer, Estimation of surface temperature of Sun.

REFERENCE BOOKS:

- BSc Physics, Vol.2, Telugu Akademy, Hyderabad
- Thermodynamics, R.C.Srivastava, S.K.Saha&AbhayK.Jain, Eastern Economy Edition.
- Unified Physics Vol.2, Optics & Thermodynamics, Jai PrakashNath&Co.Ltd., Meerut
- Fundamentals of Physics. Halliday/Resnick/Walker.C. Wiley India Edition 2007
- Heat and Thermodynamics -N BrijLal, P Subrahmanyam, S.Chand& Co.,2012
- Heat and Thermodynamics- MS Yadav, Anmol Publications Pvt. Ltd, 2000
- University Physics, HD Young, MW Zemansky,FW Sears, Narosa Publishers, New Delhi

Practical Course-III: Heat and Thermodynamics

Work load: 30 hrs **2 hrs/week**

On successful completion of this practical course,the student will be able to;

- *Perform some basic experiments in thermal Physics, viz., determinations of Stefan's constant, coefficient of thermal conductivity, variation of thermo-emf of athermocouple with temperature difference at its two junctions, calibration of a thermocouple and Specific heat of a liquid.*

Minimum of 6 experiments to be done and recorded

1. Specific heat of a liquid –Joule's calorimeter –Barton's radiation correction
2. Thermal conductivity of bad conductor-Lee's method
3. Thermal conductivity of rubber.
4. Measurement of Stefan's constant.
5. Specific heat of a liquid by applying Newton's law of cooling correction.
6. Heating efficiency of electrical kettle with varying voltages.
7. Thermoemf- thermo couple - Potentiometer
8. Thermal behavior of an electric bulb (filament/torch light bulb)
9. Measurement of Stefan's constant- emissive method
10. Study of variation of resistance with temperature - Thermistor.

RECOMMENDED CO-CURRICULAR ACTIVITIES:

MEASURABLE

- Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
- Student seminars (on topics of the syllabus and related aspects (individual activity))
- Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams)
- Field studies (individual observations and recordings as per syllabus content and related areas (Individual or team activity)

- Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

GENERAL

- Group Discussion
- Visit to Research Stations/laboratories and related industries
- Others

RECOMMENDED ASSESSMENT METHODS

Some of the following suggested assessment methodologies could be adopted;

- The oral and written examinations (Scheduled and surprise tests),
- Problem-solving exercises,
- Efficient delivery using seminar presentations,
- Viva voce interviews.

***

B.Sc. PHYSICS SYLLABUS UNDER CBCS

For Mathematics Combinations

[2020-21 Batch onwards]

II Year B.Sc.-Physics: IV Semester

Course-IV: ELECTRICITY, MAGNETISM AND ELECTRONICS

Work load:60 hrs per semester **4 hrs/week**

Course outcomes:

On successful completion of this course, the students will be able to:

- *Understand the Gauss law and its application to obtain electric field in different cases and formulate the relationship between electric displacement vector, electric polarization, Susceptibility, Permittivity and Dielectric constant.*
- *Distinguish between the magnetic effect of electric current and electromagnetic induction and apply the related laws in appropriate circumstances.*
- *Understand Biot and Savart's law and Ampere's circuital law to describe and explain the generation of magnetic fields by electrical currents.*
- *Develop an understanding on the unification of electric and magnetic fields and Maxwell's equations governing electromagnetic waves.*
- *Phenomenon of resonance in LCR AC-circuits, sharpness of resonance,Q-factor,Power factor and the comparative study of series and parallel resonant circuits.*
- *Describe the operation of p-n junction diodes, zener diodes, light emitting diodes and transistors*
- *Understand the operation of basic logic gates and universal gates and their truth tables.*

UNIT-I

1. Electrostatics: (6hrs)

Gauss's law-Statement and its proof, Electric field intensity due to (i) uniformly charged Non-Conducting solid sphere and (ii) an infinite conducting sheet of charge, Deduction of Coulomb's law from Gauss law, Electrical potential–Equipotential surfaces, Potential due to a (i) dipole (ii) charged spherical shell

2.Dielectrics: (6 hrs)

Dielectrics-Polar and Non-polar dielectrics- Effect of electric field on dielectrics,Dielectric strength, Capacitance of a parallel plate condenser with dielectric slab between the plates, Electric displacement D, electric polarization P,Relation between D, E and P, Dielectric constant and electric susceptibility.

UNIT-II

3.Magnetostatics: (6 hrs)

Biot-Savart's law and its applications: (i) circular loop and (ii) solenoid, Divergence and curl of magnetic field, Ampere's Circuital Law and its application to Solenoid, Hall effect, determination of Hall coefficient and applications.

4.Electromagnetic Induction: (6 hrs)

Faraday's laws of electromagnetic induction, Lenz's law,Self induction and Mutual induction, Self inductance of a long solenoid, Mutual inductance of two coils, Energy stored in magnetic field, Eddy currents and Electromagnetic damping

UNIT-III

5.Alternating currents: (6 hrs)

Alternating current - Relation between current and voltage in LR and CR circuits,Phasor and Vector diagrams, LCR series and parallel resonant circuit, Q –factor, Power in ac circuits, Power factor.

6.Electromagnetic waves-Maxwell's equations: (6 hrs)

Idea of displacement current, Maxwell's equations-Derivation, from integral to differential Maxwell's wave equation (withderivation), Transverse nature of electromagnetic waves, Poynting theorem (Statement andproof)

UNIT-IV

7. Basic Electronic devices: (12 hrs)

PN junction diode, Zenerdiode andLight Emitting Diode (LED) and their I-V characteristics, Zener diode as a regulator- Transistors and its operation, CB, CE and CC configurations, , Relation between alpha, beta and gamma; Input and output characteristics of a transistor in CE mode Hybrid parameters, Determination of hybrid parameters from transistor characteristics; Transistor as an amplifier.

UNIT-V:

8. Digital Electronics: (12 hrs)

Number systems, Conversion of binary to decimal system and vice versa, Binary addition & Binary subtraction (1's and 2's complement methods), Laws of Boolean algebra, Basic logic gates DeMorgan's laws-Statements and Proofs, NAND and NOR as universal gates, Exclusive-OR gate, Half adder and Full adder circuits.

REFERENCE BOOKS

- BSc Physics, Vol.3, Telugu Akademy, Hyderabad.
- Electricity and Magnetism, D.N. Vasudeva. S. Chand & Co.
- Electricity and Magnetism, B.D.Duggal and C.L.Chhabra. Shobanlal& Co.
- Electricity, Magnetism with Electronics, K.K.Tewari, R.Chand& Co.,
- Electricity and Magnetism, R.Murugeshan, S. Chand & Co.
- Principles of Electronics, V.K. Mehta, S.Chand& Co.,
- Digital Principles and Applications, A.P. Malvino and D.P.Leach, McGrawHill Edition.

Practical CourseIV:Electricity, Magnetism and Electronics

Work load: 30 hrs **2 hrs/week**

Course outcomes (Practicals):

On successful completion of this practical course the student will be able to;

- *Measure the current sensitivity and figure of merit of a moving coil galvanometer.*
- *Observe the resonance condition in LCR series and parallel circuit*
- *Learn how a sonometer can be used to determine the frequency of AC-supply.*
- *Observe the variation of magnetic field along the axis of a circular coil carrying current using Stewart and Gee's apparatus.*
- *Understand the operation of PN junction diode, Zener diode and a transistor and their V-I characteristics.*
- *Construct the basic logic gates, half adder and full adder and verify their truth tables. Further, the student will understand how NAND and NOR gates can be used as universal building blocks.*

Minimum of 6 experiments to be done and recorded

1. Figure of merit of a moving coil galvanometer.
2. LCR circuit series/parallel resonance, Q factor.
3. Determination of ac-frequency –Sonometer.
4. Verification of Kirchoff's laws and Maximum Power Transfer theorem.
5. Field along the axis of a circular coil carrying current-Stewart & Gee's apparatus.
6. PN Junction Diode Characteristics
7. Zener Diode –V-I Characteristics
8. Zener Diode as a voltage regulator
9. Transistor CE Characteristics- Determination of hybrid parameters
10. Logic Gates- OR,AND,NOT and NAND gates. Verification of Truth Tables.
11. Verification of De Morgan's Theorems.
12. Construction of Half adder and Full adders-Verification of truth tables

RECOMMENDED CO-CURRICULAR ACTIVITIES:

MEASURABLE

- Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
- Student seminars (on topics of the syllabus and related aspects (individual activity))
- Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams)
- Field studies (individual observations and recordings as per syllabus content and related areas (Individual or team activity)
- Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

GENERAL

- Group Discussion
- Visit to Research Stations/laboratories and related industries
- Others

RECOMMENDED ASSESSMENT METHODS

Some of the following suggested assessment methodologies could be adopted;

- The oral and written examinations (Scheduled and surprise tests),
- Practical assignments and laboratory reports,
- Observation of practical skills,
- Efficient delivery using seminar presentations,
- Viva voce interviews.

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B.Sc. PHYSICS SYLLABUS UNDER CBCS

For Mathematics Combinations

[2020-21 Batch onwards]

II Year B.Sc.-Physics: IV Semester

Course V: MODERN PHYSICS

Work load:60hrs per semester **4 hrs/week**

Course outcomes:

On successful completion of this course, the students will be able to:

- *Develop an understanding on the concepts of Atomic and Modern Physics, basic elementary quantum mechanics and nuclear physics.*
- *Develop critical understanding of concept of Matter waves and Uncertainty principle.*
- *Get familiarized with the principles of quantum mechanics and the formulation of Schrodinger wave equation and its applications.*
- *Examine the basic properties of nuclei, characteristics of Nuclear forces, salient features of Nuclear models and different nuclear radiation detectors.*
- *Classify Elementary particles based on their mass, charge, spin, half life and interaction.*
- *Get familiarized with the nano materials, their unique properties and applications.*
- *Increase the awareness and appreciation of superconductors and their practical applications.*

UNIT-I :

1. Atomic and Molecular Physics:(12 hrs)

Vector atom model and Stern-Gerlach experiment, Quantum numbers associated with it, Angular momentum of the atom, Coupling schemes, Spectral terms and spectral notations, Selection rules, Intensity rules, Fine structure of Sodium D-lines, Zeeman effect,Experimental arrangement to study Zeeman effect;Raman effect, Characteristics of Raman effect,

Experimental arrangement to study Raman effect, Quantum theory of Raman effect,Applications of Raman effect.

UNIT-II:

2. Matter waves&Uncertainty Principle: (12 hrs)

Matter waves, de Broglie's hypothesis, Wave length of matter waves, Properties of matter waves, Davisson and Germer's experiment, Phase and group velocities, Heisenberg's uncertainty principle for position and momentum& energy and time, Illustration of uncertainty principle using diffraction of beam of electrons (Diffraction by a single slit)and photons(Gamma ray microscope),Bohr's principle of complementarity.

UNIT-III:

3. Quantum (Wave) Mechanics:(12 hrs)

Basic postulates of quantum mechanics, Schrodinger time independent and time dependent wave equations-Derivations, Physical interpretation of wave function, Eigen functions, Eigen values, Application of Schrodinger wave equation to (i) one dimensional potential box of infinite height(InfinitePotential Well) and (ii) one dimensional harmonic oscillator

UNIT-IV:

4. Nuclear Physics:(12 hrs)

Nuclear Structure:General Properties of Nuclei, Mass defect, Binding energy; *Nuclear forces*: Characteristics of nuclear forces- Yukawa's meson theory; *Nuclear Models*: Liquid drop model, The Shell model, Magic numbers; *Nuclear Radiation detectors*: G.M. Counter, Cloud chamber, Solid State detector; *Elementary Particles*: Elementary Particles and their classification

UNIT-V:

5. Nano materials:(7hrs)

Nanomaterials – Introduction, Electron confinement, Size effect, Surface to volume ratio, Classification of nano materials– (0D, 1D, 2D); Quantum dots, Nano wires, Fullerene, CNT, Graphene(Mention of structures and properties),Distinct properties of nano materials (Mention-*mechanical,optical, electrical, and magnetic properties*); Mention of applications of

nano materials: (*Fuel cells,Phosphors for HD TV, Next Generation Computer chips, elimination of pollutants, sensors*)

6. Superconductivity: (5 hrs)

Introduction to Superconductivity, Experimental results-critical temperature, critical magnetic field, Meissner effect , Isotope effect,Type I and Type II superconductors, BCS theory (elementary ideas only),Applications of superconductors

REFERENCE BOOKS

- BSc Physics, Vol.4, Telugu Akademy, Hyderabad
- Atomic Physics by J.B. Rajam; S.Chand& Co.,
- Modern Physics by R. Murugeshan and Kiruthiga Siva Prasath. S. Chand & Co.
- Concepts of Modern Physics by Arthur Beiser. Tata McGraw-Hill Edition.
- Nuclear Physics, D.C.Tayal, Himalaya Publishing House.
- S.K. Kulkarni, Nanotechnology: Principles & Practices (Capital Publ.Co.)
- K.K.Chattopadhyay&A.N.Banerjee, Introd.to Nanoscience and Technology(PHI LearningPriv.Limited).
- Nano materials, A K Bandopadhyay. New Age International Pvt Ltd (2007)
- Textbook of Nanoscience and Nanotechnology, BS Murthy, P Shankar, Baldev Raj,BB Rath

and J Murday-Universities Press-IIM

Practical Course V:Modern Physics

Work load: 30 hrs **2 hrs/week**

On successful completion of this practical course, the student will be able to;

- *Measure charge of an electron ande/m value of an electron by Thomson method.*
- *Understand how the Planck's constant can be determined using Photocell and LEDs.*
- *Study the absorption of α-rays and β-rays, Range of β-particles and the characteristics of GM counter*
- *Determine the Energy gap of a semiconductor using thermistor and junction diode.*

Minimum of 6 experiments to be done and recorded

1. e/m of an electron by Thomson method.
2. Determination of Planck's Constant (photocell).
3. Verification of inverse square law of light using photovoltaic cell.
4. Determination of the Planck's constant using LEDs of at least 4 different colours.
5. Determination of work function of material of filament of directly heated vacuum diode.
6. Study of absorption of α-rays.
7. Study of absorption of β-rays.
8. Determination of Range of β-particles.
9. Determination of M & H.
10. Analysis of powder X-ray diffraction pattern to determine properties of crystals.
11. Energy gap of a semiconductor using junction diode.
12. Energy gap of a semiconductor using thermistor
13. GM counter characteristics

RECOMMENDED CO-CURRICULAR ACTIVITIES:

MEASURABLE

- Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
- Student seminars (on topics of the syllabus and related aspects (individual activity)

- Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
- Field studies (individual observations and recordings as per syllabus content and related areas (Individual or team activity)
- Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

GENERAL

- Group Discussion
- Visit to Research Stations/laboratories and related industries
- Others

RECOMMENDED ASSESSMENT METHODS

Some of the following suggested assessment methodologies could be adopted;

- The oral and written examinations (Scheduled and surprise tests),
- Practical assignments and laboratory reports,
- Efficient delivery using seminar presentations,
- Viva voce interviews.

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Note:

1. The duration of the examination for each theory course is 3.00 hrs.
   The duration of each practical examination is 3 hrs with 50 marks

2. Each course in theory is of 100 marks and practical course is of 50 marks.
   - Semester End University Examination in Theory Course: 75 marks [External evaluation]
   - Mid-Semester Examination in Theory Course at the college level: 25 marks [Internal evaluation]

3. The University (external) examination for Theory and Practical shall be conducted at the end of each Semester.

4. In each semester the evaluation in Practical courses shall be done by an external examiner appointed by the University.
   There shall not be Internal valuation in any semester end practical examinations.

5. The candidate shall prepare and submit at the time of practical examination a certified Record based on the practical course with a minimum of **6** experiments from each semester.

6. Numerical Problems must be solved at the end of every chapter of all Units.

7. Numerical problems, each having a weightage of 4 marks, should be asked in the Semester end University examinations.

8. The minimum passing marks in each theory course is 40 (External:30 and Internal:10)
   The minimum passing marks in each Practical/Lab course is 20.

9. The teaching work load per week for semesters I to IV is 4 hours for theory course and 2 hours for all laboratory (practical) courses.

10. Visits to industry, national research laboratories, and scientific exhibitions should be encouraged.

11. The syllabus for Practical courses is same for both Mathematics and Non-Mathematics combinations.

12. The marks distribution for the Semester End practical examination is as follows:

(i)	*Formula/ Principle / Statement with explanation of symbols and*	05
(ii)	*Diagram/Circuit Diagram / Tabular Columns ... ...*	10
(iii)	*Setting up of the experiment and taking readings/Observations*	10
(iv)	*Calculations (explicitly shown) + Graph + Result with Units...*	10
(v)	*Viva-voce ... ...*	05
(vi)	*Class Records (to be valued at the time of practical*	10
	Total Marks :	**50**

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B.Sc. PHYSICS

[For Mathematics combinations]

w.e.f. 2020-21 (Revised in May 2020)

MODEL QUESTION PAPER COMMON FOR ALL FIVE THEORY COURSES

Time : 3 hrs *Max marks : 75*

SECTION-A

(Essay Type Questions) *Marks* : 5x10M = 50M

Answer All questions with internal choice from each Unit

1. Essay type question from Unit-I

   Or

   Essay type question from Unit-I

2. Essay type question from Unit-II

   Or

   Essay type question from Unit-II

3. Essay type question from Unit-III

   Or

   Essay type question from Unit-III

4. Essay type question from Unit-IV

   Or

   Essay type question from Unit-IV

5. Essay type question from Unit-V

   Or

   Essay type question from Unit-V

SECTION-B

(Short Answer Type Questions) *Marks* : 5x5M = 25M

Answer any five out of the following ten questions

6. Short answer type question from Unit-I
7. Short answer type question from Unit-I
8. Short answer type question from Unit-II
9. Short answer type question from Unit-II
10. Short answer type question from Unit-III
11. Short answer type question from Unit-III
12. Short answer type question from Unit-IV
13. Short answer type question from Unit-IV
14. Short answer type question from Unit-V
15. Short answer type question from Unit-V

[**Note:***Question Paper setters are instructed to add Numerical Problems (each of 4 marks) with a maximum weightage of 16 marks either in Section-A or Section-B from the prescribedSyllabus*]

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SUBJECT EXPERTS

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Dr.M.Ravi Kumar,
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Ananthapuram

SYLLABUS VETTED BY

Prof.R.Rama Krishna Reddy
Dept of Physics,
S K University,
Anantapur

REVISEDUGSYLLABUS UNDERCBCS **ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION**

(A Statutory body of the Government of Andhra Pradesh)

(ImplementedfromAcademicYear2020-21)

PROGRAMME: FOUR YEAR B.Sc. (Hons)

Domain Subject: **PHYSICS**

Skill Enhancement Courses (SECs) for Semester V, from 2022-23 (Syllabus with Learning Outcomes, References, Co-curricular Activities & Model Q.P. Pattern)

Structure of SECs for Semester–V

(To choose one pair from the three alternate pairs of SECs)

Univ. Code	Course No. 6&7	Name of Course	Th. Hrs / Week	IE Marks	EE Marks	Credits	Prac Hrs/ Wk	Marks	Credits
	6A	Optical Instruments and Optometry	3	25	75	3	3	50	2
	7A	Optical Imaging and Photography	3	25	75	3	3	50	2
		OR							
	6B	Low Temperature Physics & Refrigeration	3	25	75	3	3	50	2
	7B	Solar Energy and Applications	3	25	75	3	3	50	2
		OR							
	6C	Applications of Electricity & Electronics	3	25	75	3	3	50	2
	7C	Electronic Instrumentation	3	25	75	3	3	50	2

Note-1: For Semester–V, for the domain subject Physics, any one of the above three pairs of SECs shall be chosen as courses 6 and 7, i.e., 6A & 7A or 6B & 7B or 6C & 7C. The pair shall not be broken (ABC allotment is random, not on any priority basis).

Note-2: One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate skills related to the domain subject in students. The syllabus of SEC will be partially skill oriented. Hence, teachers shall also impart practical training to students on the skills embedded in syllabus citing related real field situations.

6/7/2022

A.P. STATE COUNCIL OF HIGHER EDUCATION
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **PHYSICS**
IV Year B. Sc.(Hons) – Semester – V

Max Marks: 100+50

Course 6A: OPTICAL INSTRUMENTS AND OPTOMETRY
[Skill Enhancement Course (Elective), Credits: 05]

I. Learning Outcomes: Students at the successful completion of the course will be able to:

1. Understand the construction and working principles of various optical instruments used in daily life.
2. Acquire a critical knowledge on the various defects of eye and their correcting methods with suitable lenses.
3. Demonstrate skills of using biological microscope through hands on experience.
4. Understand the various techniques used in optometry and computer based eye testing.
5. Comprehend the various applications of microscopes and telescopes.

II. Syllabus: (Total Hours: 90 including Teaching, Lab, Field Training, Unit tests etc.)

UNIT-I OPTICAL MICROSCOPES (10hrs)

Introduction to Microscopes, Need of a Microscope, Different types of microscopes and their uses, Simple microscope-Construction, Magnifying power, normal adjustment; Compound microscope-Construction, Magnifying power, normal adjustment, Phase contrast microscope-Operating principle, Travelling microscope-Construction, working and uses

UNIT-II TELESCOPES (10hrs)

Introduction to Telescopes, Different types of Telescopes and their uses, Refracting Telescopes and Reflecting telescopes, Construction, working and magnifying power of Astronomical Telescope and Terrestrial Telescopes, Binoculars – working principle and applications.

UNIT-III APPLICATIONS OF OPTICAL INSTRUMENTS (10hrs)

Introductory ideas and applications of various microscopes viz., (i) Optical microscopes (Compound microscope, Stereo microscope, Confocal microscope) (ii) Electron microscopes (TEM, SEM), (iii) Scanning Probe microscope (iv) Scanning Acoustic microscope and (v) X-ray microscope.

Introductory ideas and applications of various telescopes viz., (i) Optical telescopes (ii) Radio telescopes (iii) Solar telescopes (iv) Infrared telescope (v) Ultraviolet telescope (vi) X-ray telescope and (vii) Gamma ray telescope

UNIT-IVOPTICAL VISION (10hrs)

Introduction to optical Vision, Eye as an optical instrument, Formation of image in the eye and the camera, Ophthalmic lenses, Power of the lenses, Far point and near points, Myopia and Hypermetropia defects, Removal of defects in vision using ophthalmic lenses, Contact lenses-Working principle, Different types of Contact lenses.

UNIT-V OPHTHALMIC TECHNIQUES AND OPTOMETRY (10hrs)

Ophthalmoscope and keratometer and their working principles, Evaluation of eye disorders, Guidelines for standardized eye chart preparation, Simple phoropter and its working principle and its uses, Checking the power of lenses, Principles of Computer based eye testing

6/7/2021

References:

1. Optics and Optical Instruments: An Introduction by B. K. Johnson, Dover Publications.
2. Modern Optical Instruments and their construction by or ford Henry-Publisher: Biblio Life, LLC.
3. A Text Book of Optics by Brj Lal and N.Subramanyam, S.Chand & Co.
4. Practical Optics by Menn Naftly, Elsevier Science Publishing.
5. Applications of Optics in daily life | CK-12 Foundation. https://flexbooks.ck12.org ›
6. Web sources suggested by the teacher concerned and the college librarian including Reading material.

Course 6A: Optical Instruments and Optometry –

PRACTICAL SYLLABUS (30 Hrs. Max Marks: 50)

IV. Learning Outcomes: On successful completion of this practical course, student shall be able to:

1. List out, identify and handle various equipments like binoculars, telescopes and microscopes.
2. Learn the procedures of operation of various optical instruments.
3. Demonstrate skills on testing the power of lenses, improving the resolution of telescopes and microscopes.
4. Acquire skills in observing and measuring the power, focal length and different refractive errors of eye.
5. Perform some techniques related to testing the blood and other biological samples.
6. Understand the technique of operation of Computer eye testing and evaluation.

V. Practical (Laboratory) Syllabus: (30 hrs)

1. Evaluation of magnifying power of simple microscope.
2. Measurement of reflection and transmission coefficient of certain materials using a microscope.
3. Resolving power of telescope
4. Determination of radii of different capillary tubes using travelling microscope.
5. Refractive index of a liquid (water) using (i) concave mirror and (ii) convex lens and a plane mirror.
6. Removal of refractive errors of eye using combination of lenses.
7. Determination of power of a convex lens by finding its focal length.

VI. Lab References:

1. A Practical Guide to Experimental Geometrical Optics byYuriy A. Garbovskiy-Cambridge Univ. Press
2. https://physics.columbia.edu/sites/default/files/content/Lab%20Resources/1292%20Lab%20Manual.pdf
3. https://www.lnmiit.ac.in/Department/Physics/uploaded_files/lab-manual.pdf
4. Basic Optics Experiments -http://www.phys.unm.edu › Optics Lab › Basics
5. A Practical Guide to Experimental Geometrical Optics by Yuriy A. Garbovskiy, Anatoliy V. Glushchenko, Cambridge Univ. Press
6. Web sources suggested by the teacher concerned.

http://www.phy.olemiss.edu/~thomas/weblab/Optics_lab_Items/Telescope_Microscope_PROCED_Spring_2018.pdf

6/7/2021

VII. Co-Curricular Activities

(a) Mandatory: (Training of students by teacher in field related skills: (lab: 10 + field: 05)

1. **For Teacher**: Training of students by the teacher (if necessary, by a local expert) in laboratory/field for a total of not less than 15 hours on the field techniques/skills on the familiarization of various optical instruments available in the laboratory; construction of different types of telescopes and their comparison in construction, operation and their utility and limitations; the details of construction of eye and various defects in the eye sight, emerging techniques in the design of eye lenses including contact lenses and making the student to understand on the testing of a biological sample using a clinical microscope

For Student: Students shall (individually) visit and observe the functioning of optical instruments at any one of the following places /centres like (a) pathological laboratory **or** (b) a local ophthalmologist **or** (c) a local optician to understand the various types of eye lenses **or** (d) a local computer based eye testing centre**or** (e) an optician, who fixes contact lenses **or** (f) a local cinema theatre **or** (g) a planetarium.Student shall write the observations and submit a hand-written Fieldwork/Project work not exceeding 10 pages in the given format to the teacher.

2. Max marks for Fieldwork/Project work: 05.
3. Suggested Format for Fieldwork/Project work: Title page, student details, index page, details of place visited, observations, findings and acknowledgements.
4. Unit tests (IE).

(b) <u>Suggested Co-Curricular Activities</u>

1. Training of students by related industrial experts.
2. Assignments (including technical assignments like identifying tools in the lens grinding, frame fitting, lens cleaning culture and other operational techniques with safety and security, IPR)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on tools and techniques in optical instruments and optical lenses, contact lenses.
5. Making a model microscope and measuring its magnification.
6. Making a simple astronomical telescope using two convex lenses.
7. Checking the power of your spectacles or lenses at home.
8. Students shall take up making their own (i) Telescope and (ii) Binoculars with the accessories available at home.

https://paksc.org/pk/science-experiments/physics-experiments/how-to-make-astronomical-telescope

https://kids.nationalgeographic.com/nature/article/make-a-telescope

https://learning-center.homesciencetools.com/article/how-to-make-a-telescope-optical-science-project/

http://scipop.iucaa.in/Amateurs/telemaking.html

9. Collection of material/figures/photos related to various types of lenses and their power.
10. Visit to any eye research laboratories, if available
11. Invited lectures and presentations on related topics by field/industrial experts

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A.P. STATE COUNCIL OF HIGHER EDUCATION

Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)

Domain Subject: **PHYSICS**

IV Year B. Sc.(Hons) – Semester – V

Max Marks: 100+50

Course 7A: OPTICAL IMAGING AND PHOTOGRAPHY

(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes: Students after successful completion of the course will be able to:

1. Identify the different types of cameras and camera lenses according to different purposes.
2. Identify and understand the focal length of the different types of lenses
3. Acquire a critical knowledge on natural and artificial sources of light and their application in photography.
4. Demonstrate skills of camera usage especially Digital Cameras.
5. Understand the various Image development and editing techniques.
6. Comprehend the concept of different types of common shooting techniques.

II. Syllabus: (Total Hours: 90 including Teaching, Lab, Field Training, Unit tests etc.)

Unit-I: INTRODUCTION TO PHOTOGRAPHY: (10 hrs)

Photography-Introduction, Working principle of a camera, Image formation in simple camera and human eye, Types of cameras , Pin-hole camera , Single Lens Reflex (SLR) camera, Twin Lens Reflex (TLR) camera , Digital Single-lens reflex camera (DSLR), Digital camera, Drone flying cameras, Care and maintenance of camera, Factors influencing choice of camera

Unit-II: DIGITAL PHOTOGRAPHY: (10 hrs)

Different types of Digital cameras and their parts, Working of DSLR camera, Types of lenses-Normal, Wide angle, telephoto, Zoom lenses, Digital Image formation, Digital camera image sensors, Size of the image, Depth of focus, Depth of field, Exposure time, Aperture, Shutter speed, ISO, filters, knowledge on pixels and their uses , resolution, Camera accessories

Unit-III: PHOTOGRAPHIC LIGHT SOURCES: (10 hrs)

Need for the light in photography, Light sources- Natural light, Sun light, Moon light,Ambient light, Artificial light sources-Flood light, Spot light, Halogen light, Halogen flash light, Digital lights, Exposure, Studio photography

Unit-IV: PHOTOGRAPHIC SHOOTING TECHNIQUES: (10 hrs)

Significance and role of Camera lens in photo shooting, Arrangement of lenses in a Camera-Positioning, Techniques involved in the use of DSLR cameras, Usage of Filters, Techniques of Photomicrography, High speed Photography with motor driven camera, Basic ideas on Underwater Photography, Medical Photography, Astronomical Photography, Infra-Red (IR) Photography, Ultra Violet (UV) Photography and Forensic Photography.

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Unit-V : PHOTO MANIPULATION : (10 hrs)

Developing and printing the photographs, equipment and materials used in developing and printing, image mixing and printing, Image editing through image editing software's like Adobe Photoshop – Adjustment of Brightness, Contrast, Tonal and Colour Values, Factors influencing quality of digital image, Methods of storing and processing, Image transportation through Pendrive, CD, HDD and CLOUD [Internet]

III Reference Books:

1. Object and image; An introduction to photography by George M Craven, PHI
2. An Introduction to Digital Photo Imaging Agfa, 1994
3. Advance Photography by M. Langford.
4. Digital Photography-A hands on Introduction by Phillip Krejcarek, Delmer Publishers
5. Multimedia – An Introduction by John Villamil, PHI
6. https://www.adobe.com/in/creativecloud/photography/discover/dslr-camera.html
7. Web sources suggested by the teacher concerned and the college librarian including reading material.

Course 7A: Optical Imaging and Photography

PRACTICAL SYLLABUS (30 Hrs, Max Marks: 50)

IV. Learning Outcomes: On successful completion of this practical course, student shall be able to:

1. List out, identify and understand various image formation techniques including Eye.
2. Learn the procedures of using Analog and Digital cameras.
3. Demonstrate the focusing techniques of Analog and Digital cameras.
4. Acquire skills in the editing and development of photos and videos.
5. Perform some experimental skills related to images, videos using the equipment available in the lab or in a local studio.

V. Practical (Laboratory) Syllabus: (30 hrs)

1. Construction of a simple pin hole Camera and study it's working.
2. Capture an image using a Digital Camera and apply editing techniques.
3. Understanding various image formats and convert one image format intoother (For ex: JPEG to BMP)
4. Convert a video stream into image stream by using a suitable editingsoftware.
5. Evaluate the number of pixels and size of digital Image.
6. Comparison of the quality of a 8-bit, 16-bit and 32 bit images.
7. Perform the reduction and enlargement of a given Digital Image.
8. Change the appearance of an image by applying the filters (For ex: from the IR image of the given digital Image by suitable IR filter)

VI. Lab References:

1. DSLR Photography for Beginners by Brian Black
2. The Art of Photography by Bruce Barnbaum
3. Photoshop for Photographers by John Slavio
4. https://www.youtube.com/channel/UCwWyFRy2l6aUFMsRemP51Sw. You Tube resource.
5. https://www.udemy.com/course/complete-photography-course/
6. Web sources suggested by the teacher concerned.

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VII. Co-Curricular Activities

(a) Mandatory:(Training of students by teacher in field related skills: (lab: 10 + field: 05):

1. **For Teacher**: Training of students by the teacher (if necessary, by a local expert) in laboratory/field for not less than 15 hours on the field techniques/skills of Image formation by using lenses and mirrors. Also to make students to understand the construction, operation and the Physics principles involved in a normal Camera and Digital Camera.

2.**For Student**: Students shall (individually) visit a local Photo studio or any such facility in a university/research organization/private and observe (i) the operation of different digital cameras, compact and SLR and in taking photographs using different types of lenses by varying aperture, shutter speed for still camera, video camera, CCTV and spy camera **or** (ii) the use of natural light, tungsten light, fluorescent light, electronic flash reflectors, exposure meters, studio flash and its accessories **or** (iii) the usage of various lighting techniques for different lenses and will do practice on special areas of photography in outdoor and indoor conditions **or** (iv) the different processes viz., audio video recording, mixing, editing, dubbing of sound, using different types of microphones **or** (v) the handling of the digital video cameras, DVD, HDD, accessories and exposure to take different common shots, dimension of images and movements as per requirement **or** (v) the computer system by digital editing software, printing the photographs taken by digital cameras and the image transportation to the storage media, sending photographs through E-mail and Scanning the photographs, capture frames and analysis of images and record their observations and submit a hand-written Fieldwork/Project work not exceeding 10 pages in the given format to the teacher.

3. Max marks for Fieldwork/Project work: 05.
4. Suggested Format for Fieldwork/Project work: Title page, student details, index page, details of place visited, observations, findings and acknowledgements.
5. Tests (IE).

(b) Suggested Co-Curricular Activities:

1. Training of students by a related skilled person from a Photo studio.
2. Assignments (including technical assignments like identifying the tools &techniques involved in photography and handling, operational techniques of different Cameras with safety and security)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on tools and techniques related to Image formation and Photographic Techniques.
5. Practice taking outdoor photographs with a digital camera in (i) Black & White and (ii) Colour in the following conditions:
   Landscapes – Street / Building – Sculpture – Insect / Animal movement – Industrial plant (outside view) – Children, birds (close up / long shot / model photography)- slow and fast moving objects-Night photography etc.
6. Shooting of different areas and topics such as sports, wildlife, modeling, drama, documentary, serial, story board making, news, interview, seminar/ workshop, industrial, live broadcasting, musical event, advertisement, etc.
7. Collection of material/figures/photos related to various components of a Camera, writing and organizing them in a systematic way in a file.
8. Visits to any local Photo Studio or any Lab in universities, research organizations, private firms, etc.
9. Invited lectures and presentations on related topics by field/industrial experts.

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A.P. STATE COUNCIL OF HIGHER EDUCATION

Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)

Domain Subject: **PHYSICS**

IV Year B. Sc.(Hons) – Semester – V

Max Marks: 100+50

Course 6B: LOW TEMPERATURE PHYSICS & REFRIGERATION

(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes: Students after successful completion of the course will be able to

1. Identify various methods and techniques used to produce low temperatures in the Laboratory.
2. Acquire a critical knowledge on refrigeration and air conditioning.
3. Demonstrate skills of Refrigerators through hands on experience and learns about refrigeration components and their accessories.
4. Understand the classification, properties of refrigerants and their effects on environment.
5. Comprehend the applications of Low Temperature Physics and refrigeration.

II. Syllabus: (Total Hours: 90 including Teaching, Lab, Field Training, Unit tests etc.)

UNIT-I PRODUCTION OF LOW TEMPERATURE (10 hrs)

Production of low temperatures-Introduction, Freezing mixtures, Joule-Thomson effect, Regenerative cooling, Different methods of liquefaction of gases, liquefaction of air, Production of liquid hydrogen and nitrogen, Adiabatic demagnetization, Properties of materials at low temperatures, Superconductivity

UNIT-II MEASUREMENT OF LOW TEMPERATURE (10 hrs)

Gas thermometer and its correction and calibration, Secondary thermometers, resistance thermometers, thermocouples, Vapour pressure thermometers, Magnetic thermometers, Advantages and drawbacks of each type of thermometer.

UNIT-III PRINCIPLES OF REFRIGERATION (10 hrs)

Introduction to Refrigeration- Natural and artificial refrigeration , Stages of refrigeration, Types of refrigeration - Vapor compression and vapor absorption refrigeration systems. Refrigeration cycle and explanation with a block diagram, Introductory ideas on air-conditioning.

Refrigerants-Introduction, Ideal refrigerant, Properties of refrigerant, Classification of refrigerants, commonly used refrigerants, Eco-friendly refrigerants

UNIT-IV COMPONENTS OF REFIGERATOR (10 hrs)

Refrigerator and its working, Block diagram, Coefficient of Performance (COP), Tons of refrigeration (TR) and Energy Efficiency Ratio (EER), Refrigerator components: Types of compressors, evaporators and condensers and their functional aspects, defrosting in a refrigerator, Refrigerant leakage and detection

UNIT-V APPLICATIONS OF LOW TEMPERATURE & REFRIGERATION (10 hrs.)

Applications of Low temperatures: Preservation of biological material, Food freezing, liquid nitrogen and liquid hydrogen in medical field, Superconducting magnets in MRI- Tissue ablation (cryosurgery) - Cryogenic rocket propulsion system.

Applications of refrigeration: Domestic refrigerators, Water coolers, Cold storages, Ice plants, Food preservation methods, Chemical and Process industries, Cold treatment of metals, Construction field, Desalination of water, Data centers.

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III. References:

1. Heat and Thermodynamics by Brij Lal &N.Subramanyam, S.Chand Publishers.
2. Thermal Physics by S C Garg, R M Bansal & C K Ghosh, McGrawHill Education, India
3. Heat and Thermodynamics by M MZemansky,McGrawHill Education (India).
4. Low-Temperature Physics by Christian E. & Siegfried H., Springer.
5. Thermal Engineering by S. Singh, S.Pati, Ch:18 Introduction to Refrigeration.
6. The Physics Hyper Text Book. Refrigerators.https://physics.info/refrigerators/
7. Refrigeration and Air Conditioning by Manohar Prasad, New age international (P) limited, New Delhi
8. A course in Refrigeration and Air Conditioning by S.C. Arora and S. Domkundwar, Dhanpatrai and sons, Delhi
9. https://trc.nist.gov/cryogenics/Papers/Review/2017-Low_Temperature_Applications_and_Challenges.pdf
10. https://nptel.ac.in/content/storage2/courses/112105129/pdf/RAC%20Lecture%203.pdf
11. Other Web sources suggested by the teacher concerned and the reading material. https://nptel.ac.in

Course 6B: Low Temperature Physics & Refrigeration

PRACTICAL SYLLABUS (30 Hrs. Max Marks: 50)

IV. Learning Outcomes: On completion of practical course, student shall be able to

1. List out, identify and handle equipment used in refrigeration and low temperature lab.
2. Learn the procedures of preparation of Freezing Mixtures.
3. Demonstrate skills on developing various Freezing mixtures and materials and their applications in agriculture, medicine and day to day life.
4. Acquire skills in observing and measuring various methodologies of very low temperatures
5. Perform some techniques related to Refrigeration and Freezing in daily life.

V. Practical (Laboratory) Syllabus: (30 hrs. Max marks: 50))

1. Record the Principles and applications of Refrigerators and Freezers.
2. Measure the temperatures below Melting point of Ice using a thermometer available in the Lab.
3. Make a freezing mixture by adding different salts viz., Sodium chloride, Potassium Hydrate (KOH), Calcium chloride to ice in different proportions and observe the temperature changes.
4. Study the operation of a refrigerator and understand the working of different parts.
5. Study the properties of refrigerants like chlorofluorocarbons-hydrochlorofluoro- carbons and record the lowest temperatures obtained.
6. Consider a simple faulty refrigerator and try to troubleshoot the simple problems by understanding its working.

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7. Understand the practical problem of filling the Freon Gas into the Refrigerator.
8. Get the Liquid Nitrogen or Liquid Helium from nearby Veterinary Hospital and measure their temperatures using chromel-alumel thermocouple or mercury thermometer and observe their physical properties like colour, smell etc and precautions to be taken for their safe handling.
9. Preparation of freeze drying food with Dry ice and liquid nitrogen
10. Preparation of freeze drying food with liquid nitrogen

VI. Lab References:

1. Experimental techniques in low temperature physics by Guy White, PhilipMeeson.
2. Experimental low-temperature physics by A. Kent, Macmillan physical science series
3. Physics and Chemistry at Low Temperatures by Leonid Khriachtchev. https://www.routledge.com/Physics-and-Chemistry-at-Low-Temperatures /Khriachtchev/p/book/9789814267519
4. Practical Cryogenics .http://research .physics illinois.edu /bezryadin /links/ practical%20Cryogenics.pdf
5. Freeze-Drying, 3rd Edition by Peter Haseley, Georg-Wilhelm Oetjen, Wiley (e-Book)
6. Web sources suggested by the teacher concerned.

VII. Co-Curricular Activities:

(a) Mandatory:(Training of students by teacher in field related skills: (lab: 10 + field: 05)

1. **For Teacher**: Training of students by the teacher in the in the laboratory/field for a total of not less than 15 hours on the techniques/skills of Low Temperature Production, methods used and applications of Low temperatures and refrigeration in day to day life and other applications in medicine and industry.
2. **For Student**: Student shall (individually) visit (i) a small ice plant or a cold storage plant (ii) Air Conditioner (AC) repair shop or (iii) Refrigerator repair shop to understand the construction, working principle and the trouble shooting of these devices after interacting with the technicians. **Or** Student shall observe the various thermodynamic processes taking place while working with the refrigerator and observe the leak detection in refrigeration system by different methods, air removal and charging of a refrigeration unit and testing of a refrigeration system to find out the Refrigerating capacity/Ton of refrigeration (TR) and the Power input. **Or** Student shall identify the refrigerant cylinder by color coding and standing pressure. **Or** Student shall visit the freezer aisle of a supermarket and observes the bags of different frozen fruits. Student shall write the observations and submit a hand-written Fieldwork/Project work not exceeding 10 pages in the given format to the teacher.
3. Max marks for Fieldwork/Project work: 05.
4. Suggested Format for Fieldwork/Project work: Title page, student details, index page, details of place visited, observations, findings and acknowledgements.
5. Unit tests (IE).

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(b) **Suggested Co-Curricular Activities**

1. Training of students by related Factory, industrial experts.
2. Assignments (including technical assignments like identifying tools in Refrigerators, Freezers and their handling, operational techniques with safety and security)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on tools and techniques in Low Temperatures and applications.
5. Collection of material/figures/photos related to substances used in Freezing Mixtures, their Properties and availability etc., writing and organizing them in a systematic way in a file.
6. Visits to Ice plants and labs in universities, research organizations, private firms, etc.
7. Making your own mini refrigerator at home
8. Build your own water cooler with the materials available at home.
9. Making hand launched liquid nitrogen rockets
10. Experiments with Liquid nitrogen and strawberry/ banana/ lemon/ onion/ mushroom/ egg etc. (To be tried under professional supervision only).
11. Invited lectures and presentations on related topics by field/industrial experts
12. Identification of different Ozone-depleting substances (ODS) that damage the ozone layer in the upper atmosphere.
13. Demonstration to illustrate the greenhouse effect and the role of carbon dioxide as a greenhouse gas using plastic water bottles, flood light lamp, beakers and temperature sensors and observe the temperature changes.
    https://edu.rsc.org/experiments/modelling-the-greenhouse-effect/1543.article
    https://sealevel.jpl.nasa.gov/files/archive/activities/ts1hiac1.pdf

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A.P. STATE COUNCIL OF HIGHER EDUCATION

Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)

Domain Subject: **Physics**

IV Year B. Sc.(Hons) – Semester – V

Max Marks: 100+50

Course 7B: Solar Energy and Applications

[Skill Enhancement Course (Elective), Credits: 05]

I. Learning Outcomes: After successful completion of the course, the student will be able to:

1. Understand Sun structure, forms of energy coming from the Sun and its measurement.
2. Acquire a critical knowledge on the working of thermal and photovoltaic collectors.
3. Demonstrate skills related to callus culture through hands on experience
4. Understand testing procedures and fault analysis of thermal collectors and PV modules.
5. Comprehend applications of thermal collectors and PV modules.

II. Syllabus: (Total Hours: 90 including Teaching, Lab, Field Training, Unit tests etc.)

Unit - I: BASIC CONCEPTS OF SOLAR ENERGY (10hrs)

Spectral distribution of solar radiation, Solar constant , zenith angle and Air-Mass, standard time, local apparent time, equation of time, direct, diffuse and total radiations. Pyrheliometer - working principle, direct radiation measurement, Pyrometer-working Principle, diffuse radiation measurement, Distinction between the two meters.

Unit - II: SOLAR THERMAL COLLECTORS (10hrs)

Solar Thermal Collectors-Introduction, Types of Thermal collectors, Flat plate collector – liquid heating type, Energy balance equation and efficiency, Evacuated tube collector, collector overall heat loss coefficient, Definitions of collector efficiency factor, collector heat-removal factor and collector flow factor, Testing of flat-plate collector, solar water heating system, natural and forced circulation types.

Concentrating collectors, Solar cookers, Solar dryers, Solar desalinators.

Unit - III: FUNDAMENTALS OF SOLAR CELLS (10hrs)

Semiconductor interface, Types, homo junction, hetero junction and Schottky barrier, advantages and drawbacks, Photovoltaic cell, equivalent circuit, output parameters, conversion efficiency, quantum efficiency, Measurement of I-V characteristics, series and shunt resistance, their effect on efficiency, Effect of light intensity, inclination and temperature on efficiency

Unit -IV: TYPES OF SOLARCELLS AND MODULES (10 hrs)

Types of solar cells, Crystalline silicon solar cells, I-V characteristics, poly-Si cells, Amorphous silicon cells, Thin film solar cells-CdTe/CdS and CuInGaSe2/CdS cell configurations, structures, advantages and limitations, Multi junction cells – Double and triple junction cells. Module fabrication steps, Modules in series and parallel, Bypass and blocking diodes

Unit – V: SOLAR PHOTOVOLTAIC SYSTEMS (10hrs)

Energy storage in PV systems, Energy storage modes, electrochemical storage, Batteries, Primary and secondary, Solid-state battery, Molten solvent battery, lead acid battery and dry batteries, Mechanical storage – Flywheel, Electrical storage –Super capacitor

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III. References:

1. Solar Energy Utilization by G. D. Rai, Khanna Publishers
2. Solar Energy- Fundamentals, design, modelling and applications by G.N. Tiwari, Narosa Publications, 2005.
3. Solar Energy-Principles of thermal energy collection & storage by S.P. Sukhatme, Tata Mc-Graw Hill Publishers, 1999.
4. Science and Technology of Photovoltaics, P. Jayarama Reddy, CRC Press (Taylor & Francis Group), Leiden &BS Publications, Hyderabad, 2009.
5. Solar Photovoltaics- Fundamentals, technologies and applications, Chetan Singh Solanki, PHI Learning Pvt. Ltd.,
6. Web sources suggested by the teacher concerned and the college librarian including reading material.
   (a) https://courses.edx.org/c4x/DelftX/ET.3034TU/asset/solar_energy_v1.1.pdf
   (b) https://www.sku.ac.ir/Datafiles/BookLibrary/45/John%20A.%20Duffie,%20William%20A.%20Beckman(auth.)-Solar%20Engineering%20of%20Thermal%20Processes,%20Fourth%20Edition%20(2013).pdf

7B

Course 6B: Solar Energy and Applications – Practical (lab) work (30 hrs, Max Marks:50)

IV. Learning Outcomes : On successful completion of this practical course, student shall be able to:

1. List out and identify various components of solar thermal collectors and systems, solar photovoltaic modules and systems.
2. Learn the procedures for measurement of direct, global and diffuse solar radiation, I - V characteristics and efficiency analysis of solar cells and modules.
3. Demonstrate skills acquired in evaluating the performance of solar cell / module in connecting them appropriately to get required power output.
4. Acquire skills in identification and elimination of the damaged panels without affecting the output power in a module / array.
5. Perform procedures and techniques related to general maintenance of solar thermal and photovoltaic modules.

V. Practical (Laboratory) Syllabus: **(30 hrs)** (Max.50 Marks)

1. Measurement of direct radiation using pyrheliometer.
2. Measurement of global and diffuse radiation using pyranometer.
3. Evaluation of performance of a flat plate collector
4. Evaluation of solar cell / module efficiency by studying the I – V measurements.
5. Determination of series and shunt resistance of a solar cell / module.
6. Determination of efficiency of two solar cells / modules connected in series.
7. Determination of efficiency of two solar cells / modules connected in parallel.
8. Study the effect of input intensity on the performance of solar cell / module.
9. Study the influence of cell / module temperature on the efficiency.
10. Study the effect of cell / module inclination on the efficiency.

VI. Lab References:

1.Solar Photo voltaic- Alab training manual, C.S. Solanki et al., Foundation Books Publishers, 2012.
2. Laboratory Manual on Solar thermal experiments, HP Garg, TC Kandpal, Narosa Publishing House 2000.
3. Web sources suggested by the teacher concerned.
https://renewablelab.niu.edu/experiments/solarPanel
Development of simple solar hot water collector:
https://www.youtube.com/watch?v=WP8H5IOTwYU
https://www.instructables.com/Solar-Water-Heater-From-Scratch/

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VII. Co-curricular Activities:

(a) Mandatory: (Training of students by teacher in field related skills: (lab: 10 + field: 05)

1. **For Teacher**: Training of students by the teacher in the in the laboratory/field for not less than 15 hours on the field techniques/skills related to measurement of direct, diffused and global solar radiation; demonstration of procedures used in the performance evaluation of solar flat plate collectors, solar photovoltaic cells and modules measurement of different parameters in the calculation of efficiency.

2. **For Student**: Students shall visit to solar thermal and photovoltaic laboratories in universities/research organizations/ nearby industries to observe and understand the techniques and procedures used for evaluation of solar collector, solar cell and module efficiencies. They shall write their observations and submit to the teacher hand-written Fieldwork/Project work not exceeding 10 pages in the given format.

3. Max marks for Fieldwork/Project work: 05.

4. Suggested Format for Fieldwork/Project work: Title page, student details, index page, details of place visited, observations, findings and acknowledgements.

5. Unit tests (IE).

(b) Suggested Co-Curricular Activities

1. Training of students by related industrial/ technical experts using guest lectures/ invited talks.
2. Assignments (including technical assignments like identifying components of a solar hot water and solar photovoltaic systems and their handling, operational techniques and maintenance procedures with safety and security)
3. Seminars, Group discussions, Quiz, Debates etc. on related topics.
4. Preparation of videos on thermal and photovoltaic systems and technical procedures.
5. Collection of brochures/figures/photos related to products and applications of solar energy and organizing them in a systematic way in a file.
6. Making a (i) solar panel (ii) solar light (iii) solar cooker (iv) solar oven (v) solar inverter at Home.
7. Visits to nearby solar thermal system as well as solar photovoltaic power stations, firms, research organizations etc.

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A.P. STATE COUNCIL OF HIGHER EDUCATION

Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)

Domain Subject: **PHYSICS**

IV Year B. Sc.(Hons) – Semester – V

Max Marks: 100+50

Course 6C: APPLICATIONS OF ELECTRICITY & ELECTRONICS

(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes: Students after successful completion of the course will be able to:

1. Identify various components present in Electricity& Electronics Laboratory.
2. Acquire a critical knowledge of each component and its utility (like resistors, capacitors, inductors, power sources etc.).
3. Demonstrate skills of constructing simple electronic circuits consisting of basic circuit elements.
4. Understand the need & Functionality of various DC & AC Power sources.
5. Comprehend the design, applications and practices of various electrical & Electronic devices and also their trouble shooting.

II. Syllabus: (Total Hours: 90 including Teaching, Lab, Field Training, Unit tests etc.)

Unit-I INTRODUCTION TO PASSIVE ELEMENTS (10 hrs.)

Passive and Active elements-Examples, **Resistor**-Types of Resistors, Color coding - Applications of a Resistor as a heating element in heaters and as a fuse element. **Capacitor**-Types of Capacitors, Color coding, Energy stored in a capacitor, Applications of Capacitor in power supplies, motors(Fans) etc., **Inductor**-Types of Inductors, EMF induced in an Inductor, Applications of Inductor, Application of choke in a fan and in a radio tuning circuit, Series resonance circuit as a Radio tuning circuit.

Unit-II Power Sources (Batteries) (10 hrs.)

Types of power sources-DC & AC sources, Different types of batteries, Rechargeable batteries –Lead acid batteries, Ni-MH batteries, Li-ion batteries- Li-PO batteries, Series, Parallel& Series-Parallel configuration of batteries, Constant Voltage source-Constant Current Source-Applications of Current sources & Voltage sources, SMPS used in computers.

Unit-III Alternating Currents (10 hrs)

A.C Power source-Generator, Construction and its working principle, Transformers-Construction and its working principle, Types of Transformers-Step-down and Step-up Transformers, Relation between primary turns and secondary turns of the transformer with emf., Use of a Transformer in a regulated Power supplies, Single phase motor –working principle, Applications of motors(like water pump, fan etc.).

Unit-IV Power Supplies (Skill Based) (10 hrs.)

Working of a DC regulated power supply, Construction of a 5 volts regulated power supply, Design of a step-down (ex: 220-12V) and step-up (ex: 120-240V) transformers-Simple Design of FM Radio circuit using LCR series resonance (tuning) circuit, Checking the output voltage of a battery eliminator using a MultiMate.(Trouble shooting), Design of a simple 5 volts DC charger, Power supply for computers(SMPS)

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Unit-V Applications of Electromagnetic Induction (10 hrs.)

DC motor –Construction and operating principle, Calculation of power, voltage and current in a DC motor, Design of a simple Motor (for example Fan) with suitable turns of coil-DC generator-Construction, operating principle and EMF equation, Construction of a simple DC generator, Difference between DC and AC generators

III. References:

1. Grob's Basic Electronics by Mitchel Schultz , TMH or McGraw Hill
2. Electronic and Electrical Servicing by Ian Robertson Sinclair, John Dunton, Elsevier Publications
3. Troubleshooting Electronic Equipment by R.S.Khandapur , TMH
4. Web sources suggested by the teacher concerned and the college librarian including reading material.

Course 6C: Applications of Electricity & Electronics–

PRACTICAL SYLLABUS (30 hrs, Max Marks:50)

IV. **Learning Outcomes:** On successful completion of this practical course, student shall be able to:

1. List out, identify and handle various equipment in Electrical & Electronics laboratory.
2. Learn the procedures of designing simple electrical circuits.
3. Demonstrate skills on the utility of different electrical components and devices.
4. Acquire the skills regarding the operation, maintenance and troubleshooting of various Devices in the lab.
5. Understand the different applications of Electromagnetic induction.

V. **Practical (Laboratory) Syllabus**: (30 hrs, Max marks:50)

1. Acquainting with the soldering techniques
2. Design and Construction of a 5 Volts DC unregulated power supply
3. Construction of a Step down Transformer and measurement of its output voltage. And to compare it with the calculated value.
4. Connect two or three resistors or capacitors or inductors and measure the Series, Parallel Combination values using a Multimeter and compare the values with the Calculated values.
5. Use the Digital Multimeter and Analog Multimeter to measure the output voltage of an AC &DC power supply and also the voltage and frequency of a AC signal using CRO.
6. Use the Multimeter to check the functionality of a Diode and Transistor. Also test whether the given transistor is PNP or NPN.
7. Construct a series electric circuit with R, L and C having an AC source and study the frequency response of this circuit. Find the Resonance Frequency.
8. Construct a Parallel electric circuit with R, L & C having an AC source and study the frequency response of this circuit .Find the resonant frequency.
9. Test whether a circuit is a Open circuit or Short Circuit by measuring continuity with a Multimeter and record your readings.

VI. Lab References:

1. Laboratory Manual for Introductory Electronics Experiments by Maheshwari, L.K. Anand, M.M.S., New Age International (P) Ltd.
2. Electricity-Electronics Fundamentals: A Text-lab Manual by Paul B. Zbar,Joseph Sloop, & Joseph G. Sloop , McGraw-Hill Education
3. Laboratory Manual Basic Electrical Engineering by Umesh Agarwal, Notion Press
4. Basic Electrical and Electronics Engineering by S.K. Bhattacharya , Pearson Publishers.
5. Web sources suggested by the teacher concerned.

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VI. Co-Curricular Activities:

(a) Mandatory:(Training of students by teacher in field related skills: (lab: 10 + field: 05)

1. **For Teacher**: Training of students by the teacher (if necessary, by a local expert) in laboratory/field for not less than 15 hours on the understanding of various electronic &electrical components and devices. And also understand the functional knowledge of these components and devices so that the student can safely handle these electronic components.

2. **For Student**: Students shall (individually) visita local Radio, TV or Mobile repair shop to understand the testing and soldering techniques and different electronic components in the devices that we use daily life. And also to understand the troubleshooting and working of domestic appliances such as cell phone chargers, fan, electric iron, heater, inverter, micro oven, washing machine etc.(Or)Students shall also visit the Physics/Electronics or Instrumentation Labs of nearby local institutions and can get additional knowledge by interacting with the technical people working there. (Or)Students shall also visit the local motor winding shop to understand the motor winding and working of different types of motors. After the observations, a hand-written Fieldwork/Project work not exceeding 10 pages in the given format to be submitted to the teacher.
3. Max marks for Fieldwork/Project work: 05.
4. Suggested Format for Fieldwork/Project work: Title page, student details, index page, details of place visited, observations, findings and acknowledgements.
5. Unit tests (IE).

(b) <u>Suggested Co-Curricular Activities</u>

1. Training of students by related industrial experts.
2. Assignments (including technical assignments like identifying various electrical and electronic components &devices and their handling, operational techniques with safety and security)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on tools and techniques in Electrical & Electronic Appliances in daily life.
5. Collection of material/figures/photos related to Electrical products like Heaters, Motors, Fans etc. and writing and organizing them in a systematic way in a file.
6. Visits to nearby electrical or electronic industries or laboratories in universities, research organizations, private firms, etc.
7. Invited lectures and presentations on related topics by field/industrial experts

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6/7/2022

A.P. STATE COUNCIL OF HIGHER EDUCATION

Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)

Domain Subject: **PHYSICS**

IV Year B. Sc.(Hons) – Semester – V

Max Marks: 100+50

Course 7C: ELECTRONIC INSTRUMENTATION

[Skill Enhancement Course (Elective), Credits: 05]

I. Learning Outcomes: Students after successful completion of the course will be able to:

1. Identify various facilities required to set up a basic Instrumentation Laboratory.
2. Acquire a critical knowledge of various Electrical Instruments used in the Laboratory.
3. Demonstrate skills of using instruments like CRO, Function Generator, Multimeter etc. through hands on experience.
4. Understand the Principle and operation of different display devices used in the display systems and different transducers
5. Comprehend the applications of various biomedical instruments in daily life like B.P. meter, ECG, Pulse oxymeter etc. and know the handling procedures with safety and security.

II. Syllabus: (Total Hours: 90 including Teaching, Lab, Field Training, Unit tests etc.)

UNIT-I INTRODUCTION TO INSTRUMENTS (10 hrs)

Types of electronic Instruments- Analog instruments & Digital Instruments, DC Voltmeter and AC Voltmeter, Construction and working of an Analog Multimeter and Digital Multimeter (Block diagram approach),Sensitivity, 3½display and 4½ display Digital multimeters, Basic ideas on Function generator

UNIT-II OSCILLOSCOPE (10 hrs)

Cathode Ray Oscilloscope-Introduction, Block diagram of basic CRO, Cathode ray tube, Electron gun assembly, Screen for CRT, Time base operation, Vertical deflection system, Horizontal deflection system, Use of CRO for the measurement of voltage (DC and DC), frequency, phase difference, Different types of oscilloscopes and their uses, Digital storage Oscilloscope

UNIT-III TRANSDUCERS (10 hrs)

Classification of transducers, Selection of transducers, Resistive, capacitive & inductive transducers, Resistive and capacitive touch screen transducer used in mobiles, Displacement transducer-LVDT, Piezoelectric transducer, Photo transducer, Digital transducer, Fibre optic sensors

UNIT-IVDISPLAY INSTRUMENTS (10 hrs)

Introduction to Display devices, LED Displays, Seven Segment Displays, Construction and operation (Display of numbers),Types of SSDs(Common Anode &Common Cathode type), Limitations of SSDs, Liquid Crystal Displays, Principle and working of 2x16 display and 4x16 LCD modules, Applications of LCD modules.

UNIT-VBIOMEDICAL INSTRUMENTS (10 hrs)

Basic operating principles and uses of (i) Clinical thermometer (ii) Stethescope (iii) Sphygmomanometer (iv) ECG machine (v) Radiography (vi) Ophthalmoscope (vii) Ultrasound scanning (viii) Ventilator (ix) Pulse oxymeter (x) Glucometer, Basic ideas of CT scan and MRI scan

III Reference Books:

1. Electronic Instrumentation by H.S.Kalsi , TMH Publishers
2. Electronic Instrument Hand Book by Clyde F. Coombs , McGraw Hill
3. Introduction to Biomedical Instrumentation byMandeep Singh, PHI Learning.

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4. Biomedical Instrumentation and Measurements by Leslie Cromwell ,Prentice Hall India.
5. Electronic Measurements and Instrumentation by Kishor, K Lal, Pearson, New Delhi
6. Electrical and Electronic Measurements by Sahan, A.K., Dhanpat Rai, New Delhi
7. Electronic Instruments and Measurement Techniques by Cooper, W.D. Halfrick, A.B., PHI Learning, New Delhi
8. Web sources suggested by the teacher concerned and the college librarian including reading material.

Course 7C: Electronic Instrumentation– PRACTICAL SYLLABUS

(30 Hrs. Max Marks: 50)

IV. Learning Outcomes: On successful completion of this practical course, student shall be able to:

1. List out, identify and handle various equipment in Instrumentation Laboratory or Electronic Laboratory.
2. Learn the construction, operational principles of various instruments.
3. Demonstrate skills on handling, Maintenance & trouble shooting of different instruments used in the Labs.
4. Acquire skills in observing and measuring various electrical and electronic quantities.
5. Perform some techniques related to Biomedical Instrumentation and measurement of Certain physiological parameters like body temperature, B.P. and sugar levels etc.

V. Practical (Laboratory) Syllabus: (30 hrs. Max marks: 50)

1.Familiarisation of digital multimeter and its usage in the measurements of (i) resistance (ii) current, (iii) AC & DC voltages and for (i) continuity test (ii) diode test and (iii) transistor test

2. Measure the AC and DC voltages, frequency using a CRO and compare the values Measured with other instruments like Digital multimeter.

3. Formation of Sine, Square wave signals on the CRO using Function Generator and measure their frequencies. Compare the measured values with actual values.

4. Display the numbers from 0 to 9 on a single Seven Segment Display module by Applying voltages.

5. Display the letters **a** to **h** on a single Seven Segment Display module by applying voltages.

6. Measurement of body temperature using a digital thermometer and list out the error and corrections.

7. Measurement of Blood Pressure of a person using a B.P. meter and record your values and analyze them.

8. Get acquainted with an available ECG machine and study the ECG pattern to understand the meaning of various peaks

9. Observe and understand the operation of a Digital Pulse oxymeter and measure the pulse rate of different people and understand the working of the meter.

VI. Lab References:

1. Electronic Measurement and Instrumentation by J.P. Navani. ,S Chand & Co Ltd
2. Principles of Electronic Instrumentation by A De Sa, Elsevier Science Publ.
3. Electronic Measurements and Instrumentation by S.P.Bihari, YogitaKumari, Dr. Vinay Kakka, Vayu Education of India .
4. Laboratory Manual For Introductory Electronics Experiments by Maheshwari, New Age
International (P) Ltd., Publishers.

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5. Electricity-Electronics Fundamentals: A Text-lab Manual by Paul B. Zbar ,Joseph Sloop, & Joseph G. Sloop, McGraw-Hill Education.
6. Web sources suggested by the teacher concerned.

VII. Co-Curricular Activities

(a) Mandatory:(Training of students by teacher in field related skills: (lab:10 + field:05)

1. **For Teacher**: Training of students by the teacher in the in the laboratory/field for not less than 15 hours on the field techniques/skills of understanding the operation, Maintenance and utility of various electrical and electronic instruments both in the Laboratory as well as in daily life.

For Student: Students shall (individually)visit a local electrical and electronics shop or small firm to familiarize with the various electrical and electronic instruments available in the market and also to understand their functionality, principle of operation and applications as well as the troubleshooting of these instruments.(Or) Student shall visit a diagnostic centre and observe the ECG machine and the ECG pattern(Or) Student shall visit a diagnostic centre and observe the CT scan and MRI scan.(Or) Student shall visit a mobile smart phone repair shop and observe the different components on the PCB(Motherboard), different ICs (chips) used in the motherboard and trouble shooting of touch screen in smart phones.

Observations shall be recorded in a hand-written Fieldwork/Project work not exceeding 10 pages in the given format to be submitted to the teacher.

2. Max marks for Fieldwork/Project work: 05.
3. Suggested Format for Fieldwork/Project work: Title page, student details, index page, details of place visited, observations, findings and acknowledgements.
4. Unit tests (IE)

(b)Suggested Co-Curricular Activities

1. Training of students by related industrial / technical experts.
2. Assignments (including technical assignments like identifying different measuring instruments and tools and their handling, operational techniques with safety and security.
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Making your own stethoscope at home.
5. Making seven segment display at home.
6. Preparation of videos on tools and techniques in various branches of instrumentation.
7. Collection of material/figures/photos related to products of Measuring Instruments, Display Modules and Biomedical Instruments and arrange them in a systematic way in a file.
8. Visits to Instrumentation Laboratories of local Universities or Industries like Cement, Chemical or Sugar Plants etc. or any nearby research organizations, private firms, etc.
9. Invited lectures and presentations on related topics by Technical /industrial experts

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Draft syllabus prepared by,

Dr. M. Ravi Kumar, Principal, T.R.R. Govt Degree College, Kandukur, PrakasamDist
Dr. Y. Narasimha Murthy, Associate Prof of Physics, S.S.B.N.College, Anantapur
Prof. K.T. Ramakrishna Reddy, Professor, Dept. of Physics, S.V.University, Tirupati.

6/7/2022

Acharya Nagarjuna University :: Nagarjuna Nagar - 522510

B.Sc. PHYSICS [For Mathematics combinations]

REVISED CBCS FRAMEWORK WITH EFFECT FROM 2020-2021 ADMITTED BATCH

Skill Enhancement Courses for Semester – V, from 2022-23

Suggested Question Paper Pattern

Time : 3 hrs *Max marks : 75*

SECTION-A

(Essay Type Questions) *Marks* : 5x10M = 50M

Answer All questions with internal choice from each Unit

1. Essay type question from Unit-I

   Or

   Essay type question from Unit-I

2. Essay type question from Unit-II

   Or

   Essay type question from Unit-II

3. Essay type question from Unit-III

   Or

   Essay type question from Unit-III

4. Essay type question from Unit-IV

   Or

   Essay type question from Unit-IV

5. Essay type question from Unit-V

   Or

   Essay type question from Unit-V

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SECTION-B

(Short Answer Type Questions) *Marks* : 5x5M = 25M

Answer any five out of the following ten questions

6. Short answer type question from Unit-I
7. Short answer type question from Unit-I
8. Short answer type question from Unit-II
9. Short answer type question from Unit-II
10. Short answer type question from Unit-III
11. Short answer type question from Unit-III
12. Short answer type question from Unit-IV
13. Short answer type question from Unit-IV
14. Short answer type question from Unit-V
15. Short answer type question from Unit-V

[**Note:** *Question Paper setters are instructed to add three (3) Numerical Problems, each of 5 marks compulsorily from Section – B out of 10 Questions.*

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6/7/2022



ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

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REVISED SYLLABUS OF B.Sc (Chemistry)

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR B.Sc. (B.Sc Chemistry)

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Fifteen Courses of 1, 2, 3 & 4 Semesters)

(To be Implemented from 2020-21 Academic Year)

Andhra Pradesh State Council of Higher Education

B.Sc. Chemistry Revised Syllabus under CBCS

w.e.f. 2020-21

Structure of Chemistry Core Syllabus under CBCS

YEAR	SEMESTER	COURSE	TITLE	MARKS	CREDITS
I	I	I	Inorganic and Physical Chemistry	100	03
			Practical – I Analysis of SALT MIXTURE	50	02
	II	II	Organic and General Chemistry	100	03
			Practical – IIVolumetric Analysis	50	02
II	III	III	Organic Chemistry and Spectroscopy	100	03
			Practical – IIIOrganic preparations and IR Spectral Analysis	50	02
	IV	IV	Inorganic, Organic and Physical Chemistry	100	03
			Practical – IVOrganic Qualitative analysis	50	02
		V	Inorganic and Physical Chemistry	100	02
			Practical-V Course Conductometric and Potentiometric Titrimetry	50	02

SEMESTER – I

Course I (Inorganic &Physical Chemistry) 60 hrs. (4h/w)

Course outcomes:

At the end of the course, the student will be able to;

1. Understand the basic concepts of p-block elements
2. Explain the difference between solid, liquid and gasesinterms of intermolecular interactions.
3. Applytheconceptsofgasequations,pHandelectrolyteswhilestudyingotherchemistrycour ses.

INORGANIC CHEMISTRY 24 h

UNIT –I

Chemistry of p-block elements 8h

Group 13: Preparation & structure of Diborane, Borazine

Group 14: Preparation, classification and uses of silicones

Group 15: Preparation & structures of Phosphonitrilic halides $\{(PNCl_2)_n$where n=3, 4

Group 16: Oxides and Oxoacids of Sulphur (structures only)

Group 17: Pseudohalogens, Structures of Interhalogen compounds.

UNIT-II

1. Chemistry of d-block elements: 6h

Characteristics of d-block elements with special reference to electronic configuration, variable valence, magnetic properties, catalytic properties and ability to form complexes. Stability of various oxidation states.

2. Chemistry of f-block elements: 6h

Chemistry of lanthanides - electronic structure, oxidation states, lanthanide contraction, consequences of lanthanide contraction, magnetic properties. Chemistry of actinides - electronic configuration, oxidation states, actinide contraction, comparison of lanthanides and actinides.

3. Theories of bonding in metals: 4h

Valence bond theory andFree electron theory, explanation of thermal and electrical conductivity of metals based on these theories, explanation of conductors, semiconductors and insulators.

PHYSICAL CHEMISTRY **36h**

UNIT-III

Solidstate **10h**

Symmetry in crystals. Law of constancy of interfacial angles. The law of rationality of indices. The law of symmetry. Miller indices, Definition of lattice point, space lattice, unit cell. Bravais lattices and crystal systems. X-ray diffraction and crystal structure. Bragg's law. Powder method. Defects in crystals. Stoichiometric and non-stoichiometric defects.

UNIT-IV

1. Gaseous state **6h**

van der Waal's equation of state. Andrew's isotherms of carbon dioxide, continuity of state. Critical phenomena. Relationship between critical constants and vander Waal's constants. Lawof corresponding states. Joule- Thomson effect. Inversion temperature.

2.Liquid state **4h**

Liquid crystals,mesomorphicstate. Differences between liquid crystal and solid/liquid. Classification of liquid crystals into Smectic and Nematic. Application of liquid crystals as LCD devices.

UNIT-V

Solutions, Ionic equilibrium& dilute solutions

1. Solutions **6h**

Azeotropes-HCl-H_2O system and ethanol-water system. Partially miscible liquids-phenol-water system. Critical solution temperature (CST), Effect of impurity on consulate temperature. Immiscible liquids and steam distillation.Nernst distribution law. Calculation of the partition coefficient. Applications of distribution law.

2. Ionic equilibrium **3h**

Ionic product, common ion effect, solubility and solubility product. Calculations based on solubility product.

3. Dilute solutions **7h**

Colligative properties- RLVP, Osmotic pressure, Elevation in boing point and depression in freezing point. Abnormal colligative properties. Van't Hoff factor.

Co-curricular activities and Assessment Methods

1. ContinuousEvaluation:Monitoringtheprogressof student'slearning
2. ClassTests,WorksheetsandQuizzes
3. Presentations,ProjectsandAssignmentsandGroupDiscussions:Enhancescriticalthinking skillsand personality
4. Semester-endExamination:criticalindicatorofstudent'slearningandteachingmethodsadoptedby teachersthroughoutthesemester.

List of Reference Books

1. Principles of physical chemistry by Prutton and Marron
2. Solid State Chemistry and its applications by Anthony R. West
3. Text book of physical chemistry by K L Kapoor
4. Text book of physical chemistry by S Glasstone
5. Advanced physical chemistry by Bahl and Tuli
6. Inorganic Chemistry by J.E.Huheey
7. Basic Inorganic Chemistry by Cotton and Wilkinson
8. A textbook of qualitative inorganic analysis by A.I. Vogel
9. Atkins,P.W.&Paula,J.deAtkin'sPhysicalChemistryEd.,OxfordUniversityPress 10thEd(2014).
10. Castellan,G.W.PhysicalChemistry4thEd.Narosa(2004).
11. Mortimer,R. G.PhysicalChemistry3rdEd. Elsevier:NOIDA,UP(2009).
12. Barrow,G.M.PhysicalChemistry

LABORATORY COURSE -I **30**hrs (2 h / w)

Practical-I Analysis of SALT MIXTURE

(At the end of Semester-I)

Qualitative inorganic analysis (Minimum of Six mixtures should be analysed) 50 M

Course outcomes:

At the end of the course, the student will be able to;

1. Understand the basic concepts of qualitative analysis of inorganic mixture
2. Use glassware, equipment and chemicals and follow experimental procedures in the laboratory
3. Apply the concepts of common ion effect, solubility product and concepts related to qualitative analysis

Analysis of SALT MIXTURE **50 M**

Analysis of mixture salt containing two anions and two cations (From two different groups) from the following:

Anions: Carbonate, Sulphate, Chloride, Bromide, Acetate, Nitrate, Borate, Phosphate.

Cations: Lead, Copper, Iron, Aluminium, Zinc, Nickel, Manganese, Calcium, Strontium, Barium, Potassium and Ammonium.

MODEL PAPER

FIRST YEAR B.Sc., DEGREE EXAMINATION

SEMESTER-I

CHEMISTRY Course-I: INORGANIC & PHYSICAL CHEMISTRY

Time: 3 hours Maximum Marks: 75

PART- A5 X 5 = 25 Marks

Answer any **FIVE** of the following questions. Each carries **FIVE** marks

1. Explain the preparation & structures of Phosphonitrilic compounds.
2. Explain in brief, catalytic properties & stability of various oxidation states of d-block elements.
3. Write short note on Bravais lattices and crystal systems.
4. What are Smectic&Nematic liquid Crystals? Explain.

5. Write account on Common ion effect & Solubility product.
6. Describe Andrew's isotherms of carbon dioxide.
7. Explain Actinide Constraction.
8. Explain the structure of Borazine.

PART- B2X 10 = 20 Marks

Answer **any two** the questions. Each carries **TEN** marks

9. Explain Classification, Preparations & uses of Silicones

10. (i) What are Pseudohalogens.
    (ii) Explain the Structures of any one AX3& AX_5interhalogen compounds.

11. What is Lanthanide Contraction? Explain the Consequences of Lanthanide Contraction.

12. (i) Explain the magnetic properties of d- block elements.
    (ii) Explain about Conductors, Semi-Conductors& Insulators using BandTheory.

Part – C 3 X 10 = 30
Answer any three of the following

13. Write an essay on Crystal defects.

14. What is Bragg's Law. Explain the determination of structure of a crystal bypowder method.

15. Derive the relationship between Critical constants &Vanderwaal constants

16. (i) Write any 5 differences between liquid crystals & liquids, solids
    (ii) Write the applications of Liquid crystals.

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17. Explain Nernst distribution Law. Explain its applications

18. What are colligative properties. Write experimental methods for determinationof molar mass of a non-volatile solute by using Elevation in boiling point & depression in freezing point.

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SEMESTER – II

Course II – (Organic & General Chemistry) 60 hrs (4h/w)

Course outcomes:

At the end of the course, the student will be able to;

1. Understandandexplainthedifferentialbehaviorof organiccompoundsbasedonfundamental conceptslearnt.
2. Formulatethemechanismoforganicreactionsby recallingandcorrelatingthefundamentalproperties ofthereactantsinvolved.
3. LearnandidentifymanyorganicreactionmechanismsincludingFreeRadical Substitution, Electrophilic AdditionandElectrophilicAromaticSubstitution.
4. Correlateanddescribethestereochemicalpropertiesoforganiccompoundsand reactions.

ORGANIC CHEMISTRY **36h**

UNIT-I

RecapitulationofBasicsofOrganicChemistry

Carbon-Carbon sigma bonds (Alkanes and Cycloalkanes) **12h**

General methods of preparation of alkanes- Wurtz and WurtzFittig reaction, Corey House synthesis, physical and chemical properties of alkanes, Isomerism and its effect on properties, Free radical substitutions; Halogenation, concept of relative reactivity v/s selectivity. Conformational analysis of alkanes (Conformations, relative stability and energy diagrams of Ethane, Propane and butane).General molecular formulae of cycloalkanes and relative stability, Baeyer strain theory, Cyclohexane conformations with energy diagram, Conformations of monosubstituted cyclohexane.

UNIT-II

Carbon-CarbonpiBonds(AlkenesandAlkynes) **12h**

Generalmethodsofpreparation,physicaland chemicalproperties.Mechanism ofE1,E2,E1cbreactions,SaytzeffandHoffmanneliminations, Electrophilic Additions,mechanism(Markownikoff/Antimarkownikoff addition) with suitableexamples,,*syn*and*anti*-addition;additionofH_2,X_2, HX. oxymercuration-

demercuration, hydroboration-oxidation,ozonolysis,hydroxylation, Diels Alderreaction,1,2-and1,4-additionreactionsinconjugateddienes.

Reactionsofalkynes;acidity,electrophilic andnucleophilicadditions,hydrationtoformcarbonyl compounds,Alkylationof terminalalkynes.

UNIT-III

Benzene and its reactivity 12h

Concept of aromaticity, Huckel's rule - application to Benzenoid (Benzene, Naphthalene) and Non - Benzenoid compounds (cyclopropenylcation, cyclopentadienyl anion and tropyliumcation)

Reactions - General mechanism of electrophilic aromatic substitution, mechanism of nitration, Friedel- Craft's alkylation and acylation. Orientation of aromatic substitution - ortho, para and meta directing groups. Ring activating and deactivating groups with examples (Electronic interpretation of various groups like NO_2 and Phenolic). Orientation of (i) Amino, methoxy and methyl groups (ii) Carboxy, nitro, nitrile, carbonyl and sulphonic acid groups (iii) Halogens

(Explanation by taking minimum of one example from each type)

GENERAL CHEMISTRY 24 h

UNIT-IV

1. Surface chemistry and chemical bonding

Surface chemistry 6h

Colloids- Coagulation of colloids- Hardy-Schulze rule. Stability of colloids,Protection of Colloids, Gold number.

Adsorption-Physical and chemical adsorption, Langmuir adsorption isotherm, applications of adsorption.

2. Chemical Bonding 6h

Valence bond theory, hybridization, VB theory as applied toClF_3**,**$Ni(CO)_4$**,** Molecular orbital theory -LCAO method, construction of M.O. diagrams for homo-nuclear and hetero-nuclear diatomic molecules (N_2, O_2, CO and NO).

3. HSAB **2h**

Pearson's concept, HSAB principle & its importance, bonding in Hard-Hard and Soft-Soft combinations.

UNIT-V

Stereochemistry of carbon compounds **10h**

Molecular representations- Wedge, Fischer, Newman and Saw-Horse formulae.

Optical isomerism: Optical activity- wave nature of light, plane polarised light, optical rotation and specific rotation.

Chiral molecules- definition and criteria(Symmetry elements)- Definition of enantiomers and diastereomers – Explanation of optical isomerism with examples- Glyceraldehyde, Lactic acid, Alanine, Tartaric acid, 2,3-dibromopentane.

D,L, R,S and E,Z- configuration with examples.

Definition of Racemic mixture – Resolution of racemic mixtures (any 3 techniques)

Co-curricular activities and Assessment Methods

ContinuousEvaluation:Monitoringtheprogressof student'slearning

ClassTests,WorksheetsandQuizzes

Presentations,ProjectsandAssignmentsandGroupDiscussions:Enhancescriticalthinkingskillsand personality

Semester-endExamination:criticalindicatorofstudent'slearningandteachingmethodsadoptedby teachersthroughoutthesemester.

List of Reference Books

Theory:

Morrison, R. N. & Boyd, R. N. Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (PearsonEducation).

Finar, I. L. Organic Chemistry (Volume 1), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).

Finar, I. L. Organic Chemistry (Volume 2: Stereochemistry and the Chemistry of Natural Products), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).

Eliel, E. L. &Wilen, S. H. Stereochemistry of Organic Compounds; Wiley: London, 1994.

Kalsi, P. S. Stereochemistry Conformation and Mechanism; New Age International, 2005.

Practical:

Ahluwalia, V.K. &Aggarwal, R. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis, University Press (2000).
Ahluwalia, V.K. &Dhingra, S. Comprehensive Practical Organic Chemistry: Qualitative Analysis, University Press (2000).
Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)

Additional Resources:

Solomons, T. W. G.; Fryhle, C. B. &Snyder, S. A. Organic Chemistry, 12th Edition, Wiley.
Bruice, P. Y. Organic Chemistry, Eighth Edition, Pearson.
Clayden, J.; Greeves, N.&Warren, S. Organic Chemistry, Oxford.
Nasipuri, D. Stereochemistry of Organic Compounds: Principles and Applications, Third Edition, NewAge International.
Gunstone, F. D. Guidebook to Stereochemistry, Prentice Hall Press, 1975.

LABORATORY COURSE-II **30**hrs (2 h / w)

Practical-II Volumetric Analysis

(At the end of Semester-II)

Course outcomes:

At the end of the course, the student will be able to;

1. Use glassware, equipment and chemicals and follow experimental procedures in the laboratory
2. Understandandexplainthevolumetric analysisbasedonfundamental conceptslearnt in ionic equilibria
3. Learnandidentifythe concepts of a standard solutions, primary and secondary standards
4. Facilitate the learner to make solutions of various molar concentrations. This may include: The concept of the mole; Converting moles to grams; Converting grams to moles; Defining concentration; Dilution of Solutions; Making different molar concentrations.

Volumetric analysis **50 M**

1. Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture.
2. Determination of Fe (II) using $KMnO_4$ with oxalic acid as primary standard.
3. Determination of Cu (II) using $Na_2S_2O_3$ with $K_2Cr_2O_7$ as primary standard.

MODEL PAPER

FIRST YEAR B.Sc., DEGREE EXAMINATION

SEMESTER-II

CHEMISTRY COURSE -II: ORGANIC & GENERAL CHEMISTRY

Time: 3 hours Maximum Marks: 75

PART- A 5 X 5 = 25 Marks

Answer any **FIVE** of the following questions. Each carries **FIVE** marks

1. Write different conformations of n-butane. Explain their relative stability..
2. Explain 1,2- & 1,4- addition reactions of conjugated dienes.
3. Explain the orientation effect of halogens on mono substituted benzene.
4. Explain the mechanism of $E1^{CB}$ elimination reaction.
5. Explain the structure of ClF_3 by Valency Bond theory.
6. What are Hard & soft acids & bases? Explain with examples.
7. Draw the Wedge, Fischer, Newmann& saw-Horse representations for Tartaric acid.
8. Define Enantiomers and Diastereomers and give two examples for each.

PART- B 3 X 10 = 30 Marks

Answer **any three of** the questions. Each carries **TEN** marks

9 (i) Write the preparation of alkanes by Wurtz and Corey-House reaction.
(ii) Explain Halogenation of alkanes. Explain the reactivity and selectivity in free radical substitutions.

10 (i) Explain Baeyer Strain Theory
(ii) Draw the conformations of Cyclohexane and explain their stability by drawing energy profile diagram.

11 (i) Write any two methods of preparation of alkenes.
(ii) Explain the mechanism of Markownikiff and Anti-Markownikoff addition of HBr to alkene.

12 (i) Explain the acidity of 1-alkynes
(ii) How will you prepare acetaldehyde and acetone from alkynes?
(iii) Write alkylation reaction of terminal alkne.

13 Define Huckel rule of aromatic compounds. What are benzenoid and non-benzenoid aromatic compounds? Give examples.

14 Explain the mechanisms of Nitration and Friedel-Craft's alkylation ofBenzene.

PART – C 2X10=20 MaRKS

Answer Any Two of The Following

15 (i) Define Hardy-Schulze rule & Gold number.
(ii) Differentiate Physisorption& Chemisorption. Explain Langmuir adsorption isotherm.

16 Construct the Molecular Orbital diagram for O_2 and NO and explain their bond order and magnetic property.

17 Define racemic mixture. Explain any two techniques for resolution of racemicmixture.

18 i) Define Optical activity and Specific rotation.
(ii) Draw the R- & S- isomers of Alanine, Glyceraldehyde.
(iii) Write the E- & Z- isomers of 2-butene.

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SEMESTER - III

Course III (ORGANICCHEMISTRY&SPECTROSCOPY) 60hrs (4 h / w)

Course outcomes:

At the end of the course, the student will be able to;

1. Understandpreparation,propertiesandreactionsofhaloalkanes,haloarenesand oxygencontaining functionalgroups.
2. Usethesyntheticchemistrylearntinthiscoursetodofunctionalgroup transformations.
3. Toproposeplausiblemechanismsforanyrelevantreaction

ORGANIC CHEMISTRY **34h**

UNIT – I

1. ChemistryofHalogenatedHydrocarbons: 6h

Alkylhalides:Methodsofpreparationandproperties,nucleophilicsubstitutionreactions– SN1,SN2andSNimechanismswithstereochemicalaspectsandeffectofsolventetc.;nucleophilics ubstitutionvs.elimination, Williamson's synthesis.

Arylhalides:Preparation(includingpreparationfromdiazoniumsalts)andproperties,nucleophilicaromatic substitution;SNAr,Benzynemechanism.

2. Alcohols &Phenols **6h**

Alcohols: preparation, properties and relative reactivity of 1°, 2°, 3° alcohols, BouvaeltBlanc Reduction; Oxidationofdiolsbyperiodicacidandleadtetra acetate,Pinacol-Pinacolonerearrangement;

Phenols:Preparationandproperties;Acidityandfactorseffectingit, Ringsubstitution reactions, Reimer–Tiemannand Kolbe's–Schmidt Reactions, Fries and Claisenrearrangements with mechanism;

UNIT-II

CarbonylCompounds **10h**

Structure,reactivity,preparationandproperties;

Nucleophilicadditions,Nucleophilicaddition-eliminationreactionswithammoniaderivatives

MechanismsofAldolandBenzoincondensation, Claisan-Schmidt, Perkin, CannizzaroandWittigreaction,Beckmannhaloformreactionand BaeyerVilligeroxidation,α-substitutionreactions,oxidationsandreductions(Clemmensen, wolf –kishner, with LiAlH4 &NaBH4).

Additionreactionsof α,β-unsaturatedcarbonylcompounds:Michaeladdition.

Activemethylenecompounds: Keto-enoltautomerism.Preparationandsyntheticapplicationsofdiethyl malonateandethylacetoacetate.

UNIT-III

CarboxylicAcidsand their Derivatives **12h**

General methods of preparation, physical properties and reactions of monocarboxylic acids, effect of substituentsonacidicstrength.Typicalreactionsofdicarboxylicacids,hydroxyacidsandunsaturatedacids.

Comparativestudyofnucleophilicsubstitutionatacylgroup-Mechanism ofacidicandalkalinehydrolysisof esters,Claisencondensation,Reformatskyreactions and Curtiusrearrangement

Reactions involving H, OH and COOH groups- salt formation, anhydride formation, acid chloride formation, amide formation and esterification (mechanism). Degradation of carboxylic acids by Huns-Diecker reaction, decarboxylation by Schimdt reaction, Arndt-Eistert synthesis, halogenation by Hell- Volhard- Zelinsky reaction.

SPECTROSCOPY **26 h**

UNIT-IV

MolecularSpectroscopy: **18h**

Interactionofelectromagneticradiationwithmoleculesandvarioustypesof spectra;

Rotation spectroscopy: Selection rules, intensities of spectral lines, determination of bond lengths of diatomic and linear triatomic molecules, isotopic substitution.

Vibrational spectroscopy: Classical equation of vibration, computation offorceconstant, vibrational degrees offreedom for polyatomic molecules, modes of vibration. Selection rules for vibrational transitions, Fundamental frequencies, overtones and hotbands.

Electronic spectroscopy: Energy levels of molecular orbitals (σ, π, n). Selection rules for electronic spectra. Types of electronic transitions in molecules, effect of conjugation. Concept of chromophore. bathochromic and hypsochromic shifts.Beer-Lambert's law and its limitations.

Nuclear Magnetic Resonance (NMR) spectroscopy: Principles of nuclear magnetic resonance, equivalent and non-equivalent protons, position of signals. Chemical shift, NMR splitting of signals - spin-spin coupling, coupling constants. Applications of NMR with suitable examples - ethyl bromide, ethanol, acetaldehyde, 1,1,2-tribromo ethane, ethyl acetate, toluene and acetophenone.

UNIT-V **8h**

Application of Spectroscopy to Simple Organic Molecules

Application of visible, ultraviolet and Infrared spectroscopy in organic molecules.

Application of electronic spectroscopy and Woodward rules for calculating λ_{max} of conjugated dienes and α,β – unsaturated compounds.

Infrared radiation and types of molecular vibrations, functional group and fingerprint region. IR spectra of alkanes, alkenes and simple alcohols (inter and intramolecular hydrogen bonding), aldehydes, ketones, carboxylic acids and their derivatives (effect of substitution on >C=O stretching absorptions).

Co-curricular activities and Assessment Methods

ContinuousEvaluation:Monitoringtheprogressof student'slearning

ClassTests,WorksheetsandQuizzes

Presentations,ProjectsandAssignmentsandGroupDiscussions:Enhancescriticalthinkingskillsand personality

Semester-endExamination:criticalindicatorofstudent'slearningandteachingmethodsadoptedby teachersthroughoutthesemester.

List of Reference Books

1. A Text Book of Organic Chemistry by Bahl and Arunbahl
2. A Text Book of Organic chemistry by I L FinarVol I
3. Organic chemistry by Bruice
4. Organic chemistry by Clayden
5. Spectroscopy by William Kemp
6. Spectroscopy by Pavia
7. Organic Spectroscopy by J. R. Dyer
8. Elementary organic spectroscopy by Y.R. Sharma
9. Spectroscopy by P.S.Kalsi
10. Spectrometric Identification of Organic Compounds by Robert M Silverstein, Francis X Webster
11. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
12. Furniss, B.S., Hannaford, A.J., Smith, P.W.G. &Tatchell, A.R. Practical Organic Chemistry, 5th Ed. Pearson (2012)

13. Ahluwalia, V.K. & Aggarwal, R. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis, University Press (2000).

LABORATORY COURSE -III 30hrs (2 h / w)

Practical Course-IIIOrganic preparations and IR Spectral Analysis

(At the end of Semester- III)

Course outcomes:

Onthecompletionofthecourse,thestudentwillbe abletodothefollowing**:**

1. how to use glassware, equipment and chemicals and follow experimental procedures in the laboratory
2. how to calculate limiting reagent, theoretical yield, and percent yield
3. how to engage in safe laboratory practices by handling laboratory glassware, equipment, and chemical reagents appropriately
4. how to dispose of chemicals in a safe and responsible manner
5. how to perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration.
6. how to create and carry out work up and separation procedures
7. how to critically evaluate data collected to determine the identity, purity, and percent yield of products and to summarize findings in writing in a clear and concise manner

Organic preparations: 40M

i. Acetylation of one of the following compounds:

amines (aniline, o-, m-, ptoluidines and o-, m-, p-anisidine) and phenols (β-naphthol, vanillin, salicylic acid) by any one method:

a. Using conventional method.

b. Using green approach

ii. Benzolyation of one of the following amines

(aniline, o-, m-, p- toluidines and o-, m-, p-anisidine)

iii. Nitration of any one of the following:

a. Acetanilide/nitrobenzene by conventional method

b. Salicylic acid by green approach (using ceric ammonium nitrate).

IR Spectral Analysis **10M**

IR Spectral Analysis of the following functional groups with examples

a) Hydroxyl groups

b) Carbonyl groups

c) Amino groups

d) Aromatic groups

MODEL PAPER

SECOND YEAR B.Sc., DEGREE EXAMINATION

SEMESTER-III

CHEMISTRY COURSE-III: ORGANIC CHEMISTRY & SPECTROSCOPY

Time: 3 hours Maximum Marks: 75

PART- A 5 X 5 = 25 Marks

Answer any **FIVE** of the following questions. Each carries **FIVE** marks

1. Discuss two methods for preparation of aryl halides.
2. Explain the mechanism for Pinacol-Pinacolone rearrangement.
3. Discuss the mechanism for Bayer-villiger oxidation reaction.
4. Explain the effect of substituents on acidic strength of mono-carboxylic acids.
5. Write the mechanism for Claisen Condensation reaction.
6. Write the selection rules in rotational spectroscopy.
7. Explain Spin – Spin coupling and Coupling Constant.
8. Explain types of electronic transitions in UV spectroscopy.

PART- B 3 X 10 = 30 Marks

Answer **any three of the following** questions. Each carries **TEN** marks

9 Give the mechanism & stereochemistry of SN^1& SN^2 reactions of alkyl halides with suitable example.

10 Explain the following reactions with mechanism.
(i) Reimer-Tiemann reaction (ii) Fries rearrangement.

11 Discuss the mechanism for following reactions.
(i) Perkin reaction. (ii) Cannizaro reaction

12 Write the preparation and any three synthetic applications of diethyl malonate.

13 Explain acid and base hydrolysis reaction of esters with mechanism.

PART – C 2x10=20 Marks

Answer any two of the following

14 Explain the mechanisms of Curtius rearrangement & Arndt –Eistert reaction.

15 (i) Write a note on vibrational degrees of freedom for polyatomic molecules.
(ii) Explain different modes of vibrations & selection rules in IR spectroscopy.

16 (i) Define Bathochromic shift. Explain the effect of conjugation in U.V. spectroscopy.
(ii) Discuss the principle of NMR spectroscopy.

17 Write Woodward-Fieser rules for calculating λmax for conjugated dienes and α,β – unsaturated carbonyl compounds , and apply them for one example each.

18 (i) What is Fingerprint region. Explain its signigicance with an example.(ii) Write IR spectral data for any one alcohol, aldehyde and ketone

SEMESTER - IV

Course IV (INORGANIC, ORGANIC AND PHYSICAL CHEMISTRY) 60hrs (4 h / w)

Course outcomes:

At the end of the course, the student will be able to;

1. Tolearnaboutthelawsofabsorptionoflightenergybymoleculesandthesubsequentphotochemical reactions.
2. Tounderstandtheconceptofquantumefficiencyandmechanismsofphotochemicalreactions.

UNIT - I

OrganometallicCompounds **8h**

Definitionandclassification oforganometallic compoundsonthebasisofbondtype,Conceptofhapticityof organicligands.Metalcarbonyls:18electronrule,electroncountofmononuclear, polynuclearandsubstituted metalcarbonylsof3dseries.Generalmethodsofpreparationofmonoandbinuclearcarbonylsof 3d series.P-acceptor behaviour of carbon monoxide. Synergic effects (VB approach) - (MO diagram of CO can be referred to for synergic effect to IR frequencies).

UNIT – II

Carbohydrates 8h

Occurrence,classificationandtheirbiologicalimportance,Monosaccharides: Constitutionandabsolute configurationofglucoseandfructose,epimersandanomers,mutarotation,determinationofringsizeofglucose andfructose,Haworthprojectionsandconformationalstructures;Interconversions ofaldosesandketoses; Killiani-FischersynthesisandRuffdegradation; Disaccharides– Elementarytreatmentofmaltose, lactoseand sucrose.Polysaccharides–Elementarytreatmentof starch.

UNIT- III

Amino acids and proteins 6h

Introduction: Definition of Amino acids, classification of Amino acids into alpha, beta, and gamma amino acids. Natural and essential amino acids - definition and examples, classification of alpha amino acids into acidic, basic and neutral amino acids with examples. Methods of synthesis: General methods of synthesis of alpha amino acids (specific examples - Glycine, Alanine, valine and leucine) by following methods: a) from halogenated carboxylic acid b) Gabriel Phthalimide synthesis c) strecker's synthesis.

Physical properties: Zwitter ion structure - salt like character - solubility, melting points, amphoteric character, definition of isoelectric point.

Chemical properties: General reactions due to amino and carboxyl groups - lactams from gamma and delta amino acids by heating- peptide bond (amide linkage). Structure and nomenclature of peptides and proteins.

Heterocyclic Compounds 7h

Introduction and definition: Simple five membered ring compounds with one hetero atom Ex. Furan. Thiophene and pyrrole - Aromatic character – Preparation from 1, 4, -dicarbonyl compounds, Paul-Knorr synthesis.

Properties: Acidic character of pyrrole - electrophillic substitution at 2 or 5 position, Halogenation, Nitration and Sulphonation under mild conditions - Diels Alder reaction in furan.

Pyridine – Structure - Basicity - Aromaticity- Comparison with pyrrole- one method of preparation and properties - Reactivity towards Nucleophilic substitution reaction.

UNIT- IV

NitrogenContainingFunctionalGroups

Preparation, propertiesandimportantreactionsof nitrocompounds,aminesanddiazoniumsalts.

1. Nitro hydrocarbons 3h

Nomenclature and classification-nitro hydrocarbons, structure -Tautomerism of nitroalkanes leading to aci and keto form, Preparation of Nitroalkanes, reactivity -halogenation, reaction with HONO (Nitrous acid), Nef reaction and Mannich reaction leading to Micheal addition and reduction.

2.Amines: 11h

Introduction,classification,chiralityin amines (pyramidal inversion),importanceand generalmethodsofpreparation.

Properties : Physical properties, Basicity of amines: Effect of substituent, solvent and steric effects. DistinctionbetweenPrimary, secondaryandtertiaryaminesusingHinsberg'smethodandnitrousacid. Discussion of the following reactions with emphasis on the mechanistic pathway: Gabriel Phthalimidesynthesis,Hoffmann-Bromamidereaction,Carbylaminereaction,Mannichreaction,Hoffmann'sexhaustive methylation,Hofmann-eliminationreactionandCopeelimination.

UNIT- V

Photochemistry 5h

Difference between thermal and photochemical processes, Laws of photochemistry- Grothus-Draper's law and Stark-Einstein's law of photochemical equivalence, Quantum yield- Photochemical reaction mechanism- hydrogen- chlorine and hydrogen- bromine reaction. Qualitative description of fluorescence, phosphorescence, Jablonski diagram, Photosensitized reactions- energy transfer processes (simple example).

Thermodynamics **12 h**

The first law of thermodynamics-statement, definition of internal energy and enthalpy, Heat capacities and their relationship, Joule-Thomson effect- coefficient, Calculation of work for the expansion of perfect gas under isothermal and adiabatic conditions for reversible processes, State function. Temperature dependence of enthalpy of formation- Kirchoff s equation, Second law of thermodynamics Different Statements of the law, Carnot cycle and its efficiency, Carnot theorem, Concept of entropy, entropy as a state function, entropy changes in reversible and irreversible processes. Entropy changes in spontaneous and equilibrium processes.

Co-curricular activities and Assessment Methods

ContinuousEvaluation:Monitoringtheprogressof student'slearning

ClassTests,WorksheetsandQuizzes

Presentations,ProjectsandAssignmentsandGroupDiscussions:Enhancescriticalthinkingskillsand personality

Semester-endExamination:criticalindicatorofstudent'slearningandteachingmethodsadoptedby teachersthroughoutthesemester.

List of Reference Books

1. Concise coordination chemistry by Gopalan and Ramalingam
2. Coordination Chemistry by Basalo and Johnson
3. Organic Chemistry by G.Mareloudan, Purdue Univ
4. Text book of physical chemistry by S Glasstone
6. Concise Inorganic Chemistry by J.D.Lee
7. Advanced Inorganic Chemistry Vol-I by Satyaprakash, Tuli, Basu and Madan
8. A Text Book of Organic Chemistry by Bahl and Arunbahl
9. A Text Book of Organic chemistry by I L FinarVol I
10. A Text Book of Organic chemistry by I L FinarVol II
11. Advanced physical chemistry by Gurudeep Raj

LABORATORY COURSE -IV 30hrs(2 h / w)

Practical Course-IVOrganic Qualitative analysis **50 M**

(At the end of Semester- IV)

Course outcomes:

At the end of the course, the student will be able to;

1. Use glassware, equipment and chemicals and follow experimental procedures in the laboratory
2. Determine melting and boiling points of organic compounds
3. Understandtheapplication of concepts of different organic reactions studied in theory part of organic chemistry

Organic Qualitative analysis **50 M**

Analysis of an organic compound through systematic qualitative procedure for functional group identification including the determination of melting point and boiling point with suitable derivatives.

Alcohols, Phenols, Aldehydes, Ketones, Carboxylic acids, Aromatic primary amines, amides and simple sugars

MODEL PAPER

SECOND YEAR B.Sc., DEGREE EXAMINATION

SEMESTER-IV

CHEMISTRY COURSE -IV: INORGANIC, ORGANIC & PHYSICAL CHEMISTRY

Time: 3 hours Maximum Marks: 75

PART- A 5 X 5 = 25 Marks

Answer any **FIVE** of the following questions. Each carries **FIVE** marks

1. Describe the 18 electron rule of mono nuclear and polynuclear metal carbonyls with suitable examples.
2. What are epimers and anomers. Give examples.
3. Discuss about iso electric point and zwitter ion.
4. Discuss the Paul-Knorr synthesis of five membered heterocyclic compounds.
5. Explain Tautomerism shown by nitro alkanes
6. Discuss the basic nature of amines.
7. Write the differences between thermal and photochemical reactions.
8. Derive heat capacities and derive $C_p - C_v = R$

PART- B

1 X 10 = 10 Marks

Answer **any one of the following** questions.

9 What are organometallic compounds? Discuss their Classification on the basis of type of bonds with examples.

10 Discuss the general methods of preparations of mono & bi-nuclear carbonylsof 3d series.

PART- C

3 X 10 = 30 Marks

Answer **any three of the following** questions.

11 Discuss the constitution, configuration and ring size of glucose. Draw the Haworth and Conformational structure of glucose.

12 (i) Explain Ruff's degradation.
(ii) Explain Kiliani- Fischer synthesis.

13 What are amino acids? Write any three general methods of preparation of amino acids.

14 Discuss the aromatic character of Furan, Thiophene and Pyrrole.

15 Write the mechanism for the following.
(i) Nef reaction (ii) Mannich reaction

16 (i) Explain Hinsberg separation of amines.
(ii) Discuss any three synthetic applications of diazonium salts.

PART- D

1 X 10 = 10 Marks

Answer **any one of the following** questions.

17 What is quantum yield? Explain the photochemical combination of Hydrogen-Chlorine and Hydrogen - Bromine.

18 Define entropy. Describe entropy changes in the reversible and irreversible process.

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SEMESTER - IV

CourseV(INORGANIC &PHYSICAL CHEMISTRY) 60 hrs (4 h / w)

Course outcomes:

At the end of the course, the student will be able to;

1. Understand concepts ofboundaryconditionsandquantization,probabilitydistribution,mostprobablevalues, uncertainty andexpectationvalues
2. Applicationofquantizationtospectroscopy.
3. Varioustypesofspectraandtheiruseinstructuredetermination.

INORGANIC CHEMISTRY 26 h

UNIT –I

Coordination Chemistry 12 h

IUPAC nomenclature of coordination compounds, Structural and stereoisomerism in complexes with coordination numbers 4 and 6. Valence Bond Theory (VBT): Inner and outer orbital complexes. Limitations of VBT, Crystal field effect, octahedral symmetry. Crystal field stabilization energy (CFSE), Crystal field effects for weak and strong fields. Tetrahedral symmetry, Factors affecting the magnitude of crystal field splitting energy, Spectrochemical series, Comparison of CFSE for Octahedral and Tetrahedral complexes, Tetragonal distortion of octahedral geometry,Jahn-Teller distortion, square planar coordination.

UNIT –II

1. InorganicReactionMechanism: **4h**

Introductiontoinorganicreactionmechanisms.Conceptofreaction pathways,transitionstate,intermediateand activatedcomplex. Labile and inert complexes, ligand substitution reactions - SN^1 and SN^2,Substitutionreactionsinsquare planar complexes,Trans-effect,theoriesoftranseffect and its applications

2. Stability of metal complexes: 2h

Thermodynamic stability and kinetic stability, factors affecting the stability of metal complexes, chelate effect, determination of composition of complex by Job's method and mole ratio method.

BioinorganicChemistry: 8h

Metalionspresentinbiologicalsystems,classificationofelementsaccordingtotheiractioninbiological system.Geochemical effectonthedistributionofmetals,Sodium/K-pump,carbonicanhydraseand carboxypeptidase.

Excessanddeficiencyofsometracemetals.Toxicityofmetalions(Hg,Pb,CdandAs), reasonsfortoxicity,Useof chelatingagentsinmedicine,Cisplatinasananti-cancerdrug. Ironanditsapplicationinbio-systems,Haemoglobin,Myoglobin.Storageandtransferof iron.

PHYSICAL CHEMISTRY **34 h**

UNIT-III

1 .Phase rule

6hConcept of phase, components, degrees of freedom. Thermodynamic derivation of Gibbs phase rule. Phase diagram of one component system - water system, Study of Phase diagrams of Simple eutectic systems i) Pb-Ag system, desilverisation of lead ii) NaCl-Water system, Congruent and incongruent melting point- Definition and examples for systems having congruent and incongruent melting point , freezing mixtures.

UNIT-IV

Electrochemistry **14h**

Specific conductance, equivalent conductance and molar conductance- Definition and effect of dilution. Cell constant. Strong and weak electrolytes,Kohlrausch's law and its applications, Definition of transport number,determination of transport number by Hittorf's method. Debye-Huckel-Onsagar's equation for strong electrolytes (elementary treatment only), Application of conductivity measurements- conductometric titrations.

Electrochemical Cells- Single electrode potential, Types of electrodes with examples: Metal-metal ion, Gas electrode, Inert electrode, Redox electrode, Metal-metal insoluble salt- salt anion. Determination of EMF of a cell, Nernst equation, Applications of EMF measurements - Potentiometric titrations.

UNIT-V

ChemicalKinetics: **14 h**

The concept of reaction rates. Effect of temperature, pressure, catalyst and other factors on reaction rates. Order and molecularity of a reaction, Derivation of integrated rate equations for zero, first and second order reactions (both for equal and unequal concentrations of reactants). Half–life of a reaction. General methods for determination of order of a reaction. Concept of activation energy and its calculation from Arrhenius equation. Theories of Reaction Rates: Collision theory and Activated Complex theory of bimolecular reactions. Comparison of the two theories (qualitative treatment only).

Co-curricular activities and Assessment Methods

ContinuousEvaluation:Monitoringtheprogressof student'slearning

ClassTests,WorksheetsandQuizzes

Presentations,ProjectsandAssignmentsandGroupDiscussions:Enhancescriticalthinkingskillsand personality

Semester-endExamination:criticalindicatorofstudent'slearningandteachingmethodsadoptedby teachersthroughoutthesemester.

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3. Advanced Inorganic Chemistry Vol-I by Satyaprakash, Tuli, Basu and Madan
4. Advanced physical chemistry by Gurudeep Raj
5. Principles of physical chemistry by Prutton and Marron
6. Advanced physical chemistry by Bahl and Tuli
7. Inorganic Chemistry by J.E.Huheey
8. Basic Inorganic Chemistry by Cotton and Wilkinson
9. A textbook of qualitative inorganic analysis by A.I. Vogel
10. Atkins,P.W.&Paula,J.deAtkin'sPhysicalChemistryEd.,OxfordUniversityPress 10thEd(2014).
11. Castellan,G.W.PhysicalChemistry4thEd.Narosa(2004).
12. Mortimer,R. G.PhysicalChemistry3rdEd. Elsevier:NOIDA,UP(2009).
13. Barrow,G.M.PhysicalChemistry

SEMESTER - IV

CourseV **LABORATORY COURSE** **30**hrs (2 h / w)

Practical-Course -VConductometric and Potentiometric Titrimetry **50 M**

Course outcomes:

At the end of the course, the student will be able to;

1. Use glassware, equipment and chemicals and follow experimental procedures in the laboratory
2. Apply conceptsof electrochemistry in experiments
3. Be familiar with electroanalytical methods and techniques in analytical chemistry which study an analyte by measuring the potential (volts) and/or current (amperes) in an electrochemical cell containing the analyte

Conductometric and Potentiometric Titrimetry 50 M

1. **Conductometric titration**- Determination of concentration of HCl solution using standard NaOH solution.
2. **Conductometric titration**- Determination of concentration of CH_3COOH Solution using standard NaOH solution.
3. **Conductometric titration**- Determination of concentration of CH_3COOH and HCl in a mixture using standard NaOH solution.
4. **Potentiometric titration**- Determination of Fe (II) using standard $K_2Cr_2O_7$ solution.
5. Determination of rate constant for acid catalyzed ester hydrolysis.

MODEL PAPER

SECOND YEAR B.Sc., DEGREE EXAMINATION

SEMESTER-IV

CHEMISTRY COURSE V: INORGANIC & PHYSICAL CHEMISTRY

Time: 3 hours Maximum Marks: 75

PART- A5 X 5 = 25 Marks

Answer any **FIVE** of the following questions. Each carries **FIVE** marks

1. Write note on Jahn-Teller distortion.
2. Explain Labile & inert complexes.
3. Explain Job's method for determination of composition of complex.
4. Explain Thermodynamic derivation of Gibb's phase rule.
5. Explain any two conductometric titrations.
6. Write note on Fuel Cells with examples and applications.
7. What is enzyme catalysis? Write any three factors effecting enzyme catalysis.

8. Derive Michaels- Menten equation.

PART- B 2 X 10 = 20 Marks

Answer **any two of the following** questions. Each carries **TEN** marks

9 Explain Valence Bond theory with Inner and Outer orbital complexes. Write limitations of VBT.

10 Define CFSE. Explain the factors effecting the magnitude of crystal field splitting energy.

11 Explain Trans effect. Explain the theories of trans effect and write any two applications of trans effect.

12 (i) Write the biological functions of Haemoglobin and Myoglobin.
(ii) Write note on use of chelating agents in medicines.

PART- C 23X 10 = 30 Marks

Answer **any three of the following** questions. Each carries **TEN** marks

13 Define Phase rule and terms involved in it. Explain phase diagram of Pb-Agsystem.

14 (i) Explain phase diagram for NaCl-water system.
(ii) Explain briefly about Freezing mixtures.

15 Define Transport number. Write experimental method for the determination of transport number by Hittorf method.

16 (i) Define single electrode potential.
(ii) Explain four types of electrodes with examples.

17 Explain general methods for determination of order of a reaction.

18 Explain Collision theory and Activated complex theory of bimolecularreactions.

***

SUBJECT EXPERTS

Prof. C. Suresh Reddy
Professor, Department of Chemistry
S.V. University
Tirupati.

Dr. M. Mahaboob Pacha
Lecturer in Chemistry
Government Degree College
Ramachandrapuram – 533255

SYLLABUS VETTED BY

Prof. N.V.S. Naidu,
Professor, Department of Chemistry
S.V. University
Tirupati.

ACHARYA NAGARJUNA UNIVERSITY :: NAGARJUNA NAGAR – 522 510

REVISED SYLLABUS OF B.Sc. Chemistry
UNDER CBCS / SEMESTER SYSTEM FRAMEWORK
WITH EFFECT FROM 2020-2021 ADMITTED BATCH

PROGRAMME : THREE-YEAR B.Sc.
Subject : CHEMISTRY

COURSES STRUCTURE: SECOND YEAR SEMESTER – IV from A.Y 2021-22

Year	Semester	Paper Part-II	Subject	Hours /week	Credits	IA	EA	Total
2nd Year	IV Semester	Course-IV	Inorganic, Organic And Physical Chemistry	4	3	25	75	100
		Course-IV Practical	OrganicQualitative analysis	3	2	Max. Marks-50 Internal assessmentat Semester end		50
		Course-V	Inorganic &Physical Chemistry	4	3	25	75	100
		Course-V Practical	Conductometric and Potentiometric Titrimetry	3	2	Max. Marks-50 External assessment at Semester end		50

8/7/22

ACHARYA NAGARJUNA UNIVERSITY :: NAGARJUNANAGAR-522 510

First Year B.Sc. CHEMISTRY SYLLABUS

SEMESTER – IV

Paper – IV : INORGANIC, ORGANIC AND PHYSICAL CHEMISTRY

60hrs (4 h / w)

Course outcomes:

At the end of the course, the student will be able to;

1. To learn about the laws of absorption of light energy by molecules and the sub sequent photo chemical reactions.
2. To understand the concept of quantum efficiency and mechanisms of photochemical reactions.

UNIT – I : ORGANO METALLIC COMPOUNDS 8h

Definition and classification of organo metallic

Compounds on the basis of bond type, Concept of hapticity of organic ligands. Metal carbonyls: 18 electron rule, electron count of mononuclear, poly nuclear and substituted metal carbonyls of 3d series. General methods of preparation of mono and binuclear carbonyls of 3d series. Structures and Shapes of Metal carbonyls of V,Cr, Mn, Fe and Co

UNIT – II : CARBOHYDRATES 8h

Occurrence, classification and their biological importance, Monosaccharide's: Constitution and absolute configuration of glucose and fructose, epimers and anomers, mutarotation, determination of ring size of glucose and fructose, Haworth projections and conformational structures; Inter conversions of aldoses and ketoses; Killiani-Fischer synthesis and Ruff degradation;

UNIT- III : AMINO ACIDS AND PROTEINS **6h**

Introduction: Definition of Amino acids, classification of Amino acids into alpha, beta, and gamma amino acids. Natural and essential amino acids - definition and examples, classification of alpha amino acids into acidic, basic and neutral amino acids with examples. Methods of synthesis: General methods of synthesis of alpha amino acids (specific examples - Glycine, Alanine, valine and leucine) by following methods: a) from halogenated carboxylic acid b) Gabriel Phthalimide synthesis c) strecker's synthesis.

Physical properties: Zwitter ion structure - salt like character - solubility, melting

8/7/22

points, amphoteric character, definition of isoelectric point.

Chemical properties: General reactions due to amino and carboxyl groups - lactams from gamma and delta amino acids by heating- peptide bond (amide linkage).

Heterocyclic Compounds **7h**

Introduction and definition: Simple five membered ring compounds with one hetero atom Ex. Furan. Thiophene and pyrrole - Aromatic character – Preparation from 1, 4, -dicarbonyl compounds, Paul-Knorr synthesis.

Properties: Acidic character of pyrrole - electrophillic substitution at 2 or 5 position, Halogenation, Nitration and Sulphonation under mild conditions - Diels Alder reaction in furan.

Pyridine – Structure - Basicity - Aromaticity- Comparison with pyrrole- one method of preparation and properties - Reactivity towards Nucleophilic substitution reaction.

UNIT- IV: Nitrogen Containing Functional Groups

Preparation, properties and important reactions of nitro compounds, amines and diazoniumsalts.

1. Nitro hydrocarbons **3h**

Nomenclature and classification-nitro hydrocarbons, structure -Tautomerism of nitro alkanes leading to aci and keto form, Preparation of Nitro alkanes, (Gabriel Phthalimide synthesis, Hoffmann- Bromamide reaction) reactivity -halogenation, reaction with HONO (Nitrous acid), Nef reaction and Mannich reaction leading to Micheal addition and reduction.

2. Amines: **11h**

Introduction, classification, chirality in amines (pyramidal inversion), importance and general methods of preparation.

Properties: Physical properties, Basicity of amines: Effect of substituent, solvent and Steric effects. Chemical properties, Distinction between Primary, Secondary and tertiary amines using Hinsberg's method and nitrous acid. Difference between Primary, Secondary and tertiary amines Discussion of the following reactions with emphasison the mechanistic pathway: Hoffmann's exhaustive methylation, Hofmann-elimination reaction and Cope elimination.

3. Diazonium salts : preparation and properties of Diazonium salts.

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UNIT- V : PHOTOCHEMISTRY **5h**

Difference between thermal and photochemical processes, Laws of photochemistry- Grothus- Draper's law and Stark-Einstein's law of photochemical equivalence, Quantum yield- Photochemical reaction mechanism- hydrogen- chlorine and hydrogen- bromine reaction. Qualitative description of fluorescence, phosphorescence, Jablonski diagram, Photosensitized reactions- energy transfer processes (simple example).

Thermodynamics **12 h**

The first law of thermodynamics-statement, definition of internal energy and enthalpy, Heat capacities and their relationship, Joule-Thomson effect- coefficient, Calculation of work for the expansion of perfect gas under isothermal and adiabatic conditions for reversible processes, State function. Temperature dependence of enthalpy of formation- Kirchoff s equation, Second law of thermodynamics Different Statements of the law, Carnot cycle and its efficiency, Carnot theorem, Concept of entropy, entropy as a state function, entropy changes in reversible and irreversible processes. Entropy changes in spontaneous and equilibrium processes.

Co-curricular activities and Assessment Methods Continuous Evaluation: Monitoring the progress of student's learning Class Tests, Worksheets and Quizzes Presentations, Projects and Assignments and Group Discussions: Enhancescritical thinking skills and personality

Semester- end Examination: criticalindicator ofstudent's learning and teaching methods adopted by teachers throughout the semester.

List of Reference Books

1. Concise coordination chemistry by Gopalan and Ramalingam
2. Coordination Chemistry by Basalo and Johnson
3. Organic Chemistry by G.Mareloudan, Purdue Univ
4. Text book of physical chemistry by S Glasstone
6. Concise Inorganic Chemistry by J.D.Lee
7. Advanced Inorganic Chemistry Vol-I by Satyaprakash, Tuli, Basu and Madan
8. A Text Book of Organic Chemistry by Bahl and Arunbahl
9. A Text Book of Organic chemistry by I L FinarVol I
10. A Text Book of Organic chemistry by I L FinarVol II
11. Advanced physical chemistry by Gurudeep Raj

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ACHARYANAGARJUNA UNIVERSITY :: NAGARJUNA NAGAR – 522 510

REVISED UG SYLLABUS UNDER CBCS (Implemented from Academic Year, 2020-21)

Course: B.Sc. **CHEMISTRY**

MODEL PAPER

SECOND YEAR B.Sc., DEGREE EXAMINATION

SEMESTER-IV

COURSE – IV : INORGANIC, ORGANIC & PHYSICAL CHEMISTRY

Time: 3 hours Maximum Marks: 75

PART- A 5 X 5 = 25 Marks

Answer any FIVE of the following questions. Each carries FIVE marks

1. Describe the 18 electron rule of mono nuclear and polynuclear metal carbonyls with suitable examples.

2. What are epimers and anomers. Give examples.

3. Discuss about iso electric point and zwitter ion.

4. Discuss the Paul-Knorr synthesis of five membered heterocyclic compounds.

5. Explain Tautomerism shown by nitro alkanes

6. Discuss the basic nature of amines.

7. Write the differences between thermal and photochemical reactions.

8. Derive heat capacities and derive Cp – Cv = R

PART- B 5 X 10 = 50 Marks

Answer any FIVE of the following questions. Each carries Ten marks

9. What are organometallic compounds? Discuss their Classification on the basis of type of bonds withexamples.

10. Discuss the general methods of preparations of mono & bi-nuclear carbonylsof 3d series.

11. Discuss the constitution, configuration and ring size of glucose. Draw the Haworth and Conformational structure of glucose.

12. (i) Explain Ruff's degradation.

(ii) Explain Kiliani- Fischer synthesis.

13 .What are amino acids? Write any three general methods of preparation of amino acids.

14. Discuss the aromatic character of Furan, Thiophene and Pyrrole.

15. Write the mechanism for the following. (i) Nef reaction

(ii) Mannich reaction

16. (i) Explain Hinsberg separation of amines.

(ii) Discuss any three synthetic applications of diazonium salts.

17.What is quantum yield? Explain the photochemical combination of Hydrogen-Chlorine and Hydrogen - Bromine.

18. Define entropy. Describe entropy changes in the reversible and irreversible process.

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ACHARYA NAGARJUNA UNIVERSITY :: NAGARJUNANAGAR-522 510

First Year B.Sc. CHEMISTRY SYLLABUS

SEMESTER – IV

Paper – V : INORGANIC &PHYSICAL CHEMISTRY

60 hrs (4 h / w)

Course outcomes:

At the end of the course, the student will be able to;

1. Understand concepts of boundary conditions and quantization, probability distribution, most probable values, uncertainty and expectation values
2. Application of quantization to spectroscopy.
3. Various types of spectra and their use in structure determination.

INORGANIC CHEMISTRY **26h**

UNIT – I : Coordination Chemistry **12h**

IUPAC nomenclature of coordination compounds, Structural and stereoisomerism in complexes with coordination numbers 4 and 6. Valence Bond Theory (VBT): Inner and outer orbital complexes. Limitations of VBT, Crystal field effect, octahedral symmetry. Crystal field stabilization energy (CFSE), Crystal field effects for weak and strong fields. Tetrahedral symmetry, Factors affecting the magnitude of crystal field splitting energy, Spectrochemical series, Comparison of CFSE for Octahedral and Tetrahedral complexes.

UNIT –II

1. **Inorganic Reaction Mechanism:** **4h**

Introduction to inorganic reaction mechanisms. Concept of reaction pathways, transition state, intermediate and activated complex. Labile and inert complexes, ligand substitutionreactions - SN^1 and SN^2, Substitution reactions in square planar complexes, Trans-effect, theories of trans effect and its applications

2. **Stability of metal complexes:** **2h**

Thermodynamic stability and kinetic stability, factors affecting the stability of metal complexes, chelate effect, determination of composition of complex by Job's method and mole ratio method.

BioinorganicChemistry: **8h**

Metalions present in biological systems, classification of elements according to their action in biolog ical system. Excess and deficiency of some trace metals.

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Toxicity of metalions (Hg,Pb,CdandAs), reasons for toxicity, Iron and its application in bio-systems, Haemoglobin, Myoglobin.

PHYSICAL CHEMISTRY **34 h**

UNIT-III

1 .Phase rule **6h**

Concept of phase, components, degrees of freedom. Thermodynamic derivation of Gibbs phase rule. Phase diagram of one component system - water system, Study of Phase diagrams of Simple eutectic systems i) Pb-Ag system, desilverisation of lead ii) NaCl-Water system, Congruent and incongruent melting point- Definition and examples for systems having congruent and incongruent melting point , freezing mixtures.

UNIT-IV

Electrochemistry **14h**

Specific conductance, equivalent conductance and molar conductance- Definition and effect of dilution. Cell constant. Strong and weak electrolytes, Kohlrausch's law and its applications, Definition of transport number, determination of transport number by Hittorf's method. Debye – Huckel - Onsagar's equation for strong electrolytes (elementary treatment only), Application of conductivity measurements- conductometric titrations.

Electrochemical Cells- Single electrode potential, Types of electrodes with examples: Metal- metal ion, Gas electrode, Inert electrode, Redox electrode, Metal-metal insoluble salt- salt anion. Determination of EMF of a cell, Nernst equation, Applications of EMF measurements

- Potentiometric titrations.

UNIT-V

Chemical Kinetics: **14 h**

The concept of reaction rates. Effect of temperature, pressure, catalyst and other factors on reaction rates. Order and molecularity of a reaction, Derivation of integrated rate equations for zero, first and second order reactions (both for equal and unequal concentrations of reactants). Half–life of a reaction. General methods for determination of order of a reaction. Concept of activation energy and its calculation from Arrhenius equation.

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Co-curricular activities and Assessment Methods

Continuous Evaluation: Monitoring the progress of student's learning Class Tests, Worksheets and Quizzes Presentations, Projects and Assignments and Group Discussions: Enhances critical thinking skills and personality

Semester- end Examination: critical indicator of student's learning and teaching methods adopted by teachers throughout the semester.

List of Reference Books

1. Text book of physical chemistry by S Glasstone
2. Concise Inorganic Chemistry by J.D.Lee
3. Advanced Inorganic Chemistry Vol-I by Satyaprakash, Tuli, Basu and Madan
4. Advanced physical chemistry by Gurudeep Raj
5. Principles of physical chemistry by Prutton and Marron
6. Advanced physical chemistry by Bahl and Tuli
7. Inorganic Chemistry by J.E.Huheey
8. Basic Inorganic Chemistry by Cotton and Wilkinson
9. A textbook of qualitative inorganic analysis by A.I. Vogel
10. Atkins, P.W. & Paula, J.deAtkin's Physical Chemistry Ed., Oxford University Press 10th Ed (2014).
11. Castellan,G.W.PhysicalChemistry4thEd.Narosa(2004).
12. Mortimer,R. G.PhysicalChemistry3rdEd. Elsevier: NOIDA,UP(2009).
13. Barrow, G.M. Physical Chemistry

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ACHARYANAGARJUNA UNIVERSITY :: NAGARJUNA NAGAR – 522 510

REVISED UG SYLLABUS UNDER CBCS (Implemented from Academic Year, 2020-21)

Course: B.Sc. **CHEMISTRY**

MODEL PAPER

SECOND YEAR B.Sc., DEGREE EXAMINATION

SEMESTER-IV

COURSE -V: INORGANIC & PHYSICAL CHEMISTRY

Time: 3 hours | Maximum Marks: 75

PART- A | 5 X 5 = 25 Marks

Answer any FIVE of the following questions. Each carries FIVE marks

1. What is spectrochemical series.
2. Explain Labile & inert complexes.
3. Explain Job's method for determination of composition of complex.
4. Explain Thermodynamic derivation of Gibb's phase rule.
5. Explain any two conductometric titrations.
6. Explain Kohlraush' s law with examples.
7. Write Arrhenius equation. Explain the terms.
8. Define order and molecularity of a reaction. Distinguish between them.

PART- B | 5 X 10 = 50 Marks

Answer any FIVE of the following questions. Each carries Ten marks

9. Explain Valence Bond theory with Inner and Outer orbital complexes. Write limitations of VBT.
10. Define CFSE. Explain the factors effecting the magnitude of crystal field splitting energy.
11. Explain Trans effect. Write any two applications of trans effect.
12. Write the biological functions of Haemoglobin and Myoglobin.
13. Define Phase rule and terms involved in it. Explain phase diagram of Pb-Ag system.
14. (i) Explain phase diagram for NaCl-water system.

    (ii) Explain briefly about Freezing mixtures.
15. Define Transport number. Write experimental method for the determination of transport number by Hittorf method.
16. (i) Define single electrode potential.

    (ii) Explain four types of electrodes with examples.
17. Explain general methods for determination of order of a reaction.
18. Derive the rate equation for first order reaction and halflife-time of first order reaction .

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ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

REVISED UG SYLLABUS UNDER CBCS
(Implemented from Academic Year, 2020-21)
PROGRAMME: FOUR YEAR B.Sc.(Hons)
Domain Subject: **CHEMISTRY**

Skill Enhancement Courses (SECs) for Semester V, from 2022-23 *(Syllabus with Learning Outcomes, References, Co-curricular Activities & Model Q.P. Pattern)*

Structure of SECs for Semester–V

(To choose One pair from the Five alternate pairs of SECs)

Univ. Code	Course NO. 6&7	Name of Course	Th.Hrs./ Week	IE Marks	EE Marks	Credits	Prac. Hrs./ Wk	Marks	Credits
	6A	Synthetic Organic Chemistry	3	25	75	3	3	50	2
	7A	Analysis of Organic Compounds	3	25	75	3	3	50	2
		OR							
	6B	Analytical Methods in Chemistry-1	3	25	75	3	3	50	2
	7B	Analytical Methods in Chemistry-1	3	25	75	3	3	50	2
		OR							
	6C	Industrial Chemistry-1	3	25	75	3	3	50	2
	7C	Industrial Chemistry-2	3	25	75	3	3	50	2
		OR							
	6D	Environmental Chemistry	3	25	75	3	3	50	2
	7D	Green Chemistry and Nanotechnology	3	25	75	3	3	50	2
		OR							
	6E	Analytical Methods in Chemistry	3	25	75	3	3	50	2
	7E	Cosmetics and Pharmaceutical Chemistry	3	25	75	3	3	50	2

Note-1: For Semester–V, for the domain subject Chemistry, any one of the five pairs of SECs shall be chosen as courses 6 and 7, i.e., 6A&7A or 6B&7B or 6C&7C or 6D&7D or 6E&7E.The pair shall not be broken (ABC allotment is random, not on any priority basis).

Note-2: *One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate skills related to the domain subject in students. The syllabus of SEC will be partially skill oriented. Hence, teachers shall also impart practical training to students on the skills embedded in syllabus citing related real field situations.*

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A.P. State Council of Higher Education

Semester-wise Revised Syllabus under CBCS, 2020-21

Four-year B.Sc.(Hons) Course Code:

Domain Subject: **CHEMISTRY**

IV Year B.Sc.(Hons) –Semester–V

Max Marks: 100+50

***Course6-A*: Synthetic Organic Chemistry**

(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of reagents used in the synthesis of organic compounds.
2. Acquire knowledge on basic concepts indifferent types of pericyclic reactions.
4. Understand the importance of retro synthesis in organic chemistry.
5. Comprehend the applications of different reactions in synthetic organic chemistry.

***II.* Syllabus :** *(Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit-1: Per cyclic reactions **12 hours**

1. A brief introduction to synthetic organic chemistry
2. Features and classification of per cyclic reactions: Phases, nodes and symmetry properties of molecular orbital's in ethylene, 1, 3-butadiene, 1, 3, 5-hexatriene, alkylation and ally radical. Thermal and photochemical reactions.
3. Electro cyclic reactions: Definition and examples, definitions of con and dis rotation, Woodward- Hoffmann selection rules.(Correlation diagrams are not required)
4. Cyclo addition reactions: Definition and examples, definitions of supra facial and an tar facial addition, Woodward- Hoffmann selection rules. (Correlation diagrams are not required)

Unit-2: Organic photochemistry **8hours**

1. Jablonski diagram-singlet and triplettates
2. Photochemistry of Carbonylcompounds-$n-\pi$ and $\pi-\pi^*$ transitions,Norrishtype-1andtype-2 reactions
3. Paterno – Buchi reaction.

Unit-3: Retro synthesis **12 hours**

1. Important terms in Retro synthesis with examples-Disconnection, Target molecule, FGI, Synthon, Retro synthetic analysis, chemo selectivity, region selectivity
2. Importance of Order of events in organic synthesis
3. Retro synthetic analysis of the compounds: a. cyclohexene, b.4-Nitro toluene, c. Paracetamol.

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Unit-4: Synthetic Reactions

8hours

Shapiro reaction, Stork - enamine reaction (only alkylation), Wittig reaction, Robinson annulation, Bailys-Hillman reaction, Heck reaction, Suzuki coupling. Synthesis of aldehydes and ketones using1, 3-Dithiane.

Unit-5: Reagents in Organic Chemistry

10 hours

Oxidizing agents: PCC, PDC, SeO_2 (Riley oxidation), NBS.

Reducing agents: $LiAlH_4$ (with mechanism), LTBA, Metal-solvent reduction (Birch reduction), Catalytic reduction.

III. References

1. Peri cyclic reactions by Ian Fleming, Second edition, Oxford University press.
2. Peri cyclic Reactions-A Text book: Reactions, Applications and Theory by S.Sankararaman, WILEY-VCH.
3. Reaction Mechanismin Organic Chemistry by S.M. Mukherji and S.P.Singh, Revised edition, Trinity Press.
4. Pericyclic reactions-AMechanistic study by S.M.Mukherji, Macmill an India.
5. Organic synthesis: The disconnection approach by Stuart Warren, John Wiley & Sons.
6. Organic chemistry by Jonathan Clayden, Nick Greeves and Stuart Warren, Second edition, Oxford university press.
7. Reactions, Reagents and Rearrangements by S.N. Sanyal, Bharati Bhawan Publishers & Distributors.

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Course6-A: **Synthetic Organic Chemistry-PRACTICAL SYLLABUS**

IV. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. Perform the organic qualitative analysis for the detection of N, S and halogens using the green procedure.
2. Learn the procedure for the separation of mixture famine acids using paper Chromatography.
3. Prepare the TLC plates for TLC chromatography.
4. Acquire skills in conducting column chromatography for the separation of dyes in the given mixture.

V. Practical (Laboratory) Syllabus :(30hrs) (Max.50 Marks)

1. Green procedure for organic qualitative analysis: Detection of N, S and halogens
2. Separation of given mixture of amino acids (glycine and phenyl alanine) using ascending paper chromatography.
3. Separation of a given dye mixture (methyl orange and methylene blue) using TLC (using alumina as adsorbent).
4. Separation of mixture of methyl range and methyl enable by column chromatography
5. Separation of food dyes using Column Chromatography
6. Separation of triglycerides using TLC

VI. Lab References:

1. Vogel A. I. Practical Organic Chemistry, Longman Group Ltd.
2. Bansal R.K. Laboratory Manual of Organic Chemistry, Wiley-Eastern.
3. Ahluwalia V. K. and Aggarwal R. Comprehensive Practical Organic Chemistry, University press.
4. Mann F. G and Saunders B.C, Practical Organic Chemistry, Pearson Education.

VII. Co-Curricular Activities

a) Mandatory:*(Lab/field training of students by teacher:(lab: 10+field:05)*:

1. **For Teacher**: Training of students by the teacher in laboratory and field for not less than15 hours on the field techniques/skills of detection of N, Sand halogens using the green procedure, preparation of TLC plates, detection of organic compounds using R_f values in TLC/ paper chromatography, loading of column, selection of solvent systemforcolumnchromatography,separationofaminoacidsanddyemixtureusingchromatographictechniques.
2. **For Students**: Student shall visit a related industry/chemistry laboratory in universities/research organizations/private sector facility and observes the synthetic reactions. Write their observations and submit a hand written fieldwork/project work report notexceeding10 pages in the given format to the teacher.
3. Max marks for Fieldwork/project work Report: 05.
4. Suggested Format for Fieldwork/project work: *Title page, student details, index page, details of place visited, observations, findings, and acknowledgements.*

4. Unit tests (IE).

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b) Suggested Co-Curricular Activities

1. Training of students by related industrial experts.
2. Assignments, Seminars and Quiz (on related topics), collection of relevant videos and material.
3. Visits of abilities, firms, research organizations etc.
4. Invited lectures and presentations on related topics by field/industrial experts.

VIII. Suggested Question Paper Pattern:

Max. Marks: 75 Time: 3 hrs

SECTION – A (Total: 15 Marks)

Very Short Answer Questions (10Marks:5x2)

SECTION - B (Total: 4x5=20Marks)

(Answer any four questions. Each answer carries 5 marks

(At least 1 question should be given from each Unit)

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SECTION - C (Total: 4x10 =40 Marks)

(Answer any four questions. Each answer carries 10 marks

(At least 1 question should be given from each Unit)

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A.P. State Council of Higher Education

Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)

Domain Subject: **CHEMISTRY**

IV Year B.Sc.(Hons) –Semester–V

Max Marks: 100+50

***Course7-A*: Analysis of Organic Compounds**

(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of mass spectrometry in the structural elucidation of organic compounds.
2. Acquire the knowledge eon structural elucidation of organic compounds.
3. Understand various chromatography methods in the separation and identification of organic compounds.
4. Demonstrate the knowledge gained in solvent extraction for the separate the organic compounds.

***II.* Syllabus :** *(Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit-1: Mass Spectrometry **10 hours**

A brief introduction to analysis of organic compounds

Basic principles, Instrumentation - Mass spectrometer, electron Ionization (Electron Impact ionization, EI), Molecular ions, metastable ions, Isotope abundance. Basic fragmentation types. Fragmentation patterns in Toluene, 2-Butanol, But aldehyde, Propionic acid.

Unit-2: Structural elucidation of organic compounds using IR, NMR, mass spectral data- **8hours**

2, 2, 3, 3-Tetra methyl butane, Butane-2, 3-dione, Prop ionic acid and methyl propionate.

Unit-3: Structural elucidation of organic compounds using IR, NMR, Mass spectral data- **8 hours**

Phenyl acetylene, ace to phenomenon amici acid and p-nitro aniline.

Unit-4: Separation techniques-1 **12 hours**

1. Solvent extraction-Principle and theory, Batch extraction technique, application of batch extraction in the separation of organic compounds from mixture- acid & neutral, base &neutral.
2. Chromatography- Principle and theory, classification, types of adsorbents, eluents, $R_f$values and factors affecting $R_f$values.
3. Thin layer chromatography-principle, experimental procedure, advantages and applications.

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Unit-5: Separation techniques-2 **12 hours**

1. Paper chromatography- Principle, experimental procedure, ascending, descending, radial and two dimensional, applications.
2. Column chromatography-Principle, classification, experimental procedure, applications.
3. HPLC-Principle, Instrumentation-block diagram and applications.

III. References

1. Organic Spectroscopy by William Kemp, Third Edition, Palgrave USA.
2. Introduction to Spectroscopy by Pavia, Lamp man, Kriza nd Vyvyan, Fifth edition, Cen gage.
3. Organic Spectroscopy: Principles and Applications by Jag Mohan, Second edition, Alpha Science.
4. Spector's copy of Organic Compounds by P.S.Kalsi, Seventh edition, New Age International.
5. Spectroscopic Methods in Organic Chemistry by Ian Fleming and Dudley Williams, Seventh edition, Springer.
6. Fundamentals of Analytical Chemistry by F.James Holler, Stanley R Crouch, Donald M.Westand Douglas A.Skoog, Ninth edition, Cen gage.
7. Analytical Chemistry by Gary D.Christian, Purnendu K.Dasgupta and Kevin A.Schug, Seventh edition, Wiley.
8. Quantitative analysis by R.A.Day Jr. and A.L.Underwood, Sixth edition, Pearson.
9. Text book of Vogel's Quantitative Chemical Analysis, Sixth edition, Pearson.

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Course7-A: **Analysis of Organic Compounds - PRACTICAL SYLLABUS**

IV. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. Prepare acetanilide using the green synthesis.
2. Demonstrate the preparation of anazodye.
3. Acquire skills in the separation of organic compounds in the given mixture using solvent extraction

V. Practical (Laboratory) Syllabus:(30hrs) (Max.50 Marks)

1. Identification of various equipment in the laboratory.
2. Acetylating of 1^0 amine by green method: Preparation of acetanilide
3. Rearrangement reaction in green conditions: Benzil - Benzilic acid rearrangement
4. Radical coupling reaction: Preparation of 1,1-bis -2-naphthol
5. Green oxidation reaction: Synthesis of adipic acid
6. Preparation and characterization of biodiesel from vegetable oil/ waste cooking oil
7. Photo reduction of Benzophenone to Benzopinacol in the presence of sunlight.
8. Separation of organic compounds in a mixture (acidic compound + neutral compound) using solvent extraction.
9. Separation of organic compounds in a mixture (basic compound +neutral compound) using solvent extraction.

VI. Lab References:

1. Vogel A. I. Practical Organic Chemistry, Longman Group Ltd.
2. Bansal R.K. Laboratory Manual of Organic Chemistry, Wiley-Eastern.
3. Ahluwalia V. K. and Aggarwal R. Comprehensive Practical Organic Chemistry, University press.
4. Mann F.G and Saunders B.C, Practical Organic Chemistry. Pearson Education.

IV. Co-Curricular Activities:

a) **Mandatory:***(Lab/field training of students by teacher:(lab:10+field:05):*

5. **For Teacher**: Training of students by teacher in laboratory and field for not less than15 hours on the field techniques/skills of preparation of acetanilide, preparation of azodye, use of separating funnel for solvent extraction, separation of organic compounds in a mixture.
6. **For Student**: Student shall visit a related industry/chemistry laboratory in universities/research organizations/private sector facility and observe the techniques used for the separation of organic compounds. Write their observations and submit a handwritten fieldwork/project work report not exceeding10 pages in the given format to the teacher.
7. Max marks for Fieldwork/project work Report: 05.

4. Suggested Format for Fieldwork/project work: *Title page, student details, index page, details of place visited, observations, findings, and acknowledgements.*

5. Unit tests (IE).

***b)* Suggested Co-Curricular Activities**

1. Training of students' by related industrial experts.
2. Assignments, Seminars and Quiz (on related topics), collection of videos and other material.
3. Visits of facilities, firms, research organizations etc.
4. Invited lectures and presentations on related topics by field/industrial experts.

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VIII. Suggested Question Paper Pattern:

Max. Marks: 75 Time: 3 hrs

SECTION - A (Total: 15 Marks)

Very Short Answer Questions (10Marks:5x2)

SECTION - B (Total: 4x5=20Marks)

(Answer any four questions. Each answer carries 5 marks

(At least 1 question should be given from each Unit)

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SECTION - C (Total: 4x10 =40 Marks)

(Answer any four questions. Each answer carries 10 marks

(At least 1 question should be given from each Unit)

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A.P. State Council of Higher Education

Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **CHEMISTRY**
IV Year B.Sc.(Hons)–Semester–V

Max Marks: 100+50

***Course6-B*: Analytical Methods in Chemistry-1**
(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of solvent extraction and ion exchange method.
2. Acquire knowledge on the basic principles of volumetric analysis and gravimetric analysis.
3. Demonstrate the usage of common laboratory apparatus used in quantitative analysis.
4. Understand the theories of different types of titrations.
5. Gain knowledge on different types of errors and their minimization methods.

II. Syllabus:

(Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)

Unit-1: Quantitative analysis-1 **8 hours**

1. A brief introduction to analytical methods in chemistry
2. Principles of volumetric analysis, concentration terms- Molarity, Molality, Normality, v/v, w/v, ppm and ppb, preparing solutions- Standard solution, primary standards and secondary standards.

2. Description and use of common laboratory apparatus- volumetric flask, burette, pipette, beakers, measuring cylinders.

Unit-2: Quantitative analysis-2 **12hours**

1. Principles of volumetric analysis: Theories of acid-base (including study of acid-base titration curves), redox, complex metric, iodometric and precipitation titrations-choice of indicators for the saturations.

2. Principles of gravimetric analysis: precipitation, coagulation, peptization, co precipitation, post precipitation, digestion, filtration, and washing of precipitate, drying and ignition.

Unit-3: Treatment of analytical data **8hours**

Types of errors- Relative and absolute, significant figures and its importance, accuracy - methods of expressing accuracy, errors- Determinate and indeterminate and minimization of errors, precision-methods of expressing precision, standard deviation and confidence interval.

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Unit-4: separation techniques **12 hours**

1. Solvent Extraction: Introduction, principle, techniques, factors affecting solvent extraction, Batch extraction, continuous extraction and counter current extraction. Synergism. Application-Determination of Iron (III).
2. Ion Exchange method: Introduction, action of ion exchange resins, applications.

UNIT-5: Analysis of water **10hours**

Determination of dissolved solids, total hardness of water, turbidity, alkalinity, Dissolved oxygen, COD, determination of chloride using Mohr's method.

III. References

1. Fundamentals of Analytical Chemistry by F.James Holler, Stanley R Crouch, Donald M.Westand Douglas A.Skoog, Ninth edition, Cengage.
2. Analytical Chemistry by Gary D.Christian, Purnendu K.Dasgupta and KevinA.Schug,Seventh edition, Wiley.
3. Quantitative analysis by R.A.DayJr. And A.L.Underwood, Sixth edition, Pearson.
4. Text book of Vogel's Quantitative Chemical Analysis, Sixth edition, Pearson.
5. Text book of Environmental Chemistry and Pollution Control by S.S.Dara and D.D.Mishra, Revised edition, S Chand & CoLtd.

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Course6-B: **Analytical methods in chemistry-1-PRACTICALSYLLABUS**

IV. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. Estimate Iron(II) using standard Potassium dichromate solution
2. Learn the procedure for the estimation of total hardness of water
3. Demonstrate the determination of chloride using Mohr's method
4. Acquire skills in the operation and calibration of pH meter
5. Perform the strong acid vs strong base titration using pH meter

V. Practical (Laboratory)Syllabus:(30hrs) (Max.50 Marks)

1. Estimation of Iron(II) using standard Potassium dichromate solution (using DPA indicator)
2. Estimation of total hardness of water using EDTA
3. Determination of chloride ion by Mohr's method
4. Study the effect on pH of addition of HCl/NaOH to solutions of acetic acid, sodium acetate and their mixtures.
5. Preparation of buffer solutions of different pH (i) Sodium acetate-acetic acid, (ii) Ammonium chloride-ammonium hydroxide.
6. pH metric titration of (i) strong acid vs. strong base, (ii) weak acid vs. strong base.
7. Determination of dissociation constant of a weak acid.

VI. Lab References:

1. Text book of Vogel's Quantitative Chemical Analysis, Sixth edition, Pearson.

VII. Co-Curricular Activities:

a) **Mandatory:***(Lab/field training of students by teacher:(lab:10+field:05):*

8. **For Teacher**: Training of students by the teacher in laboratory and field for not less than 15 hours on the field techniques/skills of calibration of pH meter, Strong acid vsstrongbasetitrationusingpHmeter,determinationofchlorideion,estimationofwaterquality parametersand estimation of Iron(II).
9. **For Student**: Student shall visit a related industry/chemistry laboratory in universities/research organizations/private sector facility and observe various methods used for the analysis of water. Write their observations and submit a hand written fieldwork/project work report not exceeding10 pages in the given format to the teacher.
10. Max marks for Fieldwork/project work Report: 05.

4. Suggested Format for Fieldwork/project work: *Title page, student details, index page, details of place visited, observations, findings, and acknowledgements.*
5. Unit tests (IE).

***b)* Suggested Co-Curricular Activities**

1. Training of students' by related industrial experts.
2. Assignments, Seminars and Quiz (on related topics).
3. Visits to facilities, firms, research organizations etc.
4. Invited lectures and presentations on related topics by field/industrial experts.

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VIII. Suggested Question Paper Pattern:

Max. Marks: 75 Time: 3 hrs

SECTION-A (Total: 15 Marks)

Very Short Answer Questions (10Marks:5x2)

SECTION- B (Total: 4x5=20Marks)

(Answer any four questions. Each answer carries 5 marks

(At least 1 question should be given from each Unit)

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SECTION- C (Total: 4x10 =40 Marks)

(Answer any four questions. Each answer carries 10 marks

(At least 1 question should be given from each Unit)

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A.P. State Council of Higher Education

Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **CHEMISTRY**
IV Year B.Sc.(Hons)–Semester–V

Max Marks: 100+50

***Course7-B*: Analytical Methods in Chemistry-2**
(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of chromatography in the separation and identification of compounds in a mixture
2. Acquire a critical knowledge on various chromatographic techniques.
3. Demonstrate skills related to analysis of water using different techniques.
4. Understand the principles of spectro chemistry in the determination of metal ions.
5. Comprehend the applications of atomic spectroscopy.

***II.* Syllabus :** *(Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit-1: Chromatography-Introduction and classification **10 hours**

Principle, Classification of chromatographic methods, Nature of adsorbents, eluents, $R_f$values, factors affecting $R_f$values.

UNIT-2: TLC and paper chromatography **12 hours**

1. Thin layer chromatography: Principle, Experimental procedure, preparation of plates, adsorbents and solvents, development of chromatogram, detection of spots, applications and advantages.
2. Paper Chromatography: Principle, Experimental procedure, choice of paper and solvents, various modes of development- ascending, descending, radial and two dimensional, applications.

UNIT-3: Column chromatography **12 hours**

1. Column chromatography: Principle, classification, Experimental procedure, stationary and mobile phases, development of the Chromatogram, applications.
2. HPLC: Basic principles, instrumentation –block diagram and applications.

UNIT-4: Spectrophotometry **8hours**

Principle, Instrumentation: Single beam and double beam spectrometer, Beer-Lambert's law- Derivation and deviations from Beer-Lambert's law, applications of Beer-Lambert's law-Quantitative determination ofFe^{+2}, $Mn^{+2}$and Pb^{+2}.

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UNIT-5: Atomic spectroscopy **8hours**

Types, atomizer, atomic absorption and emission and applications.

III. References

1. Fundamental so Analytical Chemistry by F.James Holler, Stanley R Crouch, Donald M.Westand Douglas A.Skoog, Ninth edition, Cengage.
2. Analytical Chemistry by Gary D.Christian, Purnendu K.Dasgupta and Kevin A.Schug, Seventh edition, Wiley.
3. Quantitative analysis by R.A.Day Jr. and A.L.Underwood, Sixth edition, Pearson.
4. Text book of Vogel's Quantitative Chemical Analysis, Sixth edition/ Pearson.

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Course7-B: **Analytical Methods in Chemistry-2- PRACTICAL SYLLABUS**

V. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. Perform the separation of a given dye mixture using TLC
2. Learn the preparation of TLC plates
3. Demonstrate the separation of mixture of amino acids using paper chromatography
4. Acquire skills in using column chromatography for the separation of dye mixture

VI. Practical (Laboratory) Syllabus: (30hrs) (Max.50Marks)

1. Separation of a given dye mixture (methyl orange and methylene blue) using TLC (using alumina as adsorbent).
2. Separation of mixture of methyl orange and methylene blue by column chromatography.
3. Separation of given mixture of amino acids (glycine and phenyl alanine) using ascending paper chromatography.
4. Separation of food dyes using Column Chromatography
5. Separation of triglycerides using TLC
6. Verification of Beer lambert's law. (Using potassium permanganate solution) using colorimeter /spectrophotometer.

VII. Lab References:

1. Text book of Vogel's Quantitative Chemical Analysis, Sixth edition, Pearson.
1. Vogel A. I. Practical Organic Chemistry, Longman Group Ltd.
2. Bansal R.K. Laboratory Manual of Organic Chemistry, Wiley- Eastern.
3. Ahluwalia V. K. and Aggarwal R. Comprehensive Practical Organic Chemistry, University press.
4. Mann F.Gand Saunders B.C, Practical Organic Chemistry, Pearson Education.

VII. Co-Curricular Activities:

a) **Mandatory:***(Lab/field training of students by teacher (lab:10+field:05):*

11. **For Teacher**: Training of students by the teacher in laboratory and field for not lessthan15 hours on the field techniques/skills of determination of hardness of water, using the calorimeter and or Spectrophotometer, preparation of TLC plate, identification of spots in TLC and Paper chromatographic techniques, loading of column, selection of solvent system, separation of amino acids and dyes mixture using chromatographic techniques.
12. **For Student**: Student shall visit a related industry/chemistry laboratory in universities/research organizations/private sector facility and observe the chromatographic techniques used for the separation of compounds. Write their observations and submit a hand written fieldwork/project work report not exceeding 10 pages in the given format to the teacher.
13. Max marks for Fieldwork/project work Report: 05.
4. Suggested Format for Fieldwork/project work: *Title page, student details, index page, details of place visited, observations, findings, and acknowledgements.*
10. Unit tests (IE).

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***b)* Suggested Co-Curricular Activities**

1. Training of students by related industrial experts.
2. Assignments, Seminars and Quiz (on related topics).
3. Visits to facilities, firms, research organizations etc.
4. Invited lectures and presentations on related topics by field/industrial experts.

VIII. Suggested Question Paper Pattern:

Max. Marks: 75 Time: 3 hrs

SECTION – A (Total: 15 Marks)

Very Short Answer Questions (10Marks:5x2)

SECTION - B (Total: 4x5=20Marks)

(Answer any four questions. Each answer carries 5 marks

(At least 1 question should be given from each Unit)

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SECTION - C (Total: 4x10 =40 Marks)

(Answer any four questions. Each answer carries 10 marks

(At least 1 question should be given from each Unit)

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Approved 8/7/22

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **CHEMISTRY**
IV Year B.Sc.(Hons)–Semester–V

Max. Marks : 100+50

***Course6-C*: Industrial Chemistry-1**
(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of different surface coatings.
2. Acquire a critical knowledge on manufacture of ceramics and cement.
3. Understand various steps in the manufacture of cane sugar.
4. Explain the manufacture of pulp and paper.

***II.* Syllabus :** *(Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit-1: Fertilizers **10 hours**

A brief introduction to industrial chemistry

Different types of fertilizers. Manufacture of the following fertilizers: Urea, Ammonium nitrate, Calcium ammonium nitrate, Ammonium phosphates; Polyphosphate, Superphosphate, Compound and mixed fertilizers.

Unit-2: Silicates **10hours**

1. **Ceramics:** Important clays and Felds par. Ceramics-types, uses and manufacture. High technology ceramics and their applications.
2. **Cements:** Classification of cement, ingredients and their role, Manufacture of cement and the setting process, quick setting cements.

Unit-3: Surface Coatings **12 hours**

Objectives of coatings surfaces, preliminary treatment of surface, classification of surface coatings. Paints and pigments-formulation, composition and related properties. Oil paint, modified oils, Pigments, toners and lake pigments, fillers, thinners, enamels, emulsifying agents. Special paints (Heat retardant, Fire retardant, Eco-friendly paint, Plastic paint), Water and Oil paints.

Unit-4: Sugar Chemistry **08hours**

Introduction–Manufacture and recovery of cane sugar from molasses, manufacture of sucrose from beat root, testing and estimation of sucrose.

Unit-5: Paper Industry **10hours**

Pulp and Paper-Introduction, Manufacture of pulp, sulphate or Kraft pulp, soda pulp, sulphite pulp, rag pulp, beating, refining, filling, sizing and colouring of pulp, manufacture of paper.

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III. References:

1. E.Stocchi: *Industrial Chemistry*, Vol-I, Ellis HorwoodLtd.UK
2. J.A.Kent: Riegel's *Hand book of Industrial Chemistry*, CBS Publishers, New Delhi.
3. P.C.Jain, M.Jain: *Engineering Chemistry*, Dhanpat Rai & Sons, Delhi.
4. R. Gopalan, D. Venkappayya, S. Nagarajan: *Engineering Chemistry*, Vikas Publications, NewDelhi.
5. B.K.Sharma: *Engineering Chemistry*, Goel Publishing House, Meerut
6. O. P. Vermani, A. K. Narula: *Industrial Chemistry*, Galgotia Publications Pvt. Ltd., New Delhi.

Course6 C: Industrial Chemistry-1- PRACTICAL SYLLABUS

IV: Lab work-Skills Outcomes:

On successful completion of this practical course, student shall be able to:

1. Determine free acidity in ammonium sulphate fertilizer.
2. Learn the procedure for the Estimation of Calcium in Calcium ammonium nitrate fertilizer.
3. Demonstrate skills on Estimation of phosphoric acid in superphosphate fertilizer.
4. Acquire skills in using colorimetry for the estimation of sucrose.

V. Practical(Laboratory)Syllabus:(30hrs) (Max.50 Marks)

1. Determination of free acidity in ammonium sulphate fertilizer.
2. Estimation of Calcium in Calcium ammonium nitrate fertilizer.
3. Estimation of phosphoric acid in superphosphate fertilizer.
4. Estimation of sucrose by colorimetry.

VI: Lab References

1. Text book of Vogel's Quantitative Chemical Analysis, Sixth edition, Pearson.
2. Text book on Experiments and Calculations in Engineering Chemistry, S.S.Dara, S.Chand.
3. R.Gopalan, D.Venkappayya, S.Nagarajan: Engineering Chemistry, Vikas Publications.
4. B.K.Sharma: Engineering Chemistry, Goel Publishing House, Meerut

VII. Co-Curricular Activities:

a)* Mandatory:(Lab/field training of students by teacher:(lab:10+field:05):*

1. **For Teacher**: Training of students by the teacher in laboratory and field for not less than15 hours on field related skills in determination of free acidity, estimation of calcium and phosphoric acid in a fertilizer, use of colorimeter to estimate sucrose.
2. **For Student**: Student shall visit a related industry/chemistry laboratory in universities/research organizations/private sector facility and observe the surface coatings of surfaces used to prevent the corrosion. Write their observations and submit a hand written fieldwork/project work report not exceeding10 pages in the given format to the teacher.
3. Max marks for Fieldwork/project work Report: 05.
4. Suggested Format for Fieldwork/project work: *Title page, student details, index page, details of place visited, observations, findings, and acknowledgements.*
5. Unit tests (IE).

***b)* Suggested Co - Curricular Activities**

1. Training of students by related industrial experts.
2. Assignments, Seminars and Quiz (on related topics).
3. Visits to facilities, firms, research organizations etc.
4. Invited lectures and presentations on related topics by field/industrial experts.

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VIII. Suggested Question Paper Pattern:

Max. Marks: 75 Time: 3 hrs

SECTION – A (Total: 15 Marks)

Very Short Answer Questions (10Marks:5x2)

SECTION – B (Total: 4x5=20Marks)

(Answer any four questions. Each answer carries 5 marks

(At least 1 question should be given from each Unit)

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SECTION – C (Total: 4x10 =40 Marks)

(Answer any four questions. Each answer carries 10 marks

(At least 1 question should be given from each Unit)

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Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **CHEMISTRY**
IV Year B.Sc.(Hons)–Semester–V

Max Marks: 100

***Course7-C*: Industrial Chemistry-2**
(Skill Enhancement Course (Elective), Credits: 05)

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of industrial waste management.
2. Acquire a critical knowledge on the preparation and applications of organic polymers.
3. Demonstrate the analysis of water quality parameters.
4. Explain the sources of air pollution.

***II.* Syllabus :** *(Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit-1: Organic Polymers-1 **10 hours**

Basic definitions, degree of polymerization, classification of polymers- Natural and Synthetic polymers, Organic and In organic polymers, Thermoplastic and Thermo setting polymers, Plastics, Elastomers, Fibers and Resins, Linear, Branched and Cross-Linked polymers.

Unit-2: Organic Polymers-2 **10 hours**

Addition polymers and Condensation polymers, mechanism of polymerization- Free radical, ionic and Zeigler-Natta polymerization. Industrial manufacturing and applications of following polymers, Polystyrene, Poly acrylonitrile, Poly methacrylate, Poly methyl-methacrylate.

Unit-3: Air Pollution **8 hours**

Sources of air pollution, acid rain, photochemical smog, Greenhouse effect, Formation and depletion of ozone, sources and effects of various gaseous pollutants: NOx, SOx, SPM, CO, hydrocarbons, controlling methods of air pollution.

Unit-4: Analysis of water **10hours**

Determination of total hardness of water, Dissolved oxygen, BOD, COD, total dissolved solids, turbidity, alkalinity, determination of chloride using Mohr's method.

Unit-5: Industrial Waste Management 12hours

Waste water treatment - primary, secondary & tertiary treatment. (All treatment methods in detail). Characteristics of solid wastes, methods of solid waste treatment and disposal, mierobiology involved in solid waste disposal, methods of solid waste disposal-composting, sanitary landfilling- economic, aesthetic and environmental problems.

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III. **References:**

1. E.Stocchi: *IndustrialChemistry*,Vol-I,EllisHorwoodLtd.UK
2. J.A.Kent: Riegel's *Handbook of Industrial Chemistry*, CBS Publishers, New Delhi.
3. P.C.Jain, M.Jain: *Engineering Chemistry*, DhanpatRai & Sons, Delhi.
4. R. Gopalan, D. Venkappayya, S. Nagarajan: *Engineering Chemistry*, Vikas Publications, New Delhi.
5. B.K.Sharma: *Engineering Chemistry*, Goel Publishing House, Meerut
6. O. P. Vermani, A. K. Narula: *Industrial Chemistry*, Galgotia Publications Pvt. Ltd., New Delhi.
7. A.K.De, *Environmental Chemistry*: New Age International Pvt, Ltd, New Delhi.
8. C.k.Varshney: *Water Pollution and Management*, Wiley Eastern Limited, Chennai.
9. S.S. Dara and D.D. Mishra: *Textbook of Environmental Chemistry and Pollution Control*, Revised edition, S.C.Hand &CoLtd.

Course7-C: Industrial Chemistry-2-PRACTICAL SYLLABUS

IV. **Lab work-Skills Outcomes:**

On successful completion of this practical course, student shall be able to:

1. Learn the procedures for the determination of BOD and COD.
2. Demonstrate skills in the determination of chloride in the given water sample.
3. Acquire skills in determining the hardness of water.

V. **Practical (Laboratory) Syllabus:(30hrs)** (Max.50 Marks)

1. Determination of Hardness of water by EDTA titration.
2. Determination of Chemical Oxygen Demand (COD)
3. Determination of Biological Oxygen Demand (BOD)
4. Determination of chloride using Mohr's method.
5. Determination of pH, turbidity and total solids in water sample.
6. Determination of Ca^{+2} and Mg^{+2} in soil sample by flame photometry.
7. Determination of Ph in soil samples using pH metry.

VI. **Lab References:**

1. Textbook of Vogel's Quantitative Chemical Analysis, Sixth edition, Pearson.
2. Textbook on Experiments and Calculations in Engineering Chemistry, S.S.Dara, S.Chand.

VII. **Co-Curricular Activities**

a) **Mandatory:***(Student training by teacher in field related skills: inlab:15,infield: 05 hours):*

1. **For Teacher**: Training of students by the teacher in laboratory and field for not lesst han15hours on the field related skills in determination of hardness of water, estimation of COD and BOD in water sample, determination chloride ion in water sample.
2. **For Student**: Student shall visit a related industry/chemistry laboratory in universities/research organizations/private sector facility and observe the measurement of water quality parameters. Write their observations and submit a hand written fieldwork/project work report not exceeding10 pages in the given format to the teacher.
3. Max marks for Fieldwork/project work Report: 05.
4. Suggested Format for Fieldwork/project work: *Title page, student details, index page, details of place visited, observations, findings, and*

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acknowledgements.

5. Unit tests (IE).

***b)* Suggested Co-Curricular Activities**

1. Training of students by related industrial experts.
2. Assignments, Seminars and Quiz (on related topics).
3. Visits to facilities, firms, research organizations etc.
4. Invitedlecturesandpresentationsonrelatedtopicsbyfield/industrialexperts.

***VIII.* Suggested Question Paper Pattern:**

Max. Marks: 75 Time: 3 hrs

SECTION – A (Total: 15Marks)

Very Short Answer Questions (10Marks:5x2)

SECTION - B (Total: 4x5=20Marks)

(Answer any four questions. Each answer carries 5marks

(At least 1 question should be given from each Unit)

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SECTION – C (Total: 4x10 =40 Marks)

(Answer any four questions. Each answer carries 10 marks

(At least 1 question should be given from each Unit)

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A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **CHEMISTRY**
IV Year B.Sc.(Hons)–Semester –V (from 2022-23)

Course6-D: Environmental Chemistry
(Skill Enhancement Course (Elective), Credits -05 Max Marks: 100+50

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand the environment functions and how it is affected by human activities.
2. Acquire chemical knowledge to ensure sustainable use of the world's resources and ecosystems services.
1. Engage in simple and advanced analytical tools used to measure the different types of pollution.
4. Explain the energy crisis and different aspects of sustainability.
5. Analyze key ethical challenges concerning biodiversity and understand the moral principles, goals and virtues important for guiding decisions that affect Earth's plant and animal life.

II Syllabus : *(Total Hours: 90, including Teaching, Lab, Field Skills Training, Unit tests etc.)*

UNIT-I Introduction 10h

Environment Definition – Concept of Environmental chemistry- Scope and importance of environment in nowadays – Nomenclature of environmental chemistry – Segments of environment– Effects of human activities on environment – Natural resources–Renewable Resources–Solar and biomass energy and Nonrenewable resources – Thermal power and atomic energy – Reactions of atmospheric oxygen and Hydro logical cycle.

UNIT-II

Air Pollution 10h

Definition – Sources of air pollution – Classification of air pollution – Ambient air quality standards- Climate change – Global warming – Pollution from combustion systems- Acid rain – Photochemical smog – Greenhouse effect – Formation and depletion of ozone – Bhopal gas disaster–Instrumental techniques to monitor pollution – Controlling methods of air pollution.

UNIT-III

Water pollution 10h

Unique physical and chemical properties of water – Water quality standards and parameters – Turbidity- pH Dissolved oxygen – BOD, COD, Suspended solids, total dissolved solids, alkalinity– Hardness of water–Methods to convert temporary hard water in to soft water – Methods to convert permanent hard water into soft water – eutrophication and its effects –Industrial waste water treatment.

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UNIT-IV

Chemical Toxicology **10h**

Toxic chemicals in the environment – effects of toxic chemicals – cyanide and its toxic effects – pesticides and its biochemical effects – toxicity of lead, mercury, arsenic and cadmium- Solid waste management.

UNIT-V

Ecosystem and biodiversity **10h**

Ecosystem

Concepts–structure–Functions and types of ecosystem–Abiotic and biotic components – Energy flow and Energy dynamics of ecosystem– Food chains – Food web– Tropic levels–Biogeochemical cycles (carbon, nitrogen and phosphorus)

Biodiversity

Definition – level and types of biodiversity – concept- significance – magnitude and distribution of biodiversity–trends-bio geographical classification of India–biodiversity at national, global and regional level.

III. List of Reference books:

1. Fundamentals of ecology by M.C.Dash
2. A Text book of Environmental chemistry by W. Moore and F.A. Moore
3. Environmental Chemistry by Samir k.Banerji
4. Water pollution, Lalude, MC Graw Hill
5. Environmental Chemistry, Anil Kumar De, Wiley Eastern ltd.
6. Environmental analysis, SM Khopkar (IIT Bombay)
7. Environmental Chemistry by BK Sharma & H Kaur, Goel publishing house.
8. Fundamentals of Environmental Chemistry, Manahan, Stanley. E
9. Applications of Environmental Chemistry, Eugene R. Wiener
10. Web related references suggested by teacher.

Course6-D: Environmental Chemistry – Practical syllabus

IV. Lab work-Skills Outcomes:

On successful completion of this practical course, student shall be able to:

1. List out, identify and handle various equipment in Chemistry lab.
2. Learn the procedures of preparation of standard solutions.
3. Demonstrate skills in operating instruments.
4. Acquire skills in handling spectrophotometer.
5. Analyse water and soil samples.

V. Practical (Laboratory) Syllabus: (30hrs) (Max.50Marks).

1. Identification of various equipment in the laboratory.
2. Determination of carbonate and bicarbonate in water samples by double titration method.
3. Determination of hardness of water using EDTA
   a) Permanent hardness b) Temporary hardness
4. Determination of Chlorides in water samples by Mohr's method.
5. Determination of pH, turbidity and total solids in water sample.
6. Determination of Ca^{+2} and Mg^{+2} in soil sample by flame photometry.
7. Determination of PH in soil samples using pH metry.

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VI. List of Reference books:

1. A Text Book of Quantitative Inorganic Analysis (3rd Edition)–A.I.Vogel
2. Water pollution, Lalude, MC Graw Hill
3. Environmental analysis, SM Khopkar (IIT Bombay)
4. Web related references suggested by teacher.

VII. Co-Curricular Activities:

a) **Mandatory:** (Training of students by teacher on field related skills: 15hrs)

1. For Teacher: Skills training of students by the teacher in classroom, lab and field for not less than15 hours on field related quantitative techniques for the water quality parameters, soil pollution and air pollution.

2. For Student: Individual visit to any one of the local field agencies/research laboratories in universities/research organizations/private sector culminating writing and submission of ahand-written fieldwork/project work Report not exceeding 10 pages in the given format.

3. Max marks for Fieldwork/project work Report: 05.

4. Suggested Format for Fieldwork/project work: *Title page, student details, index page, details of places visited, observations, findings and acknowledgements.*

5. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Training of students by related industrial experts.
2. Visits to research organizations and laboratories.
3. Invited lectures and presentations on related topics by field / industrial experts.
4. Assignments.
5. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
6. Preparation of videos on tools, techniques and applications of spectrophotometry.

VIII. Suggested Question Paper Pattern and Model (Theory):

Max.Marks:75 Time:3 hrs

SECTION - A

Very Short Answer Questions

(Answer any five of the following questions.
Each answer carries 2 marks) (5 x2=10 Marks)

1. Explain the terms with examples
   a) Pollutant b)Contaminant
2. Write the reaction of atmospheric oxygen
3. Explain Greenhouse effect.
4. Brief note on Bhopal gas disaster.
5. Discuss what is Eutrophication and the effects of Eutrophication
6. Write the toxic effect of Lead and Mercury.
7. What are the biochemical effects of pesticides?
8. Explain food chain.
9. Define BOD & COD.
10. Write about the functions of Ecosystem.

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SECTION - B

(Answer any five of the following questions.
Each answer carries 5marks)) (5x5=25Marks
(At least 1 question should be given from each Unit)

1. Explain the scope and importance of environment in now-a-days.
2. Write about Hydrological cycle.
3. What are Acid rains?
4. Write a brief note on Global warming.
5. Explain the reasons for the Hardness of water.
6. Brief about Solid waste management.
7. Describe Biodiversity at regional level.
8. Discuss briefly about Carbon cycle.

SECTION - C

(Answer any four of the following questions.
Eachanswercarries10 marks) (4x10 = 40 Marks)
(At least1question should be given from each Unit)

1. Explain the formation and depletion of the Ozone layer.
2. Discuss about the renewable energy resources.
3. What are the toxic effects of cyanide on the environment?
4. Describe the methods to convert permanent hard water to soft water.
5. Outline the functions and types of ecosystem.
6. Give a detailed account on biodiversity

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Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **CHEMISTRY**
IV Year B. Sc.(Hons) Semester –V (from 2022-23)

Course7- D: Green Chemistry and Nanotechnology
(Skill Enhancement Course (Elective), Credits – 05)

Max Marks: 100+50

1. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand the importance of Green chemistry and Green synthesis.
2. Engage in Microwave assisted organic synthesis.
3. Demonstrate skills using the alternative green solvents in synthesis.
4. Demonstrate and explain enzymatic catalysis.
5. Analyse alternative sources of energy and carry out green synthesis.
6. Carry out the chemical method of nanomaterial synthesis.

VI. Syllabus: *Total Hours: 90, including Teaching, Lab, Field Training, Unit tests etc.)*

UNIT-I Green Chemistry: Part- I 10 hrs

Introduction-Definition of green Chemistry, Need for green chemistry, Goals of Green chemistry Basic principles of green chemistry. Green synthesis- Evaluation of the type of the reaction i) Rearrangements (100% atom economic), ii) Addition reaction (100% atom economic). Organic reactions by Sonication method: apparatus required and examples of sonochemical reactions (Heck, Hunds dicker and Wittig reactions).

UNIT- II Green Chemistry: Part- II 10 hrs

A) Selection of solvent:

i) Aqueous phase reactions

ii) Reactions in ionic liquids, Heck reaction, Suzuki reactions, epoxidation.

Iii) Solid supported synthesis

B) Supercritical CO2: Preparation, properties and applications, (decaffeination, drycleaning)

C) Green energy and sustainability.

UNIT-III Microwave and Ultrasound assisted green synthesis: 10 hrs

Apparatus required, examples of MAOS (synthesis of fused anthroquinones, Leukart reductive amination of ketones) - Advantages and disadvantages of MAOS. Aldolcondensation –Cannizzaro reaction- Diels-Alder reactions-Strecker's synthesis

UNIT-IV Green catalysis and Green synthesis 10 hrs.

Heterogeneous catalysis, use of zeolites, silica, alumina, supported catalysis - bio catalysis: Enzymes, microbes Phase transfer catalysis (micellar /surfactant)

1. Green synthesis of the following compounds: adipic acid, catechol, disodium menudo acetate (alternative Strecker's synthesis)

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2. Microwave assisted reaction in water –Hoffmann elimination – methyl benzoate to benzoic acid – oxidation of toluene and alcohols–microwave assisted reactions in organic solvents. Diels-Alder reactions and decarboxylation reaction.
3. Ultrasound assisted reactions–sonochemical Simmons–Smith reaction (ultrasonic alternative to iodine)

UNIT – V Nanotechnology in Green chemistry 10 hrs

Basic concepts of Nano science and Nanotechnology – Bottom-up approach and Top down approaches with examples – Synthesis of Nano materials – Classification of Nanomaterial – Properties and Application of Nanomaterial. Chemical and Physical properties of Nanoparticles – Physical synthesis of nanoparticles – Inert gas condensation - aerosol method - Chemical Synthesis of nanoparticles – precipitation and co-precipitation method, sol-gel method.

III. Lab work - Skills Outcomes:

On successful completion of this practical course, student shall be able to:

1. List out, identify and handle various equipment in the laboratory.
2. Learn the procedures of green synthesis.
3. Demonstrate skills in the preparation of Nanomaterials.
4. Acquire skills in Microwave assisted organic synthesis.
5. Perform some applications of Nanomaterials.

IV. Practical (Laboratory) Syllabus: (30 hrs.) (Max.50 Marks).

1. Identification of various equipment in the laboratory.
2. Acetylation of 1^0 amine by green method: Preparation of acetanilide
3. Rearrangement reaction in green conditions: Benzil - Benzilic acid rearrangement
4. Radical coupling reaction: Preparation of 1,1-bis -2-naphthol
5. Green oxidation reaction: Synthesis of adipicacid
6. Preparation and characterization of biodiesel from vegetable oil/ waste cooking oil
7. Preparation and characterization of Nanoparticles of gold using tea leaves.
8. Benzoin condensation using Thiamine Hydrochloride as a catalyst instead of cyanide.
9. Photo reduction of Benzophenone to Benzopinacol in the presence of sunlight.

V. Reference books:

1. Green Chemistry Theory and Practical. P.T.Anatas and J.C. Warner
2. Green Chemistry V.K. Ahluwalia Narosa, New Delhi.
3. Real world cases in Green Chemistry M.C. Cann and M.E. Connelly
4. Green Chemistry: Introductory Text M.Lancaster: Royal Society of Chemistry (London)
5. Principles and practice of heterogeneous catalysis, Thomas J.M.,Thomas M.J., John Wiley
6. Green Chemistry: Environmental friendly alternatives R S Sanghli and M.M Srivastava, Narosa Publications
7. Nanotechnology: Health and Environmental Risks, Jo Anne Shatkin, CRC Press (2008).
8. Green Processes for Nanotechnology: From Inorganic to Bioinspired Nanomaterials, Vladimir A. Basiuk, Elena V. Basiuk Springer (2015)
9. Web related references suggested by teacher.

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VI. Co-Curricular Activities:

a) Mandatory: (*Training of students by teacher on field related skills: 15 hours*)

1.For Teacher: Training of students by the teacher in the classroom or in the laboratory for not less than 15 hours on field related quantitative techniques for Enzymatic catalysis, Microwave assisted organic synthesis, Biodiesel preparation etc.

2.For Student: Individual visit to any one of the local field agencies, research laboratories in universities/research organizations/private sector culminating writing and submission of a hand-written fieldwork/project work Report not exceeding 10 pages in the given format.

3. Max marks for fieldwork/project work Report: 05.

4. Suggested Format for fieldwork/project work: *Title page, student details, index page, details of places visited, observations, findings and acknowledgements.*

5. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Training of students by related industrial experts.
2. Visits to research organizations and laboratories.
3. Invited lectures and presentations on related topics by field / industrial experts.
4. Assignments.
5. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
6. Preparation of videos on tools, techniques and applications of Green chemistry and Nano synthesis.

VII. Suggested Question Paper Pattern/ Model (Theory):

Max. Marks: 75 Time: 3 hrs

SECTION -A (Total: 10 Marks)

Very Short Answer Questions

(Answer any five of the following questions.

Each answer carries 2 marks) (5 x2=10 Marks)

1. What are the goals of Green chemistry
2. Explain green synthesis.
3. Discuss epoxidation.
4. Write a brief note on decaffeination
5. Describe the advantages of MAOS.
6. Explain Cannizaro reaction.
7. What are the uses of zeolites?
8. Define bio catalysis.
9. Discuss in brief aerosol method.
10. What is chemical vapour synthesis?

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SECTION - B (Total: 25 Marks)

(Answer any five of the following questions.
Each answer carries 5marks) (5x5=25 Marks)
(At least 1 question should be given from each Unit

1. What is the need of green chemistry?
2. Discuss atom economy reactions.
3. Write short notes on Heck reaction.
4. Explain solid supported synthesis.
5. Describe the green synthetic procedure for the Diels-alder reaction
6. Brief about Bio catalysis.
7. How do you perform Strecker's synthesis by green synthesis method?
8. Discuss about Ultrasound assisted reactions.

SECTION – C (Total: 40 Marks)

(Answer any four of the following questions.
Each answer carries 10 marks) (4x10 = 40 Marks)
(At least 1 question should be given from each Unit)

1. Explain the basic principles of green chemistry
2. Illustrate the sonication method with any two reactions
3. Describe the preparation and properties of super critical carbon dioxide.
4. Explain the synthesis of fused anthro quinines by microwave assisted organic synthesis
5. How are adipic acid and catechol prepared by Green synthesis?
6. Discuss the classification and applications of Nanomaterials.

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A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject - **CHEMISTRY**
IV Year B. Sc.(Hons)–Semester –V (from 2022-23)
Course6-E: Analytical Methods in Chemistry
(Skill Enhancement Course (Elective), Credits: 05)

Max Marks: 100+50

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand the various methods involved in Quantitative analysis.
2. Acquire a critical knowledge on separation techniques.
3. Demonstrate skills related to Chromatographic techniques through hands on experience.
4. Able to engage in safe and accurate laboratory practices by handling laboratory glassware, Equipment and chemical reagents appropriately.
5. Comprehend the applications of Chromatographic techniques in different fields.

***II.* Syllabus:** *Total Hours: 90, including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit-1: Quantitative analysis (10hrs)

Importance in various fields of science, steps involved in chemical analysis. Principles of volumetric analysis: Theories of acid-base, redox, complex metric, iodometric and precipitation titrations Detection of end point in redox titration, choice of indicators for the saturations. Principles of gravimetric analysis: precipitation, coagulation, peptization, co-precipitation, post-precipitation, digestion, filtration and washing of precipitate, drying and ignition.

Unit-2: Treatment of analytical data: (10hrs)

Types of errors, significant figures and its importance, accuracy-methods of expressing accuracy, absolute and relative errors, error analysis and minimization of errors.

Precision - methods of expressing precision, standard deviation and confidence limit. The correlation coefficient.

Unit-3: Separation techniques in Chemical analysis: (10hrs)

Solvent Extraction: Introduction, principle, techniques, factors affecting solvent extraction, Batch extraction, continuous extraction and counter current extraction. Synergism. Application-Determination of Iron (III).

Ion Exchange: Introduction, action of ionex change resins, separation of inorganic mixtures, applications.

Unit– 4: Chromatography: Part - I (10hrs)

Classification of chromatography methods, principles of differential migration adsorption phenomenon, Nature of adsorbents, solvent systems, R_f values, factors effecting R_f values.

Paper Chromatography: Principles, R_f values, experimental procedures, choice of paper and solvent systems, developments of chromatogram-ascending, descending and radial. Two dimensional chromatography, applications.

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Unit– 5: Chromatography: Part - II (10hrs)

Thin layer Chromatography (TLC): Advantages. Principles. factors effecting R_f values. Experimental procedures. Adsorbents and solvents. Preparation of plates. Development of the chromatogram. Detection of the spots. Applications.

Column Chromatography: Principles, experimental procedures, Stationary and mobile Phases, Separation techniques, Applications. HPLC: Basic principles and applications.

III. Lab work-Skills Outcomes:

On successful completion of this practical course, student shall be able to:

1. List out, identify and handle various equipment in Analytical Chemistry lab.
2. Learn the procedures of preparation of primary and secondary standard solutions.
3. Demonstrate skills in the preparation of Paper, Thin layer and column Chromatography.
4. Acquire skills in observing the Chromatogram.
5. Perform some separation techniques of Organic compounds.

IV. Practical (Laboratory) Syllabus :(30hrs) (Max.50Marks).

1. Identification and handling of various laboratory equipment.
2. Determination of Zn(II)/ Mg(II) using EDTA
3. Determination of Fe (II) present in an Iron tablet using $KMnO_4$ .Redox titration.
4. Determination of Saponification value of oil and Iodine value of oil.
5. Paper chromatographic separation of $Fe3^+$, Al^{3+}, and Cr^{3+}.
6. Separation and identification of the monosaccharaides present in the given mixture (glucose & fructose) by paper chromatography. Reporting the Rf values.
7. Chromatographic separation of the active ingredients of plants, flowers and juices by TLC.
8. Separation by Column Chromatography – Mixture of Ortho and Para Nitro anilines.

V. List of Reference Books

1. Analytical Chemistry by Skoog and Miller
2. A text book of qualitative in organic analysis by A.I.Vogel
3. Nano chemistry by Geoffrey Ozin and Andre Arsenault
4. Stereo chemistry by D.Nasipuri
5. Organic Chemistry by Clayden
6. Analytical Chemistry by Gary D. Christian, 6th edition
7. Chemistry experiments for instrumental methods, Donald T Sawyer William
8. Instrumental methods of analysis, Willard, Merit, Dean, 6th edition.
9. Web related references suggested by teacher.

VI. Co-Curricular Activities:

a) Mandatory: (training of students by teacher on field related skills: 15 hrs.)

1. For Teacher: Training of students by the teacher in laboratory and field for not less than 15 hours on field related Quantitative techniques like Separation techniques, preparation by Column, preparation of TLC and determination of the purity of the sample.

2. For Student: Individual visit to any one of the Field agency, research laboratories in universities/research organizations/private sector culminating writing and submission of a hand-written fieldwork/project work Report not exceeding 10 pages in the given format.

3. Max marks for Fieldwork/project work Report: 05.

4. Suggested Format for Fieldwork/project work: *Title page, student details, index page, details of places visited, observations, findings and acknowledgements.*

5. Unit tests (IE).

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6. Critically develop, apply, report, interpret and reflect on strategies for collecting data in the lab and field.

IV. Practical (Laboratory) Syllabus :(30hrs) (Max.50Marks)

1. Identification of various equipment in the laboratory
2. Preparation of talcum powder.
3. Preparation of shampoo.
4. Preparation of hair remover.
5. Preparation of face cream.
6. Preparation of nail polish and nail polish remover.
7. Preparation of Aspirin and it's analysis.
8. Preparation of Magnesium bisilicate (Antacid).
9. Fermentation process.

V. Reference Books:

1. A handbook of Industrial Organic Chemistry by Samuel P Sadtler, JB Lippincott company.
2. Handbook Industrial Chemistry by Mohammad Farhat Ali Khan, First edition
3. Related online methods available.
4. Industrial Chemistry, E. Stocchi: Vol -I, Ellis Horwood Ltd. UK.
5. Engineering Chemistry P.C. Jain, M. Jain:,Dhanpat Rai & Sons, Delhi.
6. Industrial Chemistry, Sharma, B.K. & Gaur. , Goel Publishing House, Meerut(1996)
7. Introduction to Medicinal Chemistry, G.L. Patrick: Oxford University Press, UK.
8. Medicinal and Pharmaceutical Chemistry, Hakishan, V.K. Kapoor:, Vallabh Prakashan, Pitampura, New Delhi.
9. Principles of Medicinal Chemistry, William O. Foye, Thomas L., Lemke, David A. William: B.I. Waverly Pvt. Ltd. New Delhi.
10. Industrial Microbiology, 3rd Edition, JR Casida L.E. (2015New Age International (P) Limited Publishers, New Delhi, India.
11. Industrial Microbiology: An Introduction. 1st Edition, Waites M.J., Morgan N.L., Rockey J.S. and Higton G. (2001) Blackwell Science, London, UK.
12. Microbiology. 5th Edition, Pelczar M.J., Chan E.C.S. and Krieg N.R. (2003) Tata McGraw-Hill Publishing Company Limited, New Delhi.

VI. Co-Curricular Activities:

a) **Mandatory :***(Training of students by teacher on field related skills: 15hrs)*

1. For Teacher: Training of students by the teacher in laboratory and field fornotlessthan15hoursonfield skills/techniques like purification of the crude, Separation techniques, synthesis of simple drugs etc.

2. For Student: Individual visit to any one of the related local agencies, cosmetic industry, pharmaceutical laboratories in universities / research organizations / private sector culminating writing and submission of a hand-written fieldwork/project work Report not exceeding 10 pages in the given format.

3. Max marks for Fieldwork/project work Report: 05.

4. Suggested Format for Fieldwork/project work**:** *Title page, student details, index page, details of places visited, observations, findings and acknowledgements.*

5. Unit tests (IE).

b) <u>Suggested Co-Curricular Activities</u>

1. Training of students by related industrial experts.
2. Assignments(including technical assignments like identifying tools in plant biotechnology and their handling, operational techniques with safety and security, IPR)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on tools and techniques in plant biotechnology.
5. Collection of material/figures/photos related to products of plant tissue culture, writing and organizing them in a systematic way in a file.
6. Visits to plant tissue culture/biotechnology facilities, firms, research organizations etc.

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7. Invited lectures and presentations on related topics by field/industrial experts.

Suggested Question Paper Pattern and Model:

Max.Marks:75 Time:3hrs

SECTION –A (Total: 10 Marks)
Very Short Answer Questions
(Answer any five of the following questions.
Each answer carries 2 marks)(5x2=10 Marks)

1. What are the ingredients in the preparation of talcum powder?
2. Discuss the properties of good hair remover.
3. What are volatile oils? Give any two examples.
4. Describe the importance of Eucalyptus and Rose oils.
5. Explain analgesics with suitable examples.
6. How can a drug be targeted to an organ?
7. What are Antibacterial? Give an example.
8. Give the structure of Phenobarbital. Describe it's use as drug
9. What are Antibiotics? Give any two examples.
10. Explain the discovery of Penicillin.

SECTION - B(Total: 25Marks)
(Answer any five of the following questions.
Each answer carries 5 marks)5x5=25Marks
(At least 1 question should be given from each Unit)

1. Give a detailed outline of the method of preparation of Lipsticks.
2. Differentiate between vanishing and cold creams. Discuss their preparation.
3. Differentiate between Deodorants and Antiperspirants with suitable examples.
4. Outline the synthesis of Aspirin.
5. How do you understand by screening in drug development and what is it's significance?
6. Explain the fermentation process for the synthesis of Lysine.
7. Discuss the synthesis of Glycerol nitrate and give it's medicinal importance.
8. Outline the production of Ethyl alcohol.

SECTION - C (Total: 40 Marks)
(Answer any four of the following questions.
Each answer carries10 marks) 4x10 = 40 Marks
(At least1question should be given from each Unit)

1. What do you mean by cosmetics? Explain with the help of suitable examples its various types. Differentiate between the following with suitable examples:
a) Antiperspirant and Deodorant.
b) Perfumes/Cologne and Aftershaves.
1. c) Perspiration/sweating and pheromone.
   d) Middle notes and base notes in perfumery.
2. (a)Explain what is fermentation?
   (b)Explain Aerobic fermentation.
   (c) Discuss how fermentation can be used for the industrial production of Vitamin B_{12} & Vitamin C
3. (a)Discuss the retro synthetic approach in drug development.
   (b)Outline the synthesis of Ibuprofin.
4. Discuss the production of Cephalosporin in detailed.

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5. Outline the synthesis of Chloramphenicol and Sulphonamide.

Draft syllabus prepared by:

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ACHARYANAGARJUNA UNIVERSITY :: NAGARJUNA NAGAR – 522 510

REVISED UG SYLLABUS UNDER CBCS

(Implemented from Academic Year, 2020-21)

Course: B.Sc. **CHEMISTRY**

Skill Enhancement Courses (SECs) for Semester V, from 2022-23

Suggested Question Paper Pattern for V Semester for the all papers

Max. Marks: 75 Time: 3 hrs

SECTION - A (Total: 5x5=25 Marks)

(Answer any five questions. Each answer carries 5 marks

(At least 1 question should be given from each Unit)

1	
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SECTION - B (Total: 5x10 =50 Marks)

(Answer any four questions. Each answer carries 10 marks(2 question should be given from each Unit)

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9	
10	

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ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

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REVISED SYLLABUS OF BOTANY UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR BOTANY

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Fifteen Courses of 1, 2, 3 & 4 Semesters)

(To be Implemented from 2020-21 Academic Year)

APSCHE/ REVISION OF C.B.C.S – BOTANY COURSE W.E.F.2020-21

S. No.	Semester	Title of the Course (Paper)	Hours /week	Max. Marks (SEE)	Marks in CIA	Credits
1.	Sem.-I/ Course-1	Fundamentals of Microbes and Non-vascular Plants	04	75	25	03
	Course-1 Practical	Fundamentals of Microbes and Non-vascular Plants	03	Max. Marks-50 Internal assessment at Semester end		02
2.	Sem.-II/ Course-2	Basics of Vascular plants and Phytogeography	04	75	25	03
	Course-2 Practical	Basics of Vascular plants and Phytogeography	03	Max. Marks-50 External assessment at Semester end		02
3.	Sem.-III/ Course-3	Anatomy and Embryology of Angiosperms, Plant Ecology and Biodiversity	04	75	25	03
	Course-3 Practical	Anatomy and Embryology of Angiosperms, Plant Ecology and Biodiversity	03	Max. Marks-50 Internal assessment at Semester end		02
4.	Sem.-IV Course-4	Plant Physiology and Metabolism	03	75	25	03
	Course-4Practical	Plant Physiology and Metabolism	03	Max. Marks-50 External assessment at Semester end		02
5.	Sem.- IV Course- 5	Cell Biology, Genetics and Plant Breeding	04	75	25	03
	Course-5Practical	Cell Biology, Genetics and Plant Breeding	03	Max. Marks-50 External assessment at Semester end		02
6.	Sem.– V Course – 6 & 7	Domain related Skill Enhancement Courses (02) - Three (3) pairs ofcourses (each pair has 2 related courses) will be offered, student has to choose a pair of courses.	03	75	25	03
			03	Max. Marks-50 Internal assessment at Semester end		02
			03	75	25	03
			03	Max. Marks-50 Internal assessment at Semester end		02

CBCS / Semester System (w.e.f. 2020-'21 Admitted Batch)

I Semester /Botany Core Course - 1

Fundamentals of Microbes and Non-vascular Plants

(Viruses, Bacteria, Fungi, Lichens, Algae and Bryophytes)

(Total hours of teaching – 60 @ 04 Hrs./Week)

Theory:

Learning Outcomes:

On successful completion of this course, the students will be able to:

- Explain origin of life on the earth.
- Illustrate diversity among the viruses and prokaryotic organisms and can categorize them.
- Classify fungi, lichens, algaeand bryophytes based on theirstructure, reproduction and life cycles.
- Analyze and ascertain the plant disease symptoms due to viruses, bacteria and fungi.
- Recall and explain theevolutionary trends among amphibians of plant kingdom for their shift to land habitat.
- Evaluate the ecological and economic value of microbes, thallophytes and bryophytes.

Unit – 1:Origin of life and Viruses 12Hrs.

1. Origin of life, concept of primary Abiogenesis;Miller and Urey experiment.Five kingdom classification of R.H. Whittaker
2. Discovery of microorganisms, Pasteur experiments, germ theory of diseases.
3. Shape and symmetry of viruses; structure and replication of TMV and Bacteriaphage ; A brief account of Prions and Viroids.
4. A general account on symptoms of plant diseases caused by Viruses.Transmission of plant viruses and their control.
5. Significance of viruses in vaccine production,bio-pesticides and as cloning vectors.

Unit – 2:Special groups of Bacteria and Eubacteria 12Hrs.

1. Brief account of Archaebacteria, ActinomycetesandCyanobacteria.
2. Cell structure and nutritionof Eubacteria.

3. Reproduction- Asexual (Binary fission and endospores) and bacterial recombination (Conjugation, Transformation,Transduction).
4. Economic importance of Bacteria with reference to their role in Agriculture and industry (fermentation and medicine).
5. A general account on symptoms of plant diseases caused by Bacteria; Citrus canker.

Unit – 3: Fungi & Lichens 12 Hrs.

1. General characteristics of fungi and Ainsworth classification (upto classes).
2. Structure, reproductionand life history of(a)*Rhizopus*(Zygomycota)and (b)*Puccinia* (Basidiomycota).
3. Economic uses of fungi in food industry, pharmacy and agriculture.
4. A general account on symptoms of plant diseases caused by Fungi; Blast of Rice.
5. Lichens- structure and reproduction; ecological and economic importance.

Unit – 4: Algae 12 Hrs.

1. General characteristics of Algae (pigments, flagella and reserve food material);Fritsch classification (upto classes).
2. Thallus organization and life cycles in Algae.
3. Occurrence, structure, reproduction and life cycle of (a) *Spirogyra* (Chlorophyceae) and (b) *Polysiphonia* (Rhodophyceae).
4. Economic importance of Algae.

Unit – 5:Bryophytes 12 Hrs.

1. General characteristics of Bryophytes; classification upto classes.
2. Occurrence, morphology, anatomy, reproduction (developmental details are not needed) and life cycle of (a) *Marchantia* (Hepaticopsida) and (b) *Funaria*(Bryopsida).
3. General account on evolution of sporophytes in Bryophyta.

Text books:

- Botany – I (Vrukshasastram-I) : Telugu Akademi, Hyderabad
- Pandey, B.P. (2013) *College Botany, Volume-I*, S. Chand Publishing, New Delhi
- Hait,G., K.Bhattacharya&A.K.Ghosh (2011) *A Text Book of Botany, Volume-I*, New Central Book Agency Pvt. Ltd., Kolkata
- Bhattacharjee, R.N., (2017) *Introduction to Microbiology and Microbial Diversity*, Kalyani Publishers, New Delhi.

Books for Reference:

- Dubey, R.C. &D.K.Maheswari (2013) *A Text Book of Microbiology*,S.Chand& Company Ltd., New Delhi
- Pelczar Jr., M.J., E.C.N. Chan &N.R.Krieg (2001)*Microbiology*, Tata McGraw-Hill Co, New Delhi
- Presscott, L. Harley, J. and Klein, D. (2005)*Microbiology, 6th edition*, Tata McGraw –Hill Co. New Delhi.
- Alexopoulos, C.J., C.W.Mims&M.Blackwell (2007) *Introductory Mycology*,Wiley& Sons, Inc., New York
- Mehrotra, R.S. & K. R. Aneja (1990)*An Introduction to Mycology*. New Age International Publishers, New Delhi
- Kevin Kavanagh (2005) *Fungi ; Biology and Applications* John Wiley & Sons, Ltd.,West Sussex, England
- John Webster & R. W. S. Weber (2007) *Introduction to Fungi*,Cambridge University Press, New York
- Fritsch, F.E. (1945)*The Structure & Reproduction of Algae (Vol. I & Vol. II)*Cambridge UniversityPress Cambridge, U.K..
- Bold, H.C. & M. J. Wynne (1984)*Introduction to the Algae*, Prentice-Hall Inc., New Jersey
- Robert Edward Lee (2008)*Phycology*. Cambridge University Press, New York
- Van Den Hoek, C., D.G.Mann&H.M.Jahns (1996)*Algae : An Introduction to Phycology*. Cambridge University Press, New York
- Shaw, A.J.&B.Goffinet (2000)*Bryophyte Biology*.Cambridge University Press, New York.

Practical syllabus of Botany Core Course – 1/ Semester –

I Fundamentals of Microbes and Non-vascular Plants

(Viruses, Bacteria, Fungi, Lichens, Algae and Bryophytes)

(Total hours of laboratory exercises 30 Hrs. @ 02 Hrs./Week)

Course Outcomes: Onsuccessful completion of this practical course, student shall be able to;

1. Demonstrate the techniques of use of lab equipment, preparing slides and identify the material and draw diagrams exactly as it appears.
2. Observe and identify microbes and lower groups of plants on their own.
3. Demonstrate the techniques of inoculation, preparation of media etc.
4. Identify the material in the permanent slides etc.

Practical Syllabus:

1. Knowledge of Microbiology laboratory practices and safety rules.
2. Knowledge of different equipment for Microbiology laboratory (Spirit lamp, Inoculation loop, Hot-air oven, Autoclave/Pressure cooker, Laminar air flow chamber and Incubator) and their working principles. (In case of the non-availability of the laboratory equipment the students can be taken to the local college/clinical lab. with required infrastructural facilities or they can enter a linkage with the college/lab for future developments and it will fetch creditsduring the accreditation by NAAC).
3. Demonstration of Gram's staining technique for Bacteria.
4. Study of Viruses (Corona and TMV) using electron micrographs/ models.
5. Study of Archaebacteriaand Actinomycetes using permanent slides/ electron micrographs/diagrams.
6. Study of *Anabaena* and *Oscillatoria*using permanent/temporary slides.
7. Study of different bacteria (Cocci, Bacillus, Vibrio and Spirillum) using permanent or temporary slides/ electron micrographs/ diagrams.
8. Study/ microscopic observation of vegetative, sectional/anatomical and reproductive structures of the following using temporary or permanent slides/ specimens/ mounts :
   a. Fungi : *Rhizopus*,*Penicillium*and*Puccinia*

b. Lichens: Crustose, foliose and fruiticose

c. Algae :*Volvox, Spirogyra*, *Ectocarpus*and *Polysiphonia*

d. Bryophyta : *Marchantia*and *Funaria*

9. Study of specimens of Tobacco mosaic disease, Citrus canker and Blast of Rice.

Model Question Paper for Practical Examination

Semester – I/ Botany Core Course – 1

Fundamentals of Microbes and Non-vascular Plants

(Viruses, Bacteria, Fungi, Lichens, Algae and Bryophytes)

Max. Time: 3 Hrs. Max. Marks: 50

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1. Take the T.S. of material 'A' (Fungi), make a temporary mount and make comments about identification. 10 M
2. Identify any 2 algae from the mixture (material 'B') given with specific comments about identification. 10 M
3. Take the T.S. of material 'C' (Bryophyta), make a temporary mount and make comments about identification. 10 M
4. Identify the following with specific reasons. 4x 3 = 12 M
   D. A laboratory equipment of Microbiology
   E. TMV disease / Citrus Canker / Blast of Rice
   F. Archaebacteria /Ascomycete /Cyanobacteria/ Eu-Bacteria
   G. Lichen
5. Record + Viva-voce 5+3 = 8 M

Suggested co-curricular activities for Botany Core Course-1 in Semester-I:

A. Measurable :

a. Student seminars :

1. Baltimore classification of Viruses.
2. Lytic and lysogenic cycle of T- even Bacteriophages.
3. Viral diseases of humans and animals.
4. Retroviruses
5. Bacterial diseases of humans and animals.
6. Significance of Bacteria in Biotechnology and Genetic engineering.
7. Fungi responsible for major famines in the world.
8. Poisonous mushrooms (Toad stools).
9. Algae as Single Cell Proteins (SCPs)
10. Parasitic algae

11. Origin of Bryophytes through : Algae vsPteridophytes
12. Fossil Bryophytes
13. Evolution of gametophytes in Bryophyta.
14. Ecological and economic importance of Bryophytes.

b. Student Study Projects :

1. Isolation and identification of microbes from soil, water and air.
2. Collection and identification of algae from fresh /estuarine /marine water.
3. Collection and identification of fruiting bodies of Basidiomycetes and Ascomycetes.
4. Collection and identification of Lichens from their native localities.
5. Collection of diseased plants/parts and identification of symptoms.
6. Collection and identification of Bryophytes from their native localities.

c. Assignments: Written assignment at home / during '0' hour at college; preparation of charts with drawings, making models etc., on topics included in syllabus.

B. General :

1. Visit to Agriculture and/or Horticulture University/College/Research station to learn about microbial diseases of plants.
2. Visit to industries working on microbial, fungal and algal products.
3. Group Discussion (GD)/ Quiz/ Just A Minute (JAM) on different modules in syllabus of the course.

II Semester /BotanyCoreCourse – 2

Basics of Vascular plants and Phytogeography

(Pteridophytes, Gymnosperms,Taxonomy of Angiosperms and Phytogeography)

(Total hours of teaching – 60 @ 02 Hrs./Week)

Theory:

Learning Outcomes:

On successful completion of this course,the students will be able to:

- Classify and compare Pteridophytes and Gymnosperms based on their morphology, anatomy, reproduction and life cycles.
- Justifyevolutionary trends in tracheophytes to adapt for land habitat.
- Explain the process of fossilization and compare the characteristics of extinct and extant plants.
- Critically understand various taxonomical aids for identification of Angiosperms.
- Analyze the morphology of the most common Angiospermplantsof their localities and recognize their families.
- Evaluate the ecological, ethnic and economic value of different tracheophytes and summarize their goods and services for human welfare.
- Locate different phytogeographical regions of the world and India and can analyze their floristic wealth.

Unit – 1:Pteridophytes **12 Hrs.**

1. General characteristics of Pteridophyta; classification of Smith (1955)uptodivisions.
2. Occurrence, morphology,anatomy, reproduction (developmental details are notneeded) and life historyof (a) *Lycopodium* (Lycopsida) and (b) *Marsilea* (Filicopsida).
3. Stelar evolution in Pteridophytes;
4. Heterospory and seed habit.
5. Brief account of Azolla as biofertilizer.

Unit – 2: Gymnosperms **14 Hrs.**

1. General characteristics of Gymnosperms; Sporneclassification uptoclasses.
2. Occurrence, morphology, anatomy, reproduction (developmental details are not needed) and life history of (a) *Cycas*(Cycadopsida) and (b) *Gnetum* (Gnetopsida).
3. Outlines of geological time scale.
4. A brief account on *Cycadeoidea.*

Unit – 3:Basic aspects of Taxonomy **13Hrs.**

1. Aim and scope of taxonomy; Species concept: Taxonomic hierarchy, species, genus and family.
2. Plant nomenclature: Binomial system, ICBN- rules for nomenclature.
3. Herbarium and its techniques,BSI herbarium and Kew herbarium; concept of digital herbaria.
4. Bentham and Hooker system of classification;
5. Systematic description and economic importance of the following families:
   (a) Annonaceae (b) Curcurbitaceae

Unit – 4: Systematic Taxonomy **13 Hrs.**

1. Systematic description and economic importance of the following families:
   (a) Asteraceae (b) Asclepiadaceae (c)Amaranthaceae(d) Euphorbiaceae
   (e) Arecaceaeand (f) Poaceae
2. Outlines of Angiosperm Phylogeny Group (APG IV).

Unit – 5:Phytogeography **08 Hrs.**

1. Principles of Phytogeography, Distribution (wides, endemic, discontinuous species)
2. Endemism – types and causes.
3. Phytogeographic regions of World.
4. Phytogeographic regions of India.
5. Vegetation types in Andhra Pradesh.

Text books:

- Botany – I (Vrukshasastram-I) : Telugu Akademi, Hyderabad
- Botany – II (Vrukshasastram-II) : Telugu Akademi, Hyderabad
- Acharya, B.C., (2019) *Archchegoniates,* Kalyani Publishers, New Delhi
- Bhattacharya, K., G. Hait&Ghosh, A. K., (2011) *A Text Book of Botany, Volume-II,* New Central Book Agency Pvt. Ltd., Kolkata
- Hait,G., K.Bhattacharya&A.K.Ghosh (2011) *A Text Book of Botany, Volume-I,* New Central Book Agency Pvt. Ltd., Kolkata
- Pandey, B.P. (2013)*College Botany, Volume-I,* S. Chand Publishing, New Delhi
- Pandey, B.P. (2013)*College Botany, Volume-II,* S. Chand Publishing, New Delhi

Books for Reference:

- Smith, G.M. (1971)*CryptogamicBotanyVol. II.,* Tata McGraw Hill, New Delhi
- Sharma,O.P.(2012)Pteridophyta. Tata McGraw-Hill, New Delhi
- Kramer, K.U.&P. S. Green (1990) *The Families and Genera of Vascular Plants, Volume –I*: *Pteridophytes and Gymnosperms*(Ed.K.Kubitzki) Springe-Verlag, New York
- Bhatnagar, S.P. &AlokMoitra (1996)*Gymnosperms*. New Age International, New Delhi
- Coulter, J.M. &C.J.Chamberlain(1910) *Morphology of Gymnosperms,*The University of Chicago Press, Chicago, Illinois
- Govil, C.M. (2007)*Gymnosperms : Extinct and Extant*. KRISHNA Prakashan Media (P) Ltd.Meerut& Delhi
- Sporne, K.R.(1971)*The Morphology of Gymnosperms.*Hutchinsons Co. Ltd., London
- Arnold, C.A., (1947) *An introduction to Paleobotany*McGraw –Hill Book Company,INC, New York
- Stewart,W.N., and G.W.Rothwell (2005) *Paleobotany and the evolution of plants* Cambridge University Press, New York
- Lawrence, George H.M. (1951) *Taxonomy of Vascular Plants.* The McMillan Co., New York
- Heywood, V. H. and D. M. Moore (1984)*Current Concepts in Plant Taxonomy.* Academic Press, London.

- Jeffrey, C. (1982)*An Introduction to Plant Taxonomy.* Cambridge University Press, Cambridge. London.
- Sambamurty, A.V.S.S. (2005)*Taxonomy of Angiosperms* I. K .International Pvt. Ltd., New Delhi
- Singh, G. (2012*). Plant Systematics: Theory and Practice.*Oxford & IBH Pvt. Ltd., NewDelhi.
- Simpson, M.G. (2006). *Plant Systematics.* Elsevier Academic Press, San Diego, CA,U.S.A.
- Cain, S.A . (1944)*Foundations of Plant Geography*Harper & Brothers, N.Y.
- Good, R. (1997)*The Geography of flowering Plants (2nd Edn.)*Longmans, Green &

  Co., Inc., London & Allied Science Publishers, New Delhi
- Mani, M.S (1974)*Ecology & Biogeography of India*Dr. W. Junk Publishers, The Haque

Practical syllabus of Botany Core Course – 2/ Semester –

IIBasics of Vascular plants and Phytogeography

(Pteridophytes, Gymnosperms, Taxonomy of Angiosperms and Phytogeography) (Total hours of laboratory exercises 30 Hrs. @ 02 Hrs. /Week)

Course Outcomes:

On successful completion ofthiscourse students shall be able to:

1. Demonstrate the techniques of section cutting, preparing slides, identifying of the materialand drawing exact figures.
2. Compare and contrast the morphological, anatomical and reproductive features of vascular plants.
3. Identify the local angiosperms of the families prescribed to their genus and species level and prepare herbarium.
4. Exhibit skills of preparing slides, identifying the given twigs in the lab and drawing figures of plant twigs, flowers and floral diagrams as they are.
5. Prepare and preserve specimens of local wild plants using herbarium techniques.

Practical Syllabus:

1. Study/ microscopic observation of vegetative, sectional/anatomical and reproductive structures of the following using temporary or permanent slides/ specimens/ mounts :
   a. Pteridophyta : *Lycopodium* and *Marselia*
   b. Gymnosperms : Pines to *Cycas* and *Gnetum*
2. Study of fossil specimens of *Cycadeoidea* and *Pentoxylon*(photographs /diagrams can be shown if specimens are not available).
3. Demonstration of herbarium techniques.
4. Systematic / taxonomicstudy of locally available plants belonging to the families prescribed in theory syllabus. (Submission of 30 number of Herbarium sheets of wild plants with the standard system is mandatory).
5. Mapping of phytogeographical regions of the globe and India.

Model Question Paper for Practical Examination

Semester – II/ Botany Core Course – 2

Basics of Vascular plants and Phytogeography

(Pteridophytes, Gymnosperms,Taxonomy of Angiosperms and Phytogeography)

Max. Time: 3 Hrs. Max. Marks: 50

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1. Take T.S. of the material 'A' (Pteridophyta), make a temporary slide and justify the identification with apt points. 10 M
2. Take T.S. of the material 'B' (Gymnosperms), make a temporary slide and justify the identification with apt points. 10 M
3. Describe the vegetative and floral characters of the material 'C' (Taxonomy of Angiosperms) and derive its systematic position. 10 M
4. Identify the specimen 'D' (Fossil Gymnosperm) and give specific reasons. 5 M
5. Locate the specified phytogeographical regions (2x2M) in the world / India (E) map supplied to you. 4 M
6. Record + Herbarium & Field note book + Viva-voce 5 +4+3 = 12 M

Suggested co-curricular activities for Botany Core Course-2 in Semester-II:

A. Measurable :

a. Student seminars :

1. Fossil Pteridophytes.
2. Aquatic ferns and tree ferns
3. Ecological and economic importance of Pteridophytes
4. Evolution of male and female gametophytes in Gymnosperms.
5. Endemic and endangered Gymnosperms.
6. Ecological and economic importance of Gymnosperms.
7. Floras and their importance: Flora of British India and Flora of Madras Presidency.
8. Botanical gardens and their importance:National Botanic garden and Royal Botanic garden.
9. Artificial, Natural and Phylogenetic classification systems.
10. Molecular markers used in APG system of classification.
11. Vessel less angiosperms.

12. Insectivorous plants.
13. Parasitic angiosperms.
14. Continental drift theory and species isolation.

b. Student Study Projects :

1. Collection and identification of Pteridophytes from their native locality/ making
an album by collecting photographs of Pteridophytes.

2. Collection and identification of Gymnospermsfrom their native locality/ making an album by collecting photographs of Gymnosperms.

4. Collection of information on famous herbaria in the world and preparation of a report.
5. Collection of information on famous botanic gardens in the world and preparation of a report.
6. Collection of data on vegetables (leafy and fruity) plants in the market and and preparation of a report on their taxonomy.

7. Collection and identification of fresh and dry fruits plants in the market and and preparation of a report on their taxonomy.

7. Collection of data on plants of ethnic and ethnobotanical importance from theirnative locality.

9. Preparation of a local flora by enlisting the plants of their native place.

c. Assignments: Written assignment at home / during '0' hour at college; preparation of charts with drawings, making models etc., on topics included in syllabus.

B. General :

1. Visit to Botanic garden in a Research institute/University to see the live plants.
2. Virtual tour in websites for digital herbaria and botanic gardens.
3. Acquaint with standard floras like – Flora of Madras Presidency, Flora of their respective district in Andhra Pradesh.
4. Looking into vegetation of different phytogeographical regions using web resources.
5. Group Discussion (GD)/ Quiz/ Just A Minute (JAM) on different modules in syllabus of the course.

III Semester /Botany Core Course - 3

Anatomy and Embryology of Angiosperms, Plant Ecology and Biodiversity

(Total hours of teaching – 60 @ 04 Hrs./Week)

Theory:

Learning outcomes:

On successful completion of this course, thestudents will be able to;

- Understand on the organization of tissuesand tissue systems in plants.
- Illustrate and interpret various aspects of embryology.
- Discuss the basic concepts of plant ecology, andevaluate the effects of environmental and biotic factors on plant communities.
- Appraise various qualitative and quantitative parameters to study the population and community ecology.
- Correlate theimportance of biodiversity and consequences due to its loss.
- Enlistthe endemic/endangered flora and fauna from two biodiversity hot spots in India and assess strategies for their conservation.

Unit – 1: Anatomy of Angiosperms 12 Hrs.

1. Organization of apical meristems: Tunica-carpus theory and Histogen theory.
2. Tissue systems–Epidermal, ground and vascular.
3. Anomalous secondary growth in *Boerhaavia* and *Dracaena.*
4. Study of timbers of economic importance - Teak, Red sanders and Rosewood.

Unit – 2: Embryology of Angiosperms 12 Hrs.

1. Structure of anther, anther wall, types of tapetum. Microsporogenesis and development of male gametophyte.
2. Structure of ovule, megasporogenesis; monosporic (*Polygonum*), bisporic (*Allium*) and tetrasporic (*Peperomia*) types of embryo sacs.
3. Types of pollination, pollen – pistil interaction and fertilization.
4. Endosperm - Types and biological importance - Free nuclear, cellular, helobialand ruminate.
5. Development of Dicot (*Capsella bursa-pastoris*) embryo.

Unit – 3: Basics of Ecology **12 Hrs.**

1. Ecology: definition, branches and significance of ecology.
2. Ecosystem: Concept and components, energy flow, food chain, food web, ecologicalpyramids.
3. Biogeochemical Cycles (Carbon and Phosphorous)
4. Plants and environment: Climatic (light and temperature), edaphic and biotic factors.
5. Ecological succession:Hydrosere and Xerosere.

Unit – 4:Population, Community and Production Ecology **12 Hrs.**

1. Population ecology: Natality, mortality, growth curves, ecotypes, ecads
2. Community ecology: Frequency, density, cover, life forms, biological spectrum
3. Concepts of productivity: GPP, NPP and Community Respiration
4. Secondary production, P/R ratio in different Ecosystems.

Unit – 5:Basics of Biodiversity **12 Hrs.**

1. Biodiversity: Basic concepts, Convention on Biodiversity - Earth Summit.
2. Value of Biodiversity; types and levels of biodiversity and Threats to biodiversity
3. Biodiversity Hot spots in India. Biodiversity in North Eastern Himalayas and Western Ghats.
4. Principles and types of conservation: IUCN threat-categories, RED data book
5. Role of NBPGR and NBA in the conservation of Biodiversity.

Text books:

- Botany – III (Vrukshasastram-I) : Telugu Akademi, Hyderabad
- Botany – IV (Vrukshasastram-II) : Telugu Akademi, Hyderabad
- Pandey, B.P. (2013) *College Botany, Volume-II,* S. Chand Publishing, New Delhi
- Pandey, B.P. (2013) *College Botany, Volume-III,* S. Chand Publishing, New Delhi
- Bhattacharya, K., G. Hait&Ghosh, A. K., (2011) *A Text Book of Botany, Volume-II,* New Central Book Agency Pvt. Ltd., Kolkata

Books for Reference:

- Esau, K. (1971)*Anatomy of Seed Plants.* John Wiley and Son, USA.
- Fahn, A. (1990)*Plant Anatomy*, Pergamon Press, Oxford.
- Cutler, D.F., T. Botha & D. Wm. Stevenson (2008)*Plant Anatomy: An Applied Approach,* Wiley, USA.
- Paula Rudall (1987)*Anatomy of Flowering Plants: An Introduction to Structure and Development.* Cambridge University Press, London
- Bhojwani, S. S. and S. P. Bhatnagar (2000)*The Embryology of Angiosperms (4th Ed.),*Vikas Publishing House, Delhi.
- Pandey, A. K. (2000) *Introduction to Embryology of Angiosperms*. CBS Publishers & Distributors Pvt. Ltd. , New Delhi
- Maheswari, P. (1971)*An Introduction to Embryology of Angiosperms*. McGraw Hill Book Co., London.
- Johri, B.M. (2011)*Embryology of Angiosperms.* Springer-Verlag, Berlin
- Pandey, B.P. (2013)*College Botany, Volume-III,* S. Chand Publishing, New Delhi
- Bhattacharya, K., A. K. Ghosh, & G. Hait (2011) *A Text Book of Botany, Volume-IV,* New Central Book Agency Pvt. Ltd., Kolkata
- Kormondy, Edward J. (1996) *Concepts of Ecology,*Prentice-Hall of India Private Limited, New Delhi
- Begon, M., J.L. Harper & C.R. Townsend (2003) *Ecology*, Blackwell Science Ltd., U.S.A.
- Eugene P. Odum (1996)*Fundamentals of Ecology*,Natraj Publishers, Dehradun
- Sharma, P.D. (2012) *Ecology and Environment*. Rastogi Publications, Meerut, India.
- N.S.Subrahmanyam& A.V.S.S. Sambamurty (2008)*Ecology*Narosa Publishing House,

New Delhi

- A. K. Agrawal& P.P. Deo (2010) *Plant Ecology*,Agrobios (India), Jodhpur
- Kumar, H.D. (1992) *Modern Concepts of Ecology (7th Edn.,)*Vikas Publishing Co.,

  New Delhi.
- Newman, E.I. (2000): *Applied Ecology*Blackwell Scientific Publisher, U.K.
- Chapman, J.L&M.J. Reiss (1992): *Ecology - Principles & Applications.*Cambridge

  University Press, U.K.
- Kumar H.D. (2000)*Biodiversity & Sustainable Conservation* Oxford & IBH

  Publishing Co Ltd. New Delhi.
- U. Kumar (2007) *Biodiversity : Principles & Conservation*,Agrobios (India), Jodhpur

Practical syllabus of BotanyCore Course – 3 /Semester – III

Anatomy and Embryology of Angiosperms, Plant Ecology and Biodiversity

(Total hours of laboratory exercises 30 Hrs. @ 02 Hrs./Week)

Course Outcomes:

On successful completion ofthispractical course students shall be able to:

1. Get familiarized with techniques of section making, staining and microscopic study of vegetative, anatomical and reproductive structure of plants.
2. Observe externally and under microscope, identify and draw exact diagrams of the material in the lab.
3. Demonstrate application of methods in plant ecology and conservation of biodiversityand qualitative and quantitative aspects related to populations and communities of plants.

Practical Syllabus

1. Tissue organization in root and shoot apices using permanent slides.
2. Anomalous secondary growth in stemsof *Boerhavia* and *Dracaena*.
3. Study of anther and ovule using permanent slides/photographs.
4. Study of pollen germination and pollen viability.
5. Dissection and observation of Embryo sac haustoria in *Santalum*or*Argemone.*
6. Structure of endosperm (nuclear and cellular) using permanent slides / Photographs.
7. Dissection and observation of Endosperm haustoria in *Crotalaria* or *Coccinia*.
8. Developmental stages of dicot and monocot embryos using permanent slides / photographs.
9. Study of instruments used to measure microclimatic variables; soil thermometer, maximum and minimum thermometer, anemometer, rain gauze, and lux meter. (visit to the nearest/local meteorology station where the data is being collected regularly and record the field visit summary for the submission in the practical).
10. Study of morphological and anatomical adaptations of hydrophytes and xerophytes (02 each). Eichornia root, Nymphaea Petiole, Nerium Leaf & Casuarina Stem
11. Quantitative analysis of herbaceous vegetation in the college campus forfrequency, density and abundance.

12. Identification of vegetation/various plants in college campus and comparison with Raunkiaer's frequency distribution law.
13. Find out the alpha-diversity of plants in the area
14. Mapping of biodiversity hotspots of the world and India.

Model paper for Practical Examination

Semester – III/ Botany Core Course – 3

Anatomy and Embryology of Angiosperms, Plant Ecology and Biodiversity

Max. Time: 3 Hrs. Max. Marks: 50

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1. Take T.S. of the material 'A' (Anatomy), prepare a temporary slide and justify the identification with specific reasons. 10 M
2. Write the procedure for the experiment 'B' (Embryology) and demonstrate the same. 10 M
3. Take T.S. of the material 'C' (Ecology), prepare a temporary slide and justify the identification with specific reasons. 10 M
4. Identify the following with specific reasons. 4 x 3 = 12 M
   D. Anatomy/Embryology
   E. Ecology instrument
   F. Mapping of Biodiversity hot spot
   G. Endemic/endangered plant
5. Record + Viva-voce 5 + 3 = 8 M

Suggested co-curricular activities for Botany CoreCourse-3 in Semester-III:

A. Measurable :

a. Student seminars :

1. Anatomy in relation to taxonomy of Angiosperms.
2. Nodal anatomy
3. Floral anatomy
4. Embryology in relation to taxonomy of Angiosperms.
5. Apomictics and polyembryony.
6. Biogeochemical cycles- Carbon, Nitrogen and Phosphorous.
7. Deforestation and Afforestation.
8. Green house effect and ocean acidification.
9. The Montreal protocol and the Kyoto protocol.
10. Productivity of aquatic ecosystems.
11. Mangrove ecosystems in India.
12. Kollerulake – Ramsar site.
13. Biodiversity hotspots of the world.
14. Origin of Crop plants - Vavilov centers
15. Agrobiodiversity
16. International organizations working on conservation of Biodiversity
17. Nagoya protocol – ABS system.
18. Endemic and endangered plants in Andhra Pradesh.

b. Student Study Projects :

1. Stomata structure in plants from college campus/ their native place.
2. Report on xylem elements in plants using maceration technique.
3. Collection of information on famous herbaria in the world and preparation of a report.
4. Microscopic observations on pollen morphology from plants in college Campus/ their native locality.
5. Study report on germination and viability of pollen in different plants.
6. Observation of anthesis time in different plants and their pollinators.
7. A report on autecology and synecology of some plants in college campus or their native place.
8. Collection of photos of endemic/endangered plant and animal species to Makean album.

9. Biodiversity of the college or their own residential/ native area.
10. Collection of seeds/vegetative organs of rare plant species from their localities and to raise/grow in college garden

c. Assignments: Written assignment at home / during '0' hour at college; preparation of charts with drawings, making models etc., on topics included in syllabus.

B. General :

1. Visit to an arboretum/silviculture station/Forest research institute to see the live timber yielding plants or to visit a local timber depot. to observe various woods.
2. Field visit to a nearby ecosystem to observe the abiotic-biotic relationships.
3. Visit to National park/Sanctuary/Biosphere reserve etc., to observe in-situ conservation of plants and animals.
4. Visit to a Botanical garden or Zoo to learn about ex-situ conservation of rare plants or animals.
5. Group Discussion (GD)/ Quiz/ Just A Minute (JAM) on different modules in syllabus of the course.

III Semester/ BotanyCore Course – 4

Plant Physiology and Metabolism

(Total hours of teaching – 60 @ 04 Hrs./Week)

Theory:

Learning outcomes:

On successful completion of this course,the students will be able to;

- Comprehendthe importance of water in plant life and mechanisms for transport of water and solutes in plants.
- Evaluate the role of minerals in plant nutrition and their deficiency symptoms.
- Interpret the role of enzymes in plant metabolism.
- Critically understand the light reactions and carbon assimilation processes responsible for synthesis of foodin plants.
- Analyze the biochemical reactions in relation to Nitrogen and lipid metabolisms.
- Evaluate the physiological factors that regulategrowth and development in plants.
- Examine the role of light on flowering and explain physiology of plants under stress conditions.

Unit – 1: Plant-Water relations 10 Hrs.

1. Importance of water to plant life, physical properties of water, diffusion, imbibition, osmosis. water potential, osmotic potential, pressure potential.
2. Absorption and lateral transport of water; Ascent of sap
3. Transpiration: stomata structure and mechanism of stomatal movements (K^+ ion flux).
4. Mechanism of phloem transport; source-sink relationships.

Unit – 2: Mineral nutrition, Enzymes and Respiration 14 Hrs.

1. Essential macro and micro mineral nutrients and their role in plants; symptoms of mineral deficiency
2. Absorption of mineral ions; passive and active processes.
3. Characteristics, nomenclature and classification of Enzymes. Mechanism of enzyme action, enzyme kinetics and Enzyme inhibition

4. Respiration: Aerobic and Anaerobic; Glycolysis, Krebs cycle; electron transport system, mechanism of oxidative phosphorylation, Pentose Phosphate Pathway (HMP shunt).

Unit – 3: Photosynthesis and Photorespiration 12 Hrs.

1. Photosynthesis: Photosynthetic pigments, absorption and action spectra; Red drop and Emerson enhancement effect
2. Concept of two photosystems; mechanism of photosynthetic electron transport and evolution of oxygen; photophosphorylation
3. Carbon assimilation pathways (C3,C4 and CAM);
4. Photorespiration - C2 pathway

Unit – 4: Nitrogen and lipid metabolism 12 Hrs.

1. Nitrogen metabolism: Biological nitrogen fixation – asymbiotic and symbiotic nitrogen fixing organisms. Nitrogenase enzyme system.
2. Lipid metabolism: Classification of Plant lipids, saturated and unsaturated fatty acids.
3. Anabolism of triglycerides, β-oxidation of fatty acids, Glyoxylate cycle.

Unit – 5: Plant growth - development and stress physiology 12 Hrs.

1. Growth and Development: Definition, phases and kinetics of growth.
2. Physiological effects of Plant Growth Regulators (PGRs) - auxins, gibberellins, cytokinins, ABA, ethylene and brassinosteroids.
3. Physiology of flowering:Photoperiodism, role of phytochrome in flowering.
4. Seed germination and senescence; physiological changes.
5. Outlines of Stress Physiology (Temperature & Satiety)

Text books:

- Botany – IV (Vrukshasastram-II) : Telugu Akademi, Hyderabad
- Pandey, B.P. (2013) *College Botany, Volume-III,* S. Chand Publishing, New Delhi
- Ghosh, A. K., K. Bhattacharya &G. Hait (2011) *A Text Book of Botany, Volume-III,* New Central Book Agency Pvt. Ltd., Kolkata

Books for Reference:

- Aravind Kumar & S.S. Purohit (1998) *Plant Physiology – Fundamentals and Applications,*AgroBotanica, Bikaner
- Datta, S.C. (2007) *Plant Physiology,*New Age International (P) Ltd., Publishers, New Delhi
- Hans Mohr & P. Schopfer (2006)*Plant Physiology,* Springer (India) Pvt. Ltd., New Delhi
- Hans-Walter heldt (2005) *Plant Biochemistry,*Academic Press, U.S.A.
- Hopkins, W.G. & N.P.A. Huner (2014)*Introduction to Plant Physiology,* Wiley India Pvt. Ltd., New Delhi
- Noggle Ray & J. Fritz (2013)*Introductory Plant Physiology*, Prentice Hall (India), New Delhi
- Pandey, S.M. &B.K.Sinha (2006)*Plant Physiology,* Vikas Publishing House, New Delhi
- Salisbury, Frank B. & Cleon W. Ross (2007)*Plant Physiology*, Thomsen & Wadsworth, Austalia&U.S.A
- Sinha, R.K. (2014) *Modern Plant Physiology,* Narosa Publishing House,New Delhi
- Taiz, L.&E. Zeiger (2003)*Plant Physiology*, Panima Publishers, New Delhi
- Verma, V.(2007)*Text Book of Plant Physiology,*Ane Books India, New Delhi

Practical Syllabus of BotanyCore Course – 4 / Semester – IV

Plant Physiology and Metabolism

(Total hours of laboratory exercises 30 Hrs. @ 02 Hrs. /Week)

Course outcomes: On successful completion of this practical course, students shall be able to:

1. Conduct lab and field experiments pertaining to Plant Physiology, that is, biophysical and biochemical processes using related glassware, equipment, chemicals and plant material.
2. Estimate the quantities and qualitative expressions using experimental results and calculations
3. Demonstrate the factors responsible for growth and development in plants.

Practical Syllabus

1. Determination of osmotic potential of plant cell sap by plasmolytic method using *Rhoeo*/ *Tradescantia* leaves.
2. Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophyte.

3. Determination of rate of transpiration using Cobalt chloride method / Ganong's potometer (at least for a dicot and a monocot).

4. Effect of Temperature on membrane permeability by colorimetric method.

5. Study of mineral deficiency symptoms using plant material/photographs.

6. Demonstration of amylase enzyme activity and study the effect of substrate and Enzymeconcentration.

7. Separation of chloroplast pigments using paper chromatography technique.

8. Demonstration of Polyphenol oxidase enzyme activity (Potato tuber or Apple fruit)
9. Anatomy of C3, C4 and CAM leaves

10. Estimation of protein by biuret method/Lowry method

11. Minor experiments – Osmosis, Arc-auxonometer, ascent of sap through xylem, cytoplasmic streaming.

12. Plant Growth & Development : Sigmoid curve, Avena Curvature test, Bolting, Ripened fruit

Model Question Paper for Practical Examination

Semester – IV/ Botany Core Course – 4

Plant Physiology and Metabolism

Max. Time: 3 Hrs. Max. Marks: 50

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1. Conduct the experiment 'A' (Major experiment), write aim, principle, material and apparatus/equipment, procedure, tabulate results and make conclusion. 20 M
2. Demonstrate the experiment 'B' (Minor experiment), write the principle, procedure and give inference. 10 M
3. Identify the following with apt reasons. 3 x 4 = 12 M

   C. Plant water relations / Mineral nutrition

   D. Plant metabolism, Anatomy of C3/C4/CAM leaves.

   E. Plant growth and development
4. Record + Viva-voce 5 + 3 = 8 M

Suggested co-curricular activities for Botany Core Course-4 in Semester-IV:

A. Measurable :

a. Student seminars :

1. Antitranspirants and their significance in crop physiology and horticulture.
2. Natural chelating agents in plants.
3. Criteria of essentiality of elements and beneficial elements.
4. Hydroponics, aquaponics and aeroponics.
5. Mycorrhizal association and mineral nutrition in plants.
6. Non-proteinaceous enzymes.
7. Respiratory inhibitors.
8. Structure of ATPase and Chemiosmotic hypothesis.
9. Transpiration and photosynthesis – a compromise.
10. Amphibolic pathways and bypass pathways in plants.
11. Non-biological nitrogen fixation.
12. Role of Hydrogenase in nitrogen fixation.
13. Plant lectins – their role in plants and use in medicine and medical research.

b. Student Study Projects :

1. Stomatal densities among different groups of plants.
2. Various treatments (salt, cold, high temperature, heavy metals) and their effects on seed germination.
3. Effects of plant hormones (IAA, Gibberellin and Kinetin) on Seed Germination.
4. Diurnal variation of stomatal behavior in CAM and C3 plants found in local area.
5. Effects of nitrogen fertilizer on plant growth.
6. Enumeration of C3, C4 and CAM plants in the local area.
7. Effect of different light wavelengths (red light, green light, blue light) on apparent photosynthesis in terms of growth.
8. Light effects on leaf growth and leaf orientation.
9. Artificial Fruit Ripening Process by various treatments (carbide and ethylene).
10. Study of relative water content and water retention by leaves under different environments.
11. Study of soil nutrients in local agricultural fields.
12. Study of mineral deficiency symptoms of various crops of local area.
13. Study of local weeds in crop fields.
14. Studies on seed storage proteins, oils and starch in local millets and pulse crops.
15. Making a report on LDPs, SDPs and DNPs in their locality.

c. Assignments: Written assignment at home / during '0' hour at college; preparation of charts with drawings, making models etc., on topics included in syllabus.

B. General :

1. Group Discussion (GD)/ Quiz/ Just A Minute (JAM) on different modules in syllabus of the course.
2. Visit to a Plant Physiology laboratory in a University or Physiology division in a Agriculture/Horticulture University/Research station.

IV Semester / BotanyCoreCourse –5

Cell Biology, Genetics and Plant Breeding

(Total hours of teaching – 60 @ 04 Hrs./Week)

Theory:

Learning outcomes:

On successful completion of this course,the students will be able to:

- Distinguish prokaryotic and eukaryotic cells and design the model of a cell.
- Explain the organization of a eukaryotic chromosomeand the structure of genetic material.
- Demonstrate techniques to observe the cell and its componentsunder a microscope.
- Discuss the basics of Mendelian genetics, its variations and interpret inheritance of traits in living beings.
- Elucidate the role of extra-chromosomal genetic material for inheritance of characters.
- Evaluate the structure, function and regulation of genetic material.
- Understand the application of principles and modern techniques inplant breeding.
- Explain the procedures of selection and hybridization for improvement of crops.

Unit – 1: The Cell **12 Hrs.**

1. Cell theory; prokaryotic vs eukaryotic cell; a brief account onultra-structure of a plant cell.
2. Ultra-structure of cell wall.
3. Ultra-structure of plasma membrane and various theories on its organization.
4. Polymorphic cell organelles (Plastids); ultrastructure of chloroplast. Plastid DNA.

Unit – 2: Chromosomes **12 Hrs.**

1. Prokaryotic vs eukaryotic chromosome. Morphology of a eukayotic chromosome.
2. Euchromatin and Heterochromatin; Karyotype and ideogram.
3. Brief account of chromosomal aberrations - structural and numerical changes
4. Organization of DNA in a chromosome (solenoid and nucleosome models).

Unit – 3:Mendelian and Non-Mendelian genetics 14Hrs.

1. Mendel's laws of inheritance. Incomplete dominance and co-dominance; Multiple allelism.
2. Complementary, supplementary and duplicate gene interactions (plant based examples are to be dealt).
3. A brief account of linkage and crossing over; Chromosomal mapping - 2 point and 3 point test cross.
4. Concept of maternal inheritance (Corren's experiment on *Mirabilis jalapa*); Mitochondrial DNA.

Unit – 4:Structure and functions of DNA 12 Hrs.

1. Watson and Crick model of DNA. Brief account on DNA Replication (Semi-conservative method).
2. Brief account on Transcription, types and functions of RNA. Gene concept and genetic code and Translation.
3. Regulation of gene expression in prokaryotes - Lac Operon.

Unit – 5:Plant Breeding 12 Hrs.

1. Plant Breeding and its scope; Genetic basis for plant breeding. Plant Introduction and acclimatization.
2. Definition, procedure; applications and uses; advantages and limitations of :(a) Mass selection, (b) Pure line selection and (c) Clonal selection.
3. Hybridization – types and procedure; Heterosis(hybrid vigour).
4. Role of mutations in plant Breeding : Types of mutations & Procedure
5. A brief account on Molecular breeding – DNA markers in plant breeding. RAPD, RFLP.

Text books :

- Botany – III (Vrukshasastram-I) : Telugu Akademi, Hyderabad
- Pandey, B.P. (2013) *College Botany, Volume-III,* S. Chand Publishing, New Delhi
- Ghosh, A.K., K.Bhattacharya&G. Hait (2011) *A Text Book of Botany, Volume-III,* New Central Book Agency Pvt. Ltd., Kolkata
- Chaudhary, R. C. (1996) *Introduction to Plant Breeding,* Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi

Books for Reference:

- S. C. Rastogi (2008)*Cell Biology*,New Age International (P) Ltd. Publishers, New Delhi
- P. K. Gupta (2002)*Cell and Molecular biology*,Rastogi Publications, New Delhi
- B. D. Singh (2008) *Genetics*,Kalyani Publishers, Ludhiana
- A.V.S.S. Sambamurty (2007) *Molecular Genetics*,Narosa Publishing House,New Delhi
- Cooper, G.M. & R.E. Hausman (2009)*The Cell – A Molecular Approach,* A.S.M. Press, Washington
- Becker, W.M., L.J. Kleinsmith& J. Hardin (2007)*The World of Cell,* Pearson Education, Inc., New York
- De Robertis, E.D.P. & E.M.F. De Robertis Jr. (2002)*Cell and Molecular Biology,* Lippincott Williams & Wilkins Publ., Philadelphia
- Robert H. Tamarin (2002)*Principles of Genetics*,Tata McGraw –Hill Publishing Company Limited, New Delhi.
- Gardner, E.J., M. J. Simmons & D.P. Snustad (2004)*Principles of Genetics*, John Wiley & Sons Inc., New York
- Micklos, D.A., G.A. Freyer& D.A. Cotty (2005) *DNA Science: A First Course*, I.K. International Pvt. Ltd., New Delhi
- Chaudhari, H.K.(1983)*Elementary Principles of Plant Breeding*, TMHpublishers Co., New Delhi
- Sharma, J.R. (1994)*Principles and Practice of Plant Breeding*, Tata McGraw- Hill Publishers, New Delhi
- Singh,B.D. (2001)*Plant Breeding : Principles and Methods* ,Kalyani Publishers, Ludhiana

- Pundhan Singh (2015) *Plant Breeding for Undergraduate Students*, Kalyani Publishers, Ludhiana
- Gupta, S.K. (2010)*Plant Breeding : Theory and Techniques*,Agrobios (India), Jodhpur
- Hayes, H.K., F.R. Immer& D.C. Smith (2009) *Methods of Plant Breeding*,Biotech Books, Delhi

Practical Syllabus of Botany Core Course – 5/IVSemester

Cell Biology, Genetics and Plant Breeding

(Total hours of laboratory exercises 30 Hrs. @ 02 Hrs. /Week)

Course Outcomes: After successful completion of this practical course the student shall be able to:

1. Show the understanding of techniques of demonstrating Mitosis and Meiosis in the laboratory and identify different stages of cell division.
2. Identify and explain with diagram the cellular parts of a cell from a model or picture and prepare models
3. Solve the problems related to crosses and gene interactions.
4. Demonstrate plant breeding techniques such as emasculation and bagging

Practical Syllabus:

1. Study of ultra structure of plant cell and its organelles using Electron microscopic Photographs/models. fluid mosaic model of plasma membrane , nucleus, Mitochondria & chloroplast

2. Demonstration of Mitosis in *Allium cepa*/*Aloe vera* roots using squashtechnique; observation of various stages of mitosis in permanent slides.

4. Demonstration of Meiosis in P.M.C.s of *Allium cepa*flower buds using squash technique; observation of various stages of meiosis in permanent slides.

4. Study of structure of DNA and RNA molecules using models.

5. Solving problems monohybrid, dihybrid, back and test crosses.

6.Solving problems on gene interactions (atleast one problem for each of the gene interactions in the syllabus).

7. Chromosome mapping using 3- point test cross data.

8. Demonstration of emasculation, bagging, artificial pollination techniques for hybridization.

Model paper for Practical Examination

Semester-IV / Botany Core Course – 5

Cell Biology, Genetics and Plant Breeding

Max. Time: 3 Hrs. Max. Marks: 50

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1. Make a cytological preparation of given material 'A' (mitosis or meiosis in Onion) by squash technique, report any two stages, draw labeled diagrams and write the reasons. 15 M

2. Solve the given Genetic problem (Dihybrid cross/ Interaction of genes/ 3-point test cross) 'B' and write the conclusions. 15 M

3. Identify the following and justify with apt reasons. 3 x 4 = 12 M

   C. Cell Biology (Cell organelle)

   D. Genetics (DNA/RNA)

   E. Plant Breeding - Emasculation / Bagging / artificial pollination Photographs

4. Record + Viva-voce 5 + 3 = 8 M

Suggested co-curricular activities for Botany Core Course- 5 in Semester-IV:

A. Measurable :

a. Student seminars :

1. Light microscopy : bright field and dark field microscopy.
2. Scanning Electron Microscopy (SEM).
3. Transmission Electron Microscopy (TEM).
4. Mitosis and Meiosis
5. Cell cycle and its regulation.
6. Cell organelles bounded by single membrane.
7. Prokaryotic chromosomes
8. Special types of chromosomes :Polytene, Lampbrush and B-chromosomes.
9. Different forms of DNA.
10. Gene mutations.
11. DNA damage and repair mechanisms.
12. Reverse transcription.
13. Protein structure.

14. Modes of reproduction in plants.

15. Modes of pollination in plants

b. Student Study Projects :

1. Study of mitoticcell cycle in roots of*Aliumcepa*

2. Study of mitoticcell cycle in roots of*Aloe vera*

3. Observation of chromosomal aberrations in *Allium cepa* root cells exposed toindustrial effluent(s).

4. Observation of chromosomal aberrations in *Allium cepa* root cells exposed toheavy metal(s).

5. Observation of polyembryony in *Citrus* spp.and *Mangiferaindica.*

c. Assignments: Written assignment at home / during '0' hour at college; preparation of charts with drawings, making models etc., on topics included in syllabus.

B. General :

1. Field visit to Agriculture/Horticulture University/ Research station to observe Plant breeding methods.

2. Group Discussion (GD)/ Quiz/ Just A Minute (JAM) on different modules in syllabus of the course.

RECOMMENDED ASSESSMENT OF STUDENTS:

Recommended continuous assessment methods for all courses:

Some of the following suggested assessment methodologies could be adopted. Formal assessment for awarding marks for Internal Assessment in theory.

(a) Formal:

1. The oral and written examinations (Scheduled and surprise tests),
2. Simple, medium and Critical Assignments and Problem-solving exercises,
3. Practical assignments and laboratory reports,
4. Assessment of practical skills,
5. Individual and group project reports,
6. Seminar presentations,
7. Viva voce interviews.

(b) Informal:

1. Computerized adaptive testing, literature surveys and evaluations,
2. Peers and self-assessment, outputs form individual and collaborative work
3. Closed-book and open-book tests,

Common pattern for Question Paper for Theory Examination(s) at Semester end

Max. Time: 3 Hrs. Max. Marks: 75 M

Section – A

Answer all the following questions. 5 x 2 = 10 M

- ✓ One question should be given from each Unit in the syllabus.

Section – B

Answer any <u>three</u> of the following questions. Draw a labeled diagram wherever necessary 3 x 5 = 15 M

- ✓ One question should be given from each Unit in the syllabus.

Section – C

Answer any <u>five</u> of the following questions. Draw a labeled diagram wherever necessary 5 x 10 = 50 M

- ✓ Two questions (a & b) are to be given from each Unit in the syllabus (internal choice in each unit). Student has to answer 5 questions by choosing one from a set of questions given from a Unit.

Note: Questions should be framed in such a way to test the understanding, analytical and creative skills of the students. All the questions should be given within the frame work of the syllabus prescribed.

Annexure

Objectives and General Outcomes of Programme and Domain Subject

Programme(B.Sc.) Objectives: The objectives of bachelor's degree programmewith Botany are:

1. To provide a comprehensive knowledge on various aspects related to microbes and plants.
2. To deliver knowledge on latest developments in the field of Plant sciences with a practical approach.
3. To produce a student who thinks independently, critically and discuss various aspects of plant life.
4. To enable the graduate to prepare and pass through national and international examinations related to Botany.
5. To empower the student to become an employee or an entrepreneur in the field of Botany /Biology and to serve the nation.

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ProgrammeOutcomes:

1. Understand the basic concepts of Botany in relation to its allied core courses.
2. Perceive the significance of microbes and plants for human welfare, and structural and functional aspects of plants.
3. Demonstrate simple experiments related to plant sciences, analyze data, and interpret them with the theoretical knowledge.
4. Work in teams with enhanced inter-personal skills.
5. Develop the critical thinking with scientific temper.
6. Effectively communicate scientific ideas both orally and in writing.

Domain Subject(Botany) Objectives :

1. To impart knowledge on origin, evolution, structure, reproduction and interrelationships of microbes and early plant groups.
2. To provide knowledge on biology and taxonomy of true land plants within a phylogenetic framework.
3. To teach aspects related to anatomy, embryology and ecology of plants, and importance of Biodiversity.
4. To explain the structural and functional aspects of plants with respect to the cell organelles, chromosomes and genes, and methods of plant breeding.

5. To develop a critical understanding on SPAC, metabolism and growth and development in plants.
6. To enable the students proficient in experimental techniques and methods of analysis appropriate for various sub-courses in Botany.

Domain Subject(Botany) Outcomes:

1. Students will be able to identify, compare and distinguish various groups of microbes and primitive plants based on their characteristics.
2. Students will be able to explain the evolution of trachaeophytes and also distribution of plants on globe.
3. Students will be able to discuss on internal structure, embryology and ecological adaptations of plants, and want of conserving Biodiversity.
4. Students will be able to interpret life processes in plants in relation to physiology and metabolism.
5. Students will be able to describe ultrastructure of plant cells, inheritance and crop improvement methods.
6. Students will independently design and conduct simple experiments based on the knowledge acquired in theory and practicals of the different sub-courses in Botany.

SUBJECT EXPERTS

Prof. C.Sudhakar
Dept of Botany,
Sri Krishnadevaraya University,
Anantapur

Dr.A.Srinivasa Rao
Lecturer in Botany,
Govt Degree College,
Mandapeta

SYLLABUS VETTED BY

Prof.M.Vijaya Lakshmi,
Dept of Botany and Microbiology,
Acharya Nagarjuna University,
Nagarjuna Nagar

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

REVISED UG SYLLABUS UNDER CBCS
(Implemented from Academic Year 2020-21)
PROGRAMME: FOUR YEAR B.Sc. (Hons)
Domain Subject: **BOTANY**

Skill Enhancement Courses (SECs) for Semester V, from 2022-23 (Syllabus with LearningOutcomes, References, Co-curricular Activities & Model Q.P. Pattern)

Structure of SECs for Semester – V

(To choose One pair from the Four alternate pairs of SECs)

Univ. Code	Course NO. 6 & 7	Name of Course	Th. Hrs. / Week	IE Mar-ks	EE Mar-ks	Credits	Prac. Hrs./ Wk	Mar-ks	Credits
	6A	Plant Propagation	3	25	75	3	3	50	2
	7A	Seed Technology	3	25	75	3	3	50	2
		OR							
	6B	Vegetable Crops – Cultivation Practices	3	25	75	3	3	50	2
	7B	Vegetable Crops – Post Harvest Practices	3	25	75	3	3	50	2
		OR							
	6C	Plant Tissue Culture	3	25	75	3	3	50	2
	7C	Mushroom Cultivation	3	25	75	3	3	50	2
		OR							
	6D	Gardening and Landscaping	3	25	75	3	3	50	2
	7D	Agroforestry	3	25	75	3	3	50	2

Note-1: For Semester–V, for the domain subject Botany, any one of the four pairs of SECs shall bechosen as courses 6 and 7, i.e., 6A & 7A or 6B & 7B or 6C & 7C or 6D & 7D. The pair shall notbe broken (ABCD allotment is random, not on any priority basis).

Note-2: One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate skills related to the domain subject in students. The syllabus of SEC will be partially skill oriented. Hence, teachers shall also impart practical training to students on the skills embedded in syllabus citing related real field situations.

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **BOTANY**
IV Year B. Sc. (Hons) – Semester – V

Max Marks: 100

Course-6A: Plant Propagation
(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Explain various plant propagation structures and their utilization.
2. Understand advantages and disadvantages of vegetative, asexual and sexual plant propagation methods.
3. Assess the benefits of asexual propagation of certain economically valuable plants using apomictics and adventive polyembryony.
4. Demonstrate skills related to vegetative plant propagation techniques such as cuttings, layering, grafting and budding.
5. Apply a specific macro-propagation technique for a given plant species.

II. Syllabus: (Hours: Teaching: 50, Lab: 30, Field training: 05, others incl. unit tests: 05)
(Syllabi of theory, practical and lab (skills) training together shall be completed in 80 hours)

Unit – 1: Basic concepts of propagation (10h)

1. Propagation: Definition, need and potentialities for plant multiplication; asexual and sexual methods of propagation - advantages and disadvantages.
2. Propagation facilities: Mist chamber, humidifiers, greenhouses, glasshouses, cold frames, hot beds, poly-houses, phytotrons nursery - tools and implements.
3. Identification and propagation by division and separation: Bulbs, pseudobulbs, corms, tubers and rhizomes; runners, stolons, suckers and offsets.

Unit – 2: Apomictics in plant propagation (10h)

1. Apomixis: Definition, facultative and obligate; types – recurrent, non-recurrent, adventitious and vegetative; advantages and disadvantages.
2. Polyembryony: Definition, classification, horticultural significance; chimera and bud sport.
3. Propagation of mango, Citrus and Allium using apomictic embryos.

Unit – 3: Propagation by cuttings (10h)

1. Cuttings: Definition, different methods of cuttings; root and leaf cuttings.

2. Stem cuttings: Definition of stem tip and section cuttings; plant propagation by herbaceous, soft wood, semi hard wood, hard wood and coniferous stem cuttings.
3. Physiological and bio chemical basis of rooting; factors influencing rooting of cuttings; Use of plant growth regulators in rooting of cuttings.

Unit – 4: Propagation by layering (10h)

1. Layering: Definition, principle and factors influencing layering.
2. Plant propagation by layering: Ground layering – tip layering, simple layering, trench layering, mound (stool) layering and compound (serpentine layering).
3. Air layering technique – application in woody trees.

Unit – 5: Propagation by grafting and budding (10h)

1. Grafting: Definition, principle, types, graft incompatibility, collection of scion wood stick, scion-stock relationship, and their influences, bud wood certification; micrografting.
2. Propagation by veneer, whip, cleft, side and bark grafting techniques.
3. Budding: Definition; techniques of 'T', inverted 'T', patch and chip budding.

III. References:

1. Sharma RR and Manish Srivastav.2004. Plant Propagation and Nursery Management International Book Distributing Co. Lucknow.
2. Hartman, HT and Kester, D.E.1976. Plant Propagation: Principles and Practices, Prentice Hall of India Pvt. Ltd. Bombay.
3. Sadhu, M.K. 1996. Plant Propagation. New Age International Publishers, New Delhi.
4. Web resources suggested by the teacher concerned and college librarian including reading material.

Course -6A: Plant Propagation - Practical syllabus

IV. Learning Outcomes: On successful completion of this practical course, student will be able to:

1. Make use of different plant propagation structures for plant multiplication.
2. Explore the specialized organs or asexual propagules in some plants for their proliferation.
3. Demonstrate skills on micropropagation of plants through vegetative propagation techniques.
4. Evaluate and use a suitable propagation technique for a given plant species.

V. Practical (Laboratory) syllabus: (30hrs): The following experiments/practices shall be conducted by students in the lab.

1. Preparation of nursery beds – flat, raised and sunken beds.
2. Propagation through apomictic.
3. Propagation by separation and division technique.

4. Propagation by cuttings.
5. Propagation by layering
6. Propagation by grafting.
7. Propagation by budding.
8. Preparation of potting mixture, potting and repotting.

VI. Lab References:

1. Prasad, V. M. and Balaji Vikram, 2018. Practical Manual on Fundamentals of Horticulture and Plant Propagation, Write & Print Publications, New Delhi
2. Upadhyay S. K. (Ed.) 2013. Practical Manual Basic Horticulture-I, Akashdeep Printers, New Delhi
3. Web sources suggested by the teacher concerned.

VII. Co-Curricular Activities:

a) Mandatory: (Lab/field training of students by teacher: (Lab: 10 + field: 05 hours):

1. **For Teacher**: Training of students by the teacher in the laboratory/field for a total of not less than 15 hours on the field techniques/skills of different plant propagation structures, containers, preparation of soil, plant propagation through separation and division, apomictics, cuttings, layering, grafting and budding.
2. **For Student**: Students shall (individually) visit horticulture nurseries in a University/, research institute /private nursery and observe propagation structures, propagation techniques etc., write their observations and submit a hand-written Fieldwork/Project work/Project work Report not exceeding 10 pages in the given format to the teacher.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work Report: Title page, student details, index page, details of place visited, observations, findings and acknowledgements.
5. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Training of students by experts in plant vegetative propagation methods.
2. Assignments (including technical assignments like identifying propagation structures and their operational techniques for a specific plant species.
3. Seminars, Group discussions, Quiz, Debates etc. (suggested topics):
4. Preparation of videos on plant propagation techniques in relation to different economically useful plants.
5. Collection of material/figures/photos related to plant propagation methods, writing and organizing them in a systematic way in a file.
6. Visits to Horticulture/Agriculture/Forest nurseries, research organizations, universities etc.
7. Invited lectures and presentations on related topics by experts in the specified area.

Model Question Paper pattern for Practical Examination

Semester – V/ Botany Skill Enhancement Course

Course -6A: Plant Propagation

Max. Time: 3 Hrs. Max. Marks: 50

1. Demonstration plant propagation using separation and division /apomictics 'A' 10
2. Demonstration plant propagation using cuttings/layering technique 'B' 10
3. Demonstration of plant propagation using grafting/budding technique 'C' 10
4. Scientific observation and data analysis 4 x 3 = 12
   - D. Plant propagation structure model/photograph
   - E. Plant Growth Regulator
   - F. Nursery bed model /photograph
   - G. Asexual propagule/container/pot mixture for propagation
5. Record + Viva-voce 5+3 = 8

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **BOTANY**
IV Year B. Sc. (Hons) – Semester – V

Max Marks: 100

Course-7A: Seed Technology

(Skill Enhancement Course (Elective), Credits: 05)

I. Learning outcomes:

Students at the successful completion of the course will be able to:

1. Explain the causes for seed dormancy and methods to break dormancy.
2. Understand critical concepts of seed processing and seed storage procedures.
3. Acquire skills related to various seed testing methods.
4. Identify seed borne pathogens and prescribe methods to control them.
5. Understand the legislations on seed production and procedure of seed certification.

II. Syllabus: (Hours: Teaching: 50, Lab: 30, Field training: 05, others incl. unit tests: 05)
(Syllabi of theory, practical and lab (skills) training together shall be completed in 80 hours)

Unit - 1: Seed dormancy (10h)

1. Seed and grain: Definitions, importance of seed; structure of Dicot and Monocot seed.
2. Role and goals of seed technology; characteristics of quality seed material.
3. Dormancy: Definition, causes for seed dormancy; methods to break seed dormancy.

Unit – 2: Seed processing and storage (10h)

1. Principles of seed processing: seed pre-cleaning, precuring, drying, seed extraction; cleaning, grading, pre-storage treatments; bagging and labelling, safety precautions during processing.
2. Seed storage; orthodox and recalcitrant seeds, natural longevity of seeds.
3. Factors affecting longevity in storage; storage conditions, methods and containers.

Unit – 3: Seed testing (10h)

1. Definition of seed vigour, viability and longevity; seed sampling and equipment; physical purity analysis.
2. Seed moisture – importance – methods of moisture determination.
3. Seed germination tests using paper, sand or soil – standard germination test; TZ test to determine seed viability; seed health testing.

Unit – 4: Seed borne diseases (10h)

1. A brief account of different seed borne diseases and their transmission.
2. Different seed health testing methods for detecting microorganisms.
3. Management of seed borne diseases; seed treatment methods: spraying and dusting.

Unit – 5: Seed certification (10h)

1. Objectives - Indian seed Act; seed rules and seed order; new seed policy (1988).
2. Seed Inspector: Duties and responsibilities; classes of seeds, phases of certification standards (i.e., Land requirement, isolation distance) etc.
3. Issue of certificates, tags and sealing; pre and post control check: Genetic purity verification, certification, records and reporting.

III. References:

1. Umarani R, Jerlin R, Natarajan N, Masilamani P, Ponnuswamy AS 2006. Experimental Seed Science and Technology, Agrobios, Jodhpur
2. Agrawal, 2005. Seed Technology. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi
3. Desai B D 2004. Seeds Hand Book: Processing and Storage, CRC Press
4. Agarwal V K and J B Sinclair 1996, Principles of Seed Pathology, CRC Press
5. Tunwar NS and Singh SN. 1988. Indian Minimum Seed Certification Standards. CSCB, Ministry of Agriculture, New Delhi.
6. McDonald, M.B. and L.O. Copland. 1999. Seed Science and Technology Laboratory Manual. Scientific Publishers, Jodhpur
7. Web resources suggested by the teacher concerned and the college librarian including reading material.

Course -7A: Seed Technology Practical syllabus

IV. Learning Outcomes: On successful completion of this practical course, student will be able to:

1. Demonstrate skills on various methods to break the seed dormancy.
2. Determine seed moisture, seed germination percentage, seed viability and vigour.
3. Identify the seed borne pathogens and prescribe methods to prevent or control them.
4. Evaluate various methods to produce healthy seeds.

V. Practical (Laboratory) syllabus: (30hrs)

1. Determination of physical properties of seeds of 3 select local crops (1 each from cereals, millets, pulses and oil seeds).
2. Breaking seed dormancy in 3 select local crops.
3. Measurement of seed moisture content by O S W A or moisture meter or oven drying method.
4. Seed germination tests and evaluation.
5. Seed vigour - conductivity test.
6. Accelerated ageing tests.
7. Tetrazolium test.
8. Priming and invigoration treatments for improving germination and vigour.

9. Techniques of seed health testing - visual examination of seeds, washing test, incubation methods, embryo count method, seed soak method for the detection of certain seed borne pathogens.
10. Using various types of tools for dusting and spraying pesticides/insecticides.

VI. Lab References:

1. Sanjeev Kumar, 2019. Practical Manual Seed Technology of Vegetable Crops, M/s Asian Printery, Ahmedabad
2. Divakara Sastry, E.V., Dhirendra Singh and S.S.Rajput, 2013. Seed Technology: Practical Manual, Swami Keshwanand Rajasthan Agricultural University, Jobner
3. Web sources suggested by the teacher concerned.

VII. Co-Curricular Activities:

Mandatory: (Lab/field training of students by teacher: (Lab: 10 + field: 05 hours)

1. **For Teacher**: Training of students by the teacher in the laboratory/field for a total of not less than15 hours on the field techniques/skills of identifying and drawing seed structure, methods of breaking seed dormancy, seed cleaning, seed storage, identification of seed borne diseases, seed certification procedure.
2. **For Student**: Students shall (individually) visit horticulture/agriculture/ forest nursery/commercial seed production firms/ seed testing laboratories in government or private sector, observe seed production techniques, processing and storage, seed testing and certification procedures etc., write their observations and submit a hand-written Fieldwork/Project work Report not exceeding 10 pages in the given format to the teacher.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work Report: Title page, student details, index page, details of place visited, observations, findings and acknowledgements.
5. Unit tests (IE).

a) Suggested Co-Curricular Activities:

1. Training of students by experts in seed technology.
2. Assignments (including technical assignments like seed processing and storage techniques, seed testing, seed certification, seed borne diseases- prevention and control).
3. Seminars, Group discussions, Quiz, Debates etc. (suggested topics):
4. Preparation of videos on various aspects related to seed technology.
5. Collection of material/figures/photos related to seed technology, writing and organizing them in a systematic way in a file.
6. Visits to seed production units in Industries/Horticulture/Agriculture/Forest universities/colleges; research organizations, seed testing laboratories etc.
7. Invited lectures and presentations on related topics by experts in the specified area.

Model Question Paper pattern for Practical Examination

Semester – V/ Botany Skill Enhancement Course

Course – 7A: Seed Technology

Max. Time: 3 Hrs. Max. Marks: 50

1. Demonstration of a method to break seed dormancy 'A'	10
2. Determination of seed moisture content/ seed germination test 'B'	10
3. Demonstration of test for seed viability/ seed vigour 'C'	10
4. Scientific observation and data analysis	4 x 3 = 12
D. Monocot / Dicot seed	
E. Seed sampling equipment	
F. Seed borne pathogen specimen/photograph	
G. Seed certification agency/procedure	
4. Record + Viva-voce	5+3 = 8

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **BOTANY**
IV Year B. Sc. (Hons) – Semester – V

Max Marks: 100

Course 6B: Vegetable Crops – Cultivation Practices
(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Identify different vegetable plants and realize their value in human nutrition.
2. Analyse the types of soils to cultivate vegetable crops.
3. Demonstrate skills on agronomic practices for cultivation of vegetable crops.
4. Acquire knowledge on water, weed and disease managements in vegetable farming.
5. Comprehend aspects related to harvesting and storage of produce.

II. Syllabus: (Hours: Teaching: 50, Lab: 30, Field training: 05, others incl. unit tests: 05)
(Syllabi of theory, practical and lab (skills) training together shall be completed in 80 hours)

Unit – 1: Introduction to Olericulture (10h)

1. Vegetables and Olericulture: Definitions, nutritive value of vegetables and economic significance of vegetable farming.
2. Classification of vegetable crops (Botanical, based on climatic zones and economic parts used).
3. Types of vegetable gardens (kitchen gardening, terrace gardening, market gardening and truck gardening); implements used in vegetable gardening; vegetable forcing – a brief concept.

Unit – 2: Cultivation of leafy vegetables (10h)

1. Leafy vegetables: Definition and a brief account of locally cultivated crops.
2. Study of the following leafy vegetable crops: (a) Amaranthus (b) Palak (c) Hibiscus cannabinus (d) Fenugreek: systematic position, nutritive value, origin, area, production, improved varieties.
3. General cultivation practices such as sowing, planting distance, fertilizer requirements, irrigation, weed management, harvesting.
4. Crop specific yield, storage, disease and pest control and seed production.

Unit – 3: Cultivation of fruity vegetables (10h)

1. Fruity vegetables: Definition and a brief account of locally cultivated crops.
2. Study of the fruity vegetable crops: (a) Okra (b) Tomato (c) Chillies (d) Brinjal: systematic position, nutritive value, origin, area, production, improved varieties.
3. General cultivation practices such as sowing, planting distance, fertilizer requirements, irrigation, weed management, harvesting.
4. Crop specific yield- storage, disease and pest control and seed production

Unit – 4: Cultivation of peas and beans (10h)

1. A brief account of locally cultivated peas and beans.

2. Study of the following crops: (a) Dolichos (b) Cluster bean (c) French bean: Systematic position, nutritive value, origin, area, production, improved Varieties.
3. General cultivation practices such as sowing, planting distance, fertilizer requirements, irrigation, weed management, harvesting.
4. Crop specific yield, storage, disease and pest control and seed production.

Unit – 5: Cultivation of root and tuber crops (10h)

1. A brief account of locally cultivated root and tuber crops.
2. Study of the following crops: (a) Carrot (b) Radish (c) Sweet potato (d) Potato: Systematic position, family, nutritive value, origin, area, production, improved varieties.
3. General cultivation practices such as sowing, planting distance, fertilizer requirements, irrigation, weed management, harvesting.
4. Crop specific yield, storage, disease and pest control and seed production.

III. References:

1. Bose T K et al. (2003) Vegetable crops, Naya Udhyog Publishers, Kolkata.
2. Singh D K (2007) Modern vegetable varieties and production, IBN Publisher Technologies, International Book Distributing Co, Lucknow.
3. Premnath, Sundari Velayudhan and D P Sing (1987) Vegetables for the tropical region, ICAR, New Delhi
4. Shanmugavelu, K. G. 1989. Production Technology of Vegetable Crops. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
5. Rana MK. 2008. Scientific Cultivation of Vegetables. Kalyani Publ., New Delhi
6. Rubatzky VE and Yamaguchi M. (Eds.). 1997. World Vegetables: Principles, Production and Nutritive Values. Chapman & Hall, London.
7. Web resources suggested by the teacher concerned and the college librarian including reading material.

Course 7B: Vegetable Crops – Cultivation Practices – Practical syllabus

IV. Learning Outcomes: On successful completion of this practical course, student will be able to:

1. List out, identify and handle different garden implements.
2. Identify the important vegetable crops grown in their locality.
3. Demonstrate various skills in cultivation of vegetable crops.
4. Identify pests, diseases and their remedies that are specific to a vegetable crop.

V. Practical (Laboratory) Syllabus: (30 hrs)

1. Identification of seeds of important local vegetable plants and preparation of herbarium.
2. Identification of local vegetable crops and handling of garden tools.
3. Analysis of garden soil for ratios of physical characteristics by sieve separation.
4. Determination of chemical characters of garden soil (pH, EC, Organic Carbon, SAR).
5. Planning and layout of a vegetable crop farm.

6. Preparation of nursery bed (raised, sunken and flat beds) and sowing of seeds.
7. Transplanting and care of vegetable seedlings.
8. Intercultural operations in vegetable plots.
9. Estimation of Total Soluble Solids (TSS) by Refractometer in a fruit and a leafy vegetable.
10. Estimation of Vitamin - C in a fruit and a leafy vegetable by DCIP method.
11. Identification of pests and disease-causing organisms on any two vegetable plants.
12. Seed extraction in tomato and brinjal.

VI. Lab References:

1. Akhilesh Sharma (Ed.), 2013. Practical Manual Olericulture-I, Sheel Packers, New Delhi
2. Biswajit Saha and Shri Dharampal Singh, 2013. Practical Manual Olericulture-I, Sheel Packers, New Delhi
3. Saini RS, K.D. Sharma, O.P, Dhankhar and R.A. Kaushik (Eds.). 2001. Laboratory Manual of Analytical Techniques in Horticulture. Agrobios, Jodhpur
4. Ranganna S. 1986. Handbook of Analysis and Quality Control for Fruit and Vegetable Products. Tata-McGraw Hill, New Delhi
5. Web sources suggested by the teacher concerned.

VII. Co-Curricular Activities:

a) Mandatory: (Lab/ field training of students by teacher: (Lab: 10 + field: 05 hours)

1. **For Teacher**: Training of students by the teacher in the laboratory/field for a total of not less than 15 hours on the field techniques/skills of vegetable plants identification, vegetable gardening, agronomic practices, water, weed and disease management; harvesting and storage of produce.
2. **For Student**: Students shall (individually) visit a horticulture university/ research station or vegetable crop farm in their locality, observe different vegetable crops/ varieties of a vegetable crop, intercultural operations, pests and diseases, harvesting and storage etc., write their observations and submit to the teacher a hand-written Fieldwork/Project work Report not exceeding 10 pages in the given format.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work Report: Title page, student details, index page, details of place visited, observations, findings and acknowledgements.
5. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Training of students by related industrial experts or farmers.
2. Assignments (including technical assignments like tools in vegetable gardening and their handling, agronomic practices, modern irrigation methods, organic farming practices etc.)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on cultivation practices for vegetable crops.
5. Collection of material/figures/photos related to different vegetable crop species, writing and organizing them in a systematic way in a file.

6. Visits to horticulture universities, research organizations, private vegetable farming units etc.
7. Invited lectures and presentations on related topics by field/industrial experts

Model Question Paper Pattern for Practical Examination

Semester – V/ Botany Skill Enhancement Course

Vegetable Crops – Cultivation Practices

Max. Time: 3 Hrs. Max. Marks: 50

1. Demonstration of nursery bed making/transplanting of seedlings 'A' 8
2. Determination of physical or chemical characters of a given soil sample / Preparation of slide and identification of pest/disease-causing organism in plant part given 'B' 10
3. Estimation of Total Soluble Solids/Vitamin-C in a given plant sample 'C' 12
4. Scientific observation and data analysis $4 \times 3 = 12$
   D. Identification of a garden tool
   E. Identification of seed/specimen of a vegetable crop species
   F. Identification of a weed/irrigation method
   G. Identification of a pest/disease causing organism
5. Record + Viva-voce $5+3 = 8$

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **BOTANY**
IV Year B. Sc. (Hons) – Semester – V

Max Marks: 100

Course 7B: Vegetable Crops – Post Harvest Practices
(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Understand various practices for vegetable produce from harvesting to marketing.
2. Demonstrate skills on storage, processing and preservation of vegetables.
3. Summarize causes for spoilage of vegetables before and during storage and methods to prevent and control them.
4. Make use of preservation methods to reduce the loss of vegetable produce.
5. Explain about value added products, packaging and marketing of vegetables.

II. Syllabus: (Hours: Teaching: 50, Lab: 30, Field training: 05, others incl. unit tests: 05)
(Syllabi of theory, practical and lab (skills) training together shall be completed in 80 hours)

Unit – 1: Introduction to Post Harvest Practices (10h)

1. Post-harvest technology: Definition; importance, scope and future status of post-harvest management of vegetables.
2. Study of maturity standards of vegetables; harvest techniques of vegetables, methods stages, signs of harvesting; harvesting and its relationship with quality, sorting and grading.
3. Careful handling of harvested vegetables; pre-harvest and post-harvest factors responsible for ripening.

Unit – 2: Methods of storage (10h)

1. Climacteric and non-climacteric types of vegetables.
2. Methods of storage to prolong shelf life of harvested vegetables; on-farm storage, evaporatively cooled stores, ventilated storage, pit storage etc.
3. Refrigerated storage, refrigeration cycle, controlled and modified atmosphere, hypobaric storage.

Unit – 3: Processing of vegetables (10h)

1. Causes for spoilage of vegetables and control measures during storage; post-harvest disease and pest management.
2. Techniques to prevent deterioration; vegetable processing equipment; minimal processing of vegetables.
3. Safe chemicals and microbial limits; application of growth regulators for quality assurance; grading.

Unit -4: Preservation and value-addition (10h)

1. Importance and scope of vegetable preservation in India; principles underlying general methods of preservation.
2. Methods of preservation; food additives and food colours.

3. Fried products, process of frying; dried vegetables; sauces and chutneys, pickles and salted vegetables; by-product and waste utilization.

Unit – 5: Marketing (10h)

1. Packing line operations, packaging of vegetables and their products; transportation; codex norms for export of perishables.
2. Demand supply analysis of important vegetables; market potential of various vegetables products.
3. Important marketing agencies and institutions; importance of cooperative marketing.

III. References:

1. Salunkhe DK and Kadam SS. (Ed.). 1998. Hand Book of Vegetable Science and Technology: Production, Composition, Storage and Processing. Marcel Dekker, New York.
2. Arthey D and Dennis C. 1996. Vegetable Processing. Blackie/Springer-Verlag, New York
3. Verma LR and Joshi VK. 2000. Post-harvest Technology of Fruits and Vegetables: Handling, Processing, Fermentation and Waste Management. Indus Publishing Company, New Delhi
4. Srivastava RP and Kumar S. 2003. Fruit and Vegetable Preservation: Principles and Practices. International Book Distribution Company, Lucknow.
5. Giridharilal GS, Siddappa and Tandon GL. 1986. Preservation of Fruits and Vegetables. ICAR, New Delhi.
6. Web resources suggested by the teacher concerned and the college librarian including reading material.

Course 7B: Vegetable Crops – Post harvest Practices – Practical syllabus

IV. Learning Outcomes: On successful completion of this practical course, student will be able to:

1. Identify stages of maturity in vegetable crops.
2. Handle material for storage of vegetables.
3. Identify physical and biological causes for spoilage of vegetables.
4. Make some value-added products of vegetables.

V. Practical (Laboratory) Syllabus: (30 hrs)

1. Maturity selection and harvest, harvesting practices.
2. List and cost of equipment, utensils, and additives required for small scale processing industry.
3. Study of different types of spoilages in fresh as well as processed vegetables.
4. Identification and classification of spoilage organisms.
5. Estimation of total carbohydrates (Anthrone method) in a stored vegetable and un-stored vegetable.
6. Estimation of protein (Lowry method) in a stored vegetable and un-stored vegetable.
7. Sensory evaluation of fresh and processed vegetables.
8. Assessment of quality and grading, pre-packaging and protective treatments.
9. Identification of packaging materials, containers for packaging.
10. Preparation of pickle from a vegetable.

11. Preparation of tomato sauce, ketchup and chutney.

VI. Lab References:

1. Swati Barche, Reena Nair and P. K. Jain, 2016. A Practical Manual on Post Harvest Value Addition and Processing of Horticulture Crops. Agrobios (India), Jodhpur
2. Antonio L. Acedo Jr., Md. Atiqur Rahman, Borarin Buntong and Durga Mani Gautam, 2016. Vegetable Postharvest Training Manual, AVRDC - The World Vegetable Center, Taiwan
3. Akhilesh Sharma (Ed.), 2013. Practical Manual Olericulture-I, Sheel Packers, New Delhi
4. Biswajit Saha and Shri Dharampal Singh, 2013. Practical Manual Olericulture-I, Sheel Packers, New Delhi
5. Web sources suggested by the teacher concerned.

VII. Co-Curricular Activities:

a) Mandatory: (Lab/ field training of students by teacher: (Lab: 10 + field: 05 hours)

1. **For Teacher**: Training of students by teacher in the laboratory/field for a total of not less than 15 hours on the field techniques/skills of harvesting indices of vegetables, storage methods, tools and techniques for processing, causes for spoilage and methods to control, preservation methods, marketing chain and in making value added products.
2. **For Student**: Students shall (individually) visit any one of the places like horticulture university/ research station; vegetable storage units in public and private sector; vegetable processing industries in their locality and observe harvesting practices, storage methods, processing and preservation; grading, value added products and marketing. Write their observations and submit to the teacher a hand-written Fieldwork/Project work Report not exceeding 10 pages in the given format.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work Report: Title page, student details, index page, details of place visited, observations, findings and acknowledgements.
5. Unit tests (IE).

b). Suggested Co-Curricular Activities:

1. Training of students by related industrial experts or farmers.
2. Assignments (including technical assignments like tools and techniques for storage, processing and preservation, causes for spoilage and methods to avoid losses, value added products of some vegetables, packaging and marketing etc.)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on cultivation practices for vegetable crops.
5. Collection of material/figures/photos related to harvesting, storage, processing and preservation of vegetable crop produce, writing and organizing them in a systematic way in a file.

6. Visits to horticulture universities, research organizations; storage, processing industries in public or private sector; industries making value added products of vegetables etc.
7. Invited lectures and presentations on related topics by field/industrial experts.

Model Question Paper Pattern for Practical Examination

Semester – V/ Botany Skill Enhancement Course

Vegetable Crops – Post Harvest Practices

Max. Time: 3 Hrs. Max. Marks: 50

1. Identification of organism(s) responsible for spoilage of vegetable 'A' 8
2. Assessment of quality and grading/ technique of packaging and protective treatment. 10
3. Estimation of carbohydrates/protein content in a vegetable sample 'C' 12
4. Scientific observation and data analysis 4 x 3 = 12
   D. Identification of harvesting stage
   E. Identification of equipment for processing
   F. Identification of PGR/chemical used for PHT of vegetables.
   G. Identification of a packaging material/value added product.
5. Record + Viva-voce 5+3 = 8

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **BOTANY**
IV Year B. Sc. (Hons) – Semester – V

Max Marks: 100

Course 6C: Plant Tissue Culture
(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Comprehend the basic knowledge and applications of plant tissue culture.
2. Identify various facilities required to set up a plant tissue culture laboratory.
3. Acquire a critical knowledge on sterilization techniques related to plant tissue culture.
4. Demonstrate skills of callus culture through hands on experience.
5. Understand the biotransformation technique for production of secondary metabolites.

II. Syllabus: (Hours: Teaching: 50, Lab: 30, Field training: 05, others incl. unit tests: 05)
(Syllabi of theory, practical and lab (skills) training together shall be completed in 80 hours)

Unit - 1: Basic concepts of plant tissue culture (10h)

1. Plant tissue culture: Definition, history, scope and significance.
2. Totipotency, differentiation, dedifferentiation, and redifferentiation; types of cultures.
3. Infrastructure and equipment required to establish a tissue culture laboratory.

Unit - 2: Sterilization techniques and culture media (10h)

1. Aseptic conditions – Fumigation, wet and dry sterilization, UV sterilization, ultrafiltration.
2. Nutrient media: Composition of commonly used nutrient culture media with respect to their contents like inorganic chemicals, organic constituents, vitamins, amino acids etc.
3. Composition and preparation of Murashige and Skoog culture medium.

Unit - 3: Callus culture technique (10h)

1. Explant: Definition, different explants for tissue culture: shoot tip, axillary buds, leaf discs, cotyledons, inflorescence and floral organs, their isolation and surface sterilization; inoculation methods.
2. Callus culture: Definition, various steps in callus culture.
3. Initiation and maintenance of callus - Growth measurements and subculture; soma clonal variations.

Unit – 4: Micropropagation (10h)

1. Direct and indirect morphogenesis, organogenesis, role of PGRs; somatic embryogenesis and synthetic seeds.
2. Greenhouse hardening unit operation and management; acclimatization and hardening of plantlets - need, process, packaging, exports.
3. Pathogen (Virus) indexing- significance, methods, advantages, applications.

Unit – 5: Applications of plant tissue culture (10h)

1. Germplasm conservation: cryopreservation methods, slow growth, applications and limitations; cryoprotectants.
2. Plant transformation techniques and bioreactors; production of secondary metabolites-optimization of yield, commercial aspects, applications, limitations.
3. Transgenic plants- gene transfer methods; BT cotton.

III. References:

1. Kalyan Kumar De (2001) An Introduction to Plant Tissue Culture, New Central Book Agency (P) Ltd., Calcutta
2. Razdan, M.K. (2005) Introduction to Plant Tissue Culture, Oxford & IBH Publishers, Delhi
3. Bhojwani, S.S. (1990) Plant Tissue Culture: Theory and Practical (a revised edition). Elsevier Science Publishers, New York, USA.
4. Vasil, I.K. and Thorpe, T.A. (1994) Plant Cell and Tissue Culture. Kluwer Academic Publishers, the Netherlands.
5. Web resources suggested by the teacher concerned and the college librarian including reading material.

Course 6C: Plant Tissue Culture – Practical syllabus

IV. Learning Outcomes: On successful completion of this practical course, student will be able to:

1. List out, identify and handle various equipment in plant tissue culture lab.
2. Learn the procedures of preparation of media.
3. Demonstrate skills on inoculation, establishing callus culture and Micro propagation.
4. Acquire skills in observing and measuring callus growth.
5. Perform some techniques related to plant transformation for secondary Metabolite production.

V. Practical (Laboratory) Syllabus: (30 hrs)

1. Principles and applications of- Autoclave, Laminar Airflow, Hot Air Oven.
2. Sterilization techniques for glass ware, tools etc.,
3. MS medium - Preparation of different stock solutions; media preparation
4. Explant preparation, inoculation and initiation of callus from carrot.
5. Callus formation, growth measurements.
6. Induction of somatic embryos, preparation of synthetic seeds.
7. Multiplication of callus and organogenesis.
8. Hardening and acclimatization in green house.

VI. Lab References:

1. Reinert, J. and M.M. Yeoman, 1982. Plant Cell and Tissue Culture - A Laboratory
2. Manual, Springer-Verlag Berlin Heidelberg
3. Robert N. Trigiano and Dennis J. Gray, 1999. Plant Tissue Culture Concepts and Laboratory Exercises. CRC Press, Florida

4. Ashok Kumar, 2018. Practical Manual for Biotechnology, College of Horticulture & Forestry, Jhalawar, AU, Kota
5. Chawla, H.S., 2003. Plant Biotechnology: A Practical Approach, Nova Science Publishers, New York
6. Web sources suggested by the teacher concerned.

VII. Co-Curricular Activities:

a) Mandatory: (Lab/field training of students by teacher: Lab: 10 + field: 05 hours)

1. **For Teacher**: Training of students by teacher in the laboratory/field for a total of not less than 15 hours on the field techniques/skills of sterilization procedures, preparation of media, establishment of callus culture, growth measurements; morphogenesis and organogenesis; acclimatization and hardening of plantlets.
2. **For Student**: Students shall (individually) visit anyone of plant tissue culture laboratories in universities/research organizations/private facilities, write their observations on tools, techniques, methods and products of plant tissue culture; and submit a hand-written Fieldwork/Project work Report not exceeding 10 pages to the teacher in the given format.
3. Max marks for Fieldwork/Project work Report: 05
4. Suggested Format for Fieldwork/Project work Report: Title page, student details, index page, details of place visited, observations, findings and acknowledgements.
5. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Training of students by related industrial experts.
2. Assignments (including technical assignments like identifying tools in plant tissue culture and their handling, operational techniques with safety and security, IPR)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on tools and techniques in plant tissue culture.
5. Collection of material/figures/photos related to products of plant tissue culture, writing and organizing them in a systematic way in a file.
6. Visits to plant tissue culture/biotechnology laboratories in universities, research organizations, private firms, etc.
7. Invited lectures and presentations on related topics by field/industrial experts

Model Question Paper Pattern for Practical Examination

Semester – V/ Botany Skill Enhancement Course

Plant Tissue Culture

Max. Time: 3 Hrs. Max. Marks: 50

1. Demonstration of a sterilization technique 'A'	8
2. Preparation of MS medium 'B'	10
3. Demonstration of callus culture technique/growth measurements 'C'	12
4. Scientific observation and data analysis	4 x 3 = 12
D. Tissue culture equipment /photograph	
E. Morphogenesis or organogenesis - photograph	
F. Bioreactor/Secondary metabolite	
G. Transgenic plant/photograph	
5. Record + Viva-voce	5+3 = 8

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **BOTANY**
IV Year B. Sc. (Hons) – Semester – V

Max Marks: 100

Course 7C: Mushroom Cultivation
(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Understand the structure and life of a mushroom and discriminate edible and poisonous mushrooms.
2. Identify the basic infrastructure to establish a mushroom culture unit.
3. Demonstrate skills preparation of compost and spawn.
4. Acquire a critical knowledge on cultivation of some edible mushrooms.
5. Explain the methods of storage, preparation of value-added products and marketing.

II. Syllabus: (Hours: Teaching: 50, Lab: 30, Field training: 05, others incl. unit tests: 05)
(Syllabi of theory, practical and lab (skills) training together shall be completed in 80 hours)

Unit – 1: Introduction and value of mushrooms (10h)

1. Mushrooms: Definition, structure of a mushroom and a brief account of life cycle; historical account and scope of mushroom cultivation; difference between edible and poisonous mushrooms.
2. Morphological features of any four edible mushrooms, Button mushroom (Agaric us Bosporus), Milky mushroom (Calocybe indica), Oyster mushroom (Pleurotus sajor-caju) and Paddy straw mushroom (Volvariella volvacea).
3. Nutraceutical value of mushrooms; medicinal mushrooms in South India - Ganoderma lucidum, Phellinus rimosus, Pleurotus florida and Pleurotus pulmonaris – their therapeutic value; Poisonous mushrooms - harmful effects.

Unit – 2: Basic requirements of cultivation system (10h)

1. Small village unit and larger commercial unit; layout of a mushroom farm - location of building plot, design of farm, bulk chamber, composting, equipment and facilities, pasteurization room and growing rooms.
2. Compost and composting: Definition, machinery required for compost making, materials for compost preparation.
3. Methods of composting- long method of composting and short method of composting.

Unit – 3: Spawning and casing (10h)

1. Spawn and spawning: Definition, facilities required for spawn preparation; preparation of spawn substrate.
2. Preparation of pure culture, media used in raising pure culture; culture maintenance, storage of spawn.

3. Casing: Definition, Importance of casing mixture, Quality parameters of casing soil, different types of casing mixtures, commonly used materials.

Unit – 4: Mushroom cultivation (10h)

Raw material, compost, spawning, casing, cropping, and problems in cultivation (diseases, pests and nematodes, weed molds and their management strategies), picking and packing for any Four of the following mushrooms:

(a) Button mushroom (b) Oyster mushroom (c) Milky mushroom and (d) Paddy straw mushroom

Unit – 5: Post harvest technology (10h)

1. Shelf life of mushrooms; preservation of mushrooms - freezing, dry freezing, drying and canning.
2. Quality assurance and entrepreneurship - economics of different types of mushrooms; value added products of mushrooms.
3. Management of spent substrates and waste disposal of various mushrooms.

III. References:

1. Tewari Pankaj Kapoor, S. C. (1988). Mushroom Cultivation. Mittal Publication, New Delhi.
2. Pandey R.K, S. K Ghosh, (1996). A Hand Book on Mushroom Cultivation. Emkey Publications
3. Nita Bhal. (2000). Handbook on Mushrooms (Vol. I and II). Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi
4. Pathak, V. N. and Yadav, N. (1998). Mushroom Production and Processing Technology. Agrobios, Jodhpur.
5. Tripathi, D.P. (2005) Mushroom Cultivation, Oxford & IBH Publishing Co. Pvt. Ltd, New Delhi.
6. Pathak V.N., Nagendra Yadav and Maneesha Gaur (2000), Mushroom Production and Processing Technology Vedams Ebooks Pvt. Ltd., New Delhi
7. Web resources suggested by the teacher concerned and the college librarian including reading material.

Course 7C: Mushroom Cultivation – Practical syllabus

IV. Learning Outcomes: On successful completion of this practical course, student will be able to:

1. Identify and discriminate different mushrooms based on morphology.
2. Understand facilities required for mushroom cultivation.
3. Demonstrate skills on preparation of spawn, compost and casing material.
4. Exhibit skills on various cultivation practices for an edible mushroom.

V. Practical (Laboratory) Syllabus: (30 hrs)

1. Identification of different types of mushrooms.
2. Preparation of pure culture of an edible mushroom.
3. Preparation of mother spawn.

4. Production of planting spawn and storage.
5. Preparation of compost and casing mixture.
6. Demonstration of spawning and casing.
7. Hands on experience on cropping and harvesting.
8. Demonstration of storage methods.
9. Preparation of value-added products.

VI. Lab References:

1. Sushma Sharma Sapna Thakur Ajar Nath Yadav, 2018. Mushroom Cultivation: A Laboratory Manual, Eternal University, Sirmour, H.P.
2. Kadhila-Muandingi, N.P., F. S. Mubiana and K. L. Halueendo, 2012. Mushroom Cultivation: A Beginners Guide, The University of Namibia
3. Gajendra Jagatap and Utpal Dey, 2012. Mushroom Cultivation:Practical Manual, LAMBERT Academic Publishing, Saarbrücken, Germany
4. Deepak Som, 2021. A Practical Manual on Mushroom Cultivation, P.K.Publishers & Distributors, Delhi
5. Web sources suggested by the teacher concerned.

VII. Co-Curricular Activities:

a) Mandatory: (Lab/field training of students by teacher: Lab: 10 + field: 05 hours)

1. **For Teacher**: Training of students by teacher in the laboratory/field for not less than 15 hours on the field techniques/skills of identification of edible and poisonous mushrooms, basic facilities of a mushroom culture unit, preparation of compost and spawn, cultivation practices of edible mushrooms, storage and marketing of produce.
2. **For Student**: Students shall (individually) visit mushroom culture units in universities/research organizations/private sector write their observations on infrastructure, cultivation practices and products of a mushroom culture unit etc., and submit to the teacher a hand-written Fieldwork/Project work Report not exceeding 10 pages in the given format.
3. Max marks for Fieldwork/Project work Report: 05.
6. Suggested Format for Fieldwork/Project work Report: Title page, student details, index page, details of place visited, observations, findings and acknowledgements.
4. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Training of students by related industrial experts.
2. Assignments (including technical assignments like identifying various mushrooms, tools and techniques for culture, identification and control of diseases etc.,
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on tools and techniques in mushroom culture.
5. Collection of material/figures/photos related to edible and poisonous mushrooms, cultivation of mushrooms in cottage industries, writing and organizing them in a systematic way in a file.
6. Visits to mushroom culture units in universities, research organizations, private firms, etc.
7. Invited lectures and presentations on related topics by field/industrial experts.

Model Question Paper Pattern for Practical Examination

Semester – V/ Botany Skill Enhancement Course

Mushroom Cultivation

Max. Time: 3 Hrs. Max. Marks: 50

1. Demonstration of preparing pure culture/mother spawn 'A' 8
2. Preparation method for planting spawn and storage/compost and casing material 'B' 10
3. Demonstration of spawning and casing/storage and making a value-added product 'C' 12
4. Scientific observation and data analysis $4 \times 3 = 12$
   D. Edible/poisonous mushroom specimen/photograph
   E. Infrastructure/tool used in mushroom cultivation
   F. Material for compost/casing
   G. Storage practice/ a value-added product
5. Record + Viva-voce $5+3 = 8$

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **BOTANY**
IV Year B. Sc. (Hons) – Semester – V

Max Marks: 100

Course 6D: Gardening and Landscaping

(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Acquire a critical knowledge about the aesthetic value, types and styles of gardens.
2. Perform filed operations in a garden by understanding the role of a gardener.
3. Identify various ornamental plants and explain the growth habits.
4. Propagate garden plants through various propagation techniques.
5. Demonstrate skills of designing and developing a garden.

II. Syllabus: (Hours: Teaching: 50, Lab: 30, Field training: 05, others incl. unit tests: 05)
(Syllabi of theory, practical and lab (skills) training together shall be completed in 80 hours)

Unit -1: Basics of Gardening (10h)

1. Garden and gardening: Definitions, objectives and scope; types of gardens (domestic garden, flower garden, woodland garden, rock garden, water garden and herb and vegetable garden).
2. Speciality gardens (vertical garden, roof garden and scented garden); principles of gardening; garden components and adornments;
3. Styles of garden: formal, informal, free style and wild; some famous gardens of India.

Unit -2: Garden operations (10h)

1. Bio-aesthetic planning, eco-tourism, theme parks, indoor gardening, therapeutic gardening.
2. Gardening operations: soil laying, manuring, watering, management of pests and diseases and harvesting.
3. Lawn making, methods of designing rockery and water garden.

Unit-3: Ornamental plants (10h)

1. Ornamental plants: flowering annuals and perennials; climbers and creepers; shade and ornamental trees.
2. Bulbous and foliage ornamental plants; cacti and succulents; palms, ferns.
3. Bonsai: definition, types and styles, art of making bonsai.

Unit-4: Propagation techniques (10h)

1. Propagation of ornamental plants by rhizomes, corms tubers, bulbs and bulbils.
2. Vegetative propagation techniques – a brief account of cuttings, layering and grafting.
3. Types of seed beds; sowing of seeds and raising seedlings, transplanting of seedlings; growing plants in pots, potting and repotting.

Unit-5: Landscaping (10h)

1. Landscaping: definition, landscaping of parks and public gardens.
2. Urban planning and planting avenues; Landscaping highways and educational institutions; beautifying villages and colonies.
3. Computer Aided Designing (CAD) for outdoor and indoor-scaping.

III. References:

1. Bose T.K. and Mukherjee, D., 1972, Gardening in India, Oxford & IBH Publishing Co., New Delhi.
2. Sandhu, M.K. 1989 Plant Propagation, Wiley Eastern Ltd., Bengaluru.
3. Nambisan, K. M. P. 1992. Design Elements of Land Scape Gardening Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
4. Bose, T. K. Malti, R. G. Dhua, R. S and Das, P. 2004. Floriculture and Landscaping. Nayaprakash, Calcutta.
5. Arora, J.S. 2006. Introductory Ornamental Horticulture. Kalyani Publishers, Ludhiana.
6. Web resources suggested by the teacher concerned and the college librarian including reading material.

Course 6D: Gardening and Landscaping – Practical syllabus

IV. Learning Outcomes: On successful completion of this practical course, student will be able to:

1. Perform various skills related to gardening.
2. Identify the living and non-living components required for garden development.
3. Identify the pests and diseases of garden plants and control the same.
4. Demonstrate skills of making bonsai and developing lawn.
5. Make landscape design using CAD.

V. Practical (Laboratory) Syllabus: (30 hrs)

1. Preparation of beds for growing nursery of herbs, shrubs and trees.
2. Tools, implements and containers used for propagation and nursery techniques.
3. Identification of different ornamental plants.
4. Demonstration of types and styles of gardens using photos or videos.
5. Gardening operations: soil laying, manuring, watering.
6. Identification of pathogenic and non-pathogenic diseases of garden plants and grasses.
7. Propagation by cutting, layering, budding and grafting.
8. Planning and designing of gardens, functional uses of plants in the landscape.
9. Preparation of land for lawn and planting.
10. Exposure to CAD (Computer Aided Designing)
11. Demonstration of bonsai making.
12. Making of topiaries.

VI. Lab References:

1. Paul Wagland, 2011. Garden Landscaping Manual: A Step-by-Step Guide to Landscaping & Building Projects in Your Garden, Haynes Publishing UK
2. Misra Kaushal Kumar, 2016. Practical Manual of Horticulture, Biotech Books, Open Library.org
3. Hemla Naik, B., S.Y. Chandrashekhar and M. Jawaharlal, 2013. Principles of Landscape Gardening, TNAU, Agrimoon.Com.
4. Web sources suggested by the teacher concerned.

VII. Co-Curricular Activities:

a) Mandatory: (Lab/ field training of students by teacher: (Lab: 10 + field: 05 hours)

1. **For Teacher**: Training of students by the teacher in the laboratory/field for a total of not less than 15 hours on the field techniques/skills of garden operations, lawn making, art of bonsai, plant propagation methods, Using CAD.
2. **For Student**: Students shall (individually) visit the parks in public and private places, study the living and non-living elements of gardening – landscaping; write their observations (on various plants, growth habit, propagation, design of garden etc.,) and submit a hand-written Fieldwork/Project work Report not exceeding 10 pages in the given format to the teacher.
3. Max marks for Fieldwork/Project work Report: 05
4. Suggested Format for Fieldwork/Project work Report: Title page, student details, index page, details of place(s) visited, observations, findings, and acknowledgements.
5. Unit tests (IE).

b) Suggested Co-Curricular Activities:

1. Training of students by related industrial experts.
2. Assignments (including technical assignments like identifying ornamental plants, types and styles of gardens, propagation of garden plants, landscaping)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on plant propagation, garden operations, ornamental gardening.
5. Collection of material/figures/photos related to gardening and landscaping, writing and organizing them in a systematic way in a file.
6. Visits to gardens and parks in public places and/or private firms; famous gardens in A.P. and India etc.
7. Invited lectures and presentations on related topics by field/industrial experts.

Model Question Paper Pattern for Practical Examination

Semester – V/ Botany Skill Enhancement Course

Gardening and Landscaping

Max. Time: 3 Hrs. Max. Marks: 50

1. Demonstration a vegetative propagation technique 'A'	8
2. Demonstration of bed making/ garden operations' 'B'	10
3. Demonstration of bonsai technique/ designing a landscape 'C'	12
4. Scientific observation and data analysis	4 x 3 = 12
D. Type or style of garden	
E. Ornamental plant	
F. Garden adornments	
G. Pest or disease of garden plants	
5. Record + Viva-voce	5+3 = 8

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-year B.Sc. (Hons)
Domain Subject: **BOTANY**
IV Year B. Sc. (Hons) – Semester – V

Max Marks: 100

Course 7D: Agroforestry

(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Understand the concepts and economic value of agroforestry.
2. Acquire a critical knowledge on systems and design of agroforestry.
3. Explain silviculture practices in relation to agroforestry.
4. Understand the role of agroforestry to reclaim the waste lands.
5. Perform skills in relation to tree measurement techniques.

II. Syllabus: (Hours: Teaching: 50, Lab: 30, Field training: 05, others incl. unit tests: 05)

(Syllabi of theory, practical and lab (skills) training together shall be completed in 80 hours)

Unit-1: Basic concepts of Agroforestry (10h)

1. Forest and Agroforestry. Definition, objectives, scope and advantages of agroforestry; classification of agroforestry; differences between social forestry and agroforestry.
2. Agroforestry practices as existing in India and Andhra Pradesh.
3. Criteria for selection and screening of tree species; design and diagnosis methodology in relation to agroforestry.

Unit-2: Systems of Agroforestry (10h)

1. Global agroforestry system: shifting cultivation, taungya cultivation, shelter belt and wind breaks, and energy plantation and homestead gardens.
2. Multipurpose tree species and their characteristics; criteria for selection of agroforestry design, role tree architecture and management in agroforestry.
3. Alley cropping, high density short rotation plantation systems, silvicultural woodlots, energy plantations.

Unit-3: Silviculture of Agroforestry trees (10h)

1. Silviculture: Definition, objectives and scope and its place in agroforestry.
2. Choice of species, site selection, and pure verses mixed crop, planting techniques and methods, protection of seedlings/ plantations from environmental and biological adversaries, tending operations, concept of coppice etc.
3. Silviculture of agroforestry trees with special reference to: (a) Azadirachta indica, (b) Tectona grandis (c) Emblica officinalis and (d) Tamarindus indica.

Unit-4: Waste land reclamation (10h)

1. Wasteland definition, types: ecological characteristics, landslides, soil erosion, hoods, drought, salinity, water logging and fire.
2. Biological causes of deforestation, grazing, shifting cultivation and faulty agricultural practices.

3. Reclamation of wastelands, scientific land use practices, afforestation, soil conservation practices, improvement of water catchment areas and development of recreational and amenity areas.

Unit-5: Measurements in Agroforestry (10h)

1. Tree measurement techniques: Instruments and methods for measurement of tree diameter, height, bark thickness, crown volume crown surface area.
2. Tree stem form, yield tables, volume tables, concept of sustained yield, and kind of tree rotation, increment and yield; estimation of biomass.
3. Determination of tree age and introduction of working plan.

III. References:

1. Dwivedi, A.P. 1992. Agroforestry: Principles and Practices. Oxford & IBH
2. Nair, P.K.R. 1993. An Introduction to Agroforestry. Kluwer.
3. Nair P.K.R., M.R. Rai and L.E.Buck, 2004. New Vistas in Agroforestry. Kluwer
4. Rajeshwar Rao G., M. Prabhakar, G. Venkatesh, I. Srinivas and K. Sammi Reddy (2018) Agroforestry Opportunities for Enhancing Resilience to Climate Change in Rainfed Areas, ICAR-CRIDA, Hyderabad
5. Young, A. 1997. Agroforestry for Soil Management. CABI
6. Web resources suggested by the teacher concerned and the college librarian including reading material.

Course 7D: Agroforestry – Practical syllabus

IV. Learning Outcomes: On successful completion of this practical course, student will be able to:

1. Identify suitable tree species for agroforestry and their products.
2. Demonstrate skills on raising tree species from seeds and by vegetative propagation.
3. Perform skills on measurements related to wood-based products.
4. Estimate biomass in an energy plantation.

V. Practical (Laboratory) Syllabus: (30 hrs)

1. Identification of agroforestry tree-species.
2. Identification of important major and minor agroforest products.
3. Collection and maintenance of agro-forest products and herbarium
4. Nursery lay out seed sowing and pre-sowing seed treatments.
5. Vegetative propagation techniques – hard wood cuttings and air layering.
6. Diameter measurements using calipers and tape; diameter measurements of forked, buttressed, fluted and leaning trees.
7. Height measurement of standing trees by shadow method, single pole method and hypsometer.
8. Volume measurement of logs using various formulae.
9. Biomass estimation in energy plantations.

VI. Lab References:

1. Meena, R. N. and R.K. Singh, 2014. A Practical Manual on Agroforesty, Srijan Samiti Publication, Varanasi
2. Dadhwal, K.S., P.Panwar, R.Kaushal, H.S.Saralch and R.Chauhan, 2014. Practical Manual on Agroforestry, Jaya Publishing House, Delhi

3. Sen, N. L., R. C. Dadheech, L. K. Dashora and T. S. Rawat, 2010. Manual of Agroforestry and Social forestry, Agrotech Publishing Academy, Udaipur
4. Web sources suggested by the teacher concerned.

VII. Co-Curricular Activities:

a) Mandatory: (Lab/ field training of students by teacher: (Lab: 10 + field: 05 hours)

1. **For Teacher**: Training of students by the teacher in the laboratory/field for not less than 15 hours on techniques like selection and screening of tree species, design and diagnosis methodology in agroforestry, silviculture practices for some selected tree species and measurements in agroforestry.
2. **For Student**: Students shall (individually) visit to nurseries of forest department, agroforestry division in Horticulture university/research station, agroforest/silviculture sites, write their observations on nursery practices, various species grown in an agroforest, growth habit, cultivation practices, measurements, products etc., and submit to the teacher a hand-written Fieldwork/Project work Report not exceeding 10 pages in the given format.
3. Max marks for Fieldwork/Project work Report: 05
4. Suggested Format for Fieldwork/Project work Report: Title page, student details, index page, details of place visited, observations, findings and acknowledgements.
5. Unit tests (IE).

a) Suggested Co-Curricular Activities:

1. Training of students by related industrial experts.
2. Assignments (including technical assignments like criteria for selection of agroforestry tree species; silviculture practices in agroforests; measurements in agroforestry; economic, social, land use and cultural services of agroforestry)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation of videos on various agroforestry methods, silviculture practices, tree measurement techniques etc.,
5. Collection of material/figures/photos related to agroforestry, writing and organizing them in a systematic way in a file.
6. Visits to social forest nurseries, energy plantations and forest research centres; nearby agro-forest based industries in A.P.
7. Invited lectures and presentations on related topics by field/industrial experts

Model Question Paper Pattern for Practical Examination

Semester – V/ Botany Skill Enhancement Course

Agroforestry

Max. Time: 3 Hrs. Max. Marks: 50

1. Demonstration pre-sowing seed treatments 'A'	8
2. Demonstration of hard wood cutting/air layering technique 'B'	10
3. Demonstration of technique of diameter/height measurement 'C'	12
4. Scientific observation and data analysis	4 x 3 = 12
D. Agroforest plant	
E. Agroforest product	
F. A tool used for measurement	
G. A herbarium specimen collected by him/her for identification	
5. Record + Viva-voce	5+3 = 8

Suggested pattern for Question Paper of Theory Examination(s) at Semester end

Max. Time: 3 Hrs. Max. Marks: 75 M

Section – A

Answer all the following questions. 5 x 2 = 10 M

- ✓ One question should be given from each Unit in the syllabus.

Section – B

Answer any Four of the following questions. Draw a labelled diagram wherever necessary 3 x 5 = 15 M

- ✓ One question should be given from each Unit in the syllabus.

Section – C

Answer any five of the following questions. Draw a labelled diagram wherever necessary 5 x 10 = 50 M

- ✓ Two questions (a & b) are to be given from each Unit in the syllabus (internal choice in each unit). Student has to answer 5 questions by choosing one from a set of questions given from a Unit.

Note: Questions should be framed in such a way to test the understanding, analytical and creative skills of the students. All the questions should be given within the frame work of the syllabus prescribed.



ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

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REVISED SYLLABUS OF B.Sc. (ZOOLOGY) UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR B.Sc.

(Zoology)

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Fifteen Courses of 1, 2, 3 & 4 Semesters)

(To be Implemented from 2020-21 Academic Year)

Modified Zoology syllabus in ANU, UG BoS Zoology meeting conducted on 24.02 2021 at 11.00am in committee room

Ch. Sarojini.

Dr.SAROJINI CHILUVURI

Chairperson of ANU UG BoS of ZOOLOGY

Structure of ZOOLOGY Syllabus

(Under CBCS for 3-year B.Sc. Programme)

(With domain subject covered during the first 4 Semesters with 5 Courses)

YEAR	SEM	PAPER	TITLE	MARKS (100)		CREDITS
				MID SEMESTER	END SEMESTER	
I	I	I	Animal Diversity – I Biology of Non-Chordates	25	75	04
			Practical - I	25	75	01
	II	II	Animal Diversity – II Biology of Chordates	25	75	04
			Practical - II	25	75	01
II	III	III	Cell biology, Genetics, Molecular Biology & Evolution	25	75	04
			Practical - III	25	75	01
	IV	IV	Physiology, Cellular Metabolism & Embryology	25	75	04
			Practical - IV	25	75	01
		V	Immunology &Animal Biotechnology	25	75	04
			Practical - V	25	75	01

PROGRAMME: THREE-YEAR B.Sc.

(With Chemistry, Botany and Zoology Disciplines)

As per the **National Education Policy, 2019 the outcomes of Higher Education** includeincreased critical thinking abilities, higher order thinking and deeper learning, mastery of content, problem solving, team work and communication skills besides general engagement and enjoyment of learning including systematic research in India.

The overall objectives of the learning outcomes-based curriculum framework are to:

- Help formulate graduate attributes, qualification descriptors, programme learning outcomes and course learning outcomes that are expected to be demonstrated by the holder of a qualification;
- Enable prospective students, parents, employers and others to understand the nature and level of learning outcomes (knowledge, skills, attitudes and values) or attributes a graduate of a programme should be capable of demonstrating on successful completion of the programme of study.

Programme Educational Objectives (PEOs):

PEO1Higher Education:Empower students to pursue higher studies in various fields of Biology and Chemistry.

PEO2Career:Enable students to pursue careers in Chemical,Biological and related fields as demonstrated by professional success at positions within industry, government, or academia.

PEO3Social responsibility: Enable students to exhibit professionalism, ethical attitude, communication skills and team work in their profession.

Program Outcomes (POs):

The Learning Outcomes of the programme could be in consonance with the Bloom's Taxonomy, which includes –

1. Remember (Lower order)
2. Understand (Lower Order)
3. Apply (Lower Order)
4. Analyze (Higher Order)

5. Evaluate& Problem Solving (Higher Order)
6. Create (Higher Order)

PO1Critical thinking: Able to understand and utilize the principles of scientific enquiry, think analytically, clearly and evaluate critically while solving problems and making decisions during biological study.

PO2Effective communication: Able to formally communicate Scientific ideas and investigations of the biology discipline to othersusing both oral and written communication skills.

PO3Social interaction:Able to develop individual behaviourandinfluence society and social structure.

PO4Effective citizenship: Able to work with a sense of responsibility towards social awareness and follow the ethical standards in the society.

PO5Ethics: Ability to demonstrate and discuss ethical conduct in scientific activities.

PO6Environment and Sustainability:Able to understand the impact of biological science in societal and environmental contexts and demonstrate the knowledge for sustainable development.

PO7Self-directed and life-long learning: Able to recognize the need of life-long learning and engage in research and self-education.

Domain Subject: ZOOLOGY

(Syllabus with Outcomes, Co-curricular Activities, References & Model Q.P forFive Courses of 1, 2, 3, 4 & 5 Semesters)

"The domain subject "Zoology", embracing the fields of Animal diversity, Cell biology, Genetics, evolution, Animal physiology, Biochemistry, Embryology, Immunology, Molecular biology and Ecology gives the student a broad understanding of faunal diversity, various life processes involved in the development of an animal, its functioning, its response to environmental stimuli, molecular basis of life, new technological approach towards life, an insight for the lecturer into research and responsibility of the student towards environment".

GENERAL CURRICULAR ACTIVITIES

- **Lecturer-based**:

1) **Class-room activities**: Organization of Group discussions, question-answer sessions, scientific observations, use of audio-visual aids, guidance programmes, examination and evaluation work (scheduled and surprise tests), quizzes, preparation of question banks, student study material, material for PG entrance examinations etc.
2) **Library activities**: Reading books and magazines taking notes from prescribed and reference books and preparation of notes on lessons as per the syllabus; Reading journals and periodicals pertaining to different subjects of study; Making files of news-paper cuttings etc.
3) **Lab activities**: Organization of practicals, maintenance of lab attendance registers/log registers, maintenance of glassware and chemicals
4) **Activities in the Seminars, workshops and conferences**:Organization of at least one seminar/workshop/conference per academic year either on academic/research aspects and inculcate research spirit among students
5) **Research activities**: Student study projects (General / RBPT model), Minor or Major research projects, Research guidance to research scholars, Publication of research articles/papers (at least one in 2 years) in UGC-recognized journals, Registration in Vidwan/Orcid/Scopus/Web of Science
6) **Smart Classroom Activities**: Organization of Departmental WhatsApp groups, Ed Modo groups/Google Class Rooms/Adobe Spark groups for quick delivery of the subject; Preparation of Moocs content & presentation tube lessons by trained lecturers; Using smart/digital/e- class rooms (mandarory) wherever present; Utilization of youtube videos (subject to copy rights) etc.

- **Student-based**:

1) **Class-room activities**: Power point presentations, seminars, assignments
2) **Library activities**: Visit to library during library hour and preparation of notes
3) **Lab activities**: Maintenance of observation note book and record, keeping lab clean and tidy
4) **Activities in the Seminars, workshops and conferences**:Participation/presentation in seminar/workshop/conference

CO-CURRICULAR ACTIVITES

OBJECTIVES:

The co-curricular activities are aimed at strengthening the theoretical knowledge with an activity related to the content taught in the class room. The aesthetic development, character building, spiritual growth, physical growth, moral values, creativity of the student.

The different types of co-curricular activities relevant to Zoology domain are listed below:

- **Academic - based**
    - Preparation of Charts/Clay or Thermocol Models
    - Debates, Essay Writing Competitions
    - Group Discussions
    - Departmental (Zoology) magazine
    - Formation of Book clubs
    - Animal album-making
    - Viva-Voce
- **Lab/Research –based**
    - Digital dissections
    - Field Visit/Excursions/Zoological Tours and submission of report
    - Training at research centres (aquaculture/apiculture/sericulture etc.)
    - Exposure to scientific instruments and hands-on experience
- **Value - based**
    - Organization of first-aid camp, swachhbharat, cleanliness week, girl-child importance, Nutrition and health awareness etc.

- **Observation of Days of National/International Importance**

World Cancer Day (February 4th)	International Biological Diversity Day (May 22nd)
Darwin Day (February 12th)	World Turtle Day (May 23rd)
National Science Day (Feb 28th)	World blood Donor Day (June 14th)
World Wildlife day (March 3rd)	World Zoonoses Day (July 6th)
National Vaccination Day (March 16th)	World Mosquito Day (August 20th)
World Health Day (April 7th)	World Turtle Day (May 23rd)
Earth Day (April 22nd)	World Mosquito Day (August 20th)
Malaria Day (April 25th)	World Animal day (October 4th)
World Hepatitis Day (May 19th)	World Immunization Day (November 10th)

AP STATE COUNCIL OF HIGHER EDUCATION

w.e.f. 2020-21 (Revised in April, 2020) **ZOOLOGY –**

SEMESTER I

PAPER – I: ANIMAL DIVERSITY – BIOLOGY OF NONCHORDATES

HOURS: 60 (5X12) **Max. Marks: 100**

Course Outcomes: By the completion of the course the graduate should able to –

CO1 Describe general taxonomic rules on animal classification

CO2 Classify Protozoa toCoelenterata with taxonomic keys

CO3 Classify Phylum Platy hemninthes to Annelida phylum using examples from parasitic adaptation and vermin composting

CO4 Describe Phylum Arthropoda to Mollusca using examples and importance of insects and Molluscans

CO5 Describe Echinodermata to Hemi chordata with suitable examples and larval stages in relation to the phylogeny

Learning objectives

1. To understand the taxonomic position of protozoa to helminthes.
2. To understand the general characteristics of animals belonging to protozoa to hemichordata.
3. To understand the structural organization of animals phylum from protozoa to hemichordata.
4. To understand the origin and evolutionary relationship of different phyla from protozoa to hemichordata.
5. To understand the origin and evolutionary relationship of different phylum from annelids to hemichordates.

ZOOLOGY SYLLABUS FOR I SEMESTER

PAPER – I: ANIMAL DIVERSITY – BIOLOGY OF NONCHORDATES

HOURS:60 (5X12) **Max. Marks: 100**

UNIT I

1.1 Principles of Taxonomy – Binomial nomenclature – Rules of nomenclature

1.2 Whittaker's five kingdom concept and classification of Animal Kingdom.

Phylum Protozoa

1.3 General Characters and classification of protozoa up to classes with suitable examples

1.4 Locomotion, nutrition and reproduction in Protozoans replaced with
1.4 Mode of infection, Pathogenesity, prophylaxis and treatment in the case of *Entamoeba histolytica, Plasmodium vivax, Trypanosoma gambience and Leishmania donovani*

1.5 *Elphidium (type study)*

UNIT –II

PhylumPorifera

2.1 General characters and classification up to classes with suitable examples

2.2 Skelton in Sponges Deleted

2.3 Canal system in sponges

PhylumCoelenterata

2.4 General characters and classification up to classes with suitable examples

2.5 Metagenesisin *Obelia*

2.6 Polymorphism in coelenterates

2.7 Corals and coral reefs

PhylumCtenophora :

2.8 General Characters and Evolutionary significance(affinities)

Unit – III

PhylumPlatyhelminthes

3.1 General characters and classification up to classes with suitable examples

3.2 Life cycle and pathogenecity of *Fasciola hepatica*

3.3 Parasitic Adaptations in helminthes

Phylum Nemathelminthes

3.4 General characters and classification up to classes with suitable examples

3.5. Life cycle and pathogenecity of *Ascarislumbricoides*

Mode of infection, Pathogenesity, prophylaxis and treatment in the case of *Schistosoma haematobium, taenia solium, Enterobius vermicularis and Anchylostoma duodenale* *Added*

Unit – IV

Phylum Annelida

4.1 General characters and classification up to classes with suitable examples

4.2 Evolution of Coelom and Coelomoducts Deleted

4.3 Vermiculture - Scope, significance, earthworm species, processing, Vermicompost, economic importance of vermicompost

Phylum Arthropoda

4.4 General characters and classification up to classes with suitable examples

4.5 Vision and respiration in Arthropoda Deleted

4.6 Metamorphosis in Insects

4.7 *Peripatus* - Structure and affinities

4.8 Social Life in Bees and Termites Replaced with
Economic importance of useful insects and Harmful insects (Useful insects - Honey bee, silk worm and Lac insect
Harmful insects- Mosquitoes, House fly and Termites)

Unit – V

Phylum Mollusca

5.1 General characters and classification up to classes with suitable examples

5.2 Pearl formation in Pelecypoda

5.3 Sense organs in Mollusca Replaced with

Economic importance of Molluscans

PhylumEchinodermata

5.4 General characters and classification up to classes with suitable examples

5.5 Water vascular system in star fish

5.6 Larval forms of Echinodermata

PhylumHemichordata

5.7 General characters and classification up to classes with suitable examples

5.8 *Balanoglossus* - Structure and affinities

Co-curricular activities (suggested)

- Preparation of chart/model of phylogenic tree of life, 5-kingdom classification, *Elphidium* life cycle etc.
- Visit to Zoology museum or Coral island as part of Zoological tour
- Charts on life cycle of *Obelia*, polymorphism, sponge spicules
- Clay models of canal system in sponges
- Preparation of charts on life cycles of *Fasciola*and *Ascaris*
- Visit to adopted village and conducting awareness campaign on diseases, to people as part of Social Responsibility.
- Plaster-of-paris or Thermocol model of *Peripatus*
- Construction of a vermicompost in each college, manufacture of manure by students and donating to local farmers
- Models of compound eye, bee hive and terminarium (termitaria) by students
- Visit to apiculture centre and short-term training as part of apprenticeship programme of the govt. Of Andhra Pradesh
- Chart on pearl forming layers using clay or Thermocol
- Visit to a pearl culture rearing industry/institute
- Live model of water vascular system
- Phylogeny chart on echinoderm larvae and their evolutionary significance
- Preparation of charts depicting the feeding mechanism, 3 coeloms, tornaria larva etc., of *Balanoglossus*

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2. Kotpal, R.L. 1988 - 1992 Protozoa, Porifera, Coelenterata, Helminthes, Arthropoda, Mollusca, Echinodermata. Rastogi Publications, Meerut.

3. E.L. Jordan and P.S. Verma '*Invertebrate Zoology'* S. Chand and Company.

4. R.D. Barnes '*Invertebrate Zoology'* by: W.B. Saunders CO., 1986.

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6 P.S. Dhami and J.K. Dhami. Invertebrate Zoology. S. Chand and Co. New Delhi.

7. Parker, T.J. and Haswell'*A text book of Zoology'* by, W.A., Mac Millan Co. London.

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ZOOLOGY MODEL PAPER FOR I SEMESTER

ZOOLOGY - PAPER - I

ANIMAL DIVERSITY – BIOLOGY OF NONCHORDATES

Time : 3 hrs **Max. Marks : 75**

I. Answer any FIVE of the following : **5x5=25**

Draw labeled diagrams wherever necessary

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II. Answer any FIVE of the following: **5x10=50**

Draw labeled diagrams wherever necessary

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OR



ZOOLOGY PRACTICAL SYLLABUS FOR I SEMESTER

ZOOLOGY - PAPER - I

ANIMAL DIVERSITY - BIOLOGY OF NONCHORDATES

Periods: 24 **Max. Marks: 50**

Learning Outcomes:

- To understand the importance of preservation of museum specimens
- To identify animals based on special identifying characters
- To understand different organ systems through demo or virtual dissections
- To maintain a neat, labeled record of identified museum specimens

Syllabus :

1. Study of museum slides / specimens / models (Classification of animals up to orders)

Protozoa: Amoeba*, Paramoecium, Paramoecium Binary fission and Conjugation, Vorticella, Entamoebahistolytica, Plasmodium vivax*

Porifera: *Sycon, Spongilla, Euspongia, Sycon*- T.S & L.S, Spicules, Gemmule

Coelenterata: *Obelia – Colony & Medusa, Aurelia, Physalia, Velella, Corallium, Gorgonia, Pennatula*v.

Platyhelminthes: *Planaria, Fasciola hepatica, Fasciola*larval forms – Miracidium, Redia, Cercaria, *Echinococcusgranulosus, Taeniasolium, Schistosomahaematobium*vii.

Nemathelminthes: *Ascaris(Male & Female), Drancunculus, Ancylostoma, Wuchereria*

Annelida: *Nereis, Aphrodite, Chaetopteurs, Hirudinaria,* Trochophore larva

Arthropoda: Cancer, Palaemon**,** Scorpion, *Scolopendra, Sacculina, Limulus, Peripatus,* Larvae - Nauplius, Mysis, Zoea, Mouth parts of male *&*female *Anopheles* and *Culex,* Mouthparts of Housefly and Butterfly. xiii.

Mollusca: *Chiton, Pila, Unio, Pteredo, Murex, Sepia, Loligo, Octopus, Nautilus,* Glochidium larva

Echinodermata: *Asterias, Ophiothrix, Echinus, Clypeaster, Cucumaria, Antedon,* Bipinnaria larva

Hemichordata: *Balanoglossus,* Tornaria larva

2. Dissections:

1. Prawn: Appendages, Digestive system, Nervous system, Mounting of Statocyst

2. Insect Mouth Parts

3. Laboratory Record work shall be submitted at the time of practical e amination

4. An **"Animal album**" containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose

5. Computer - aided techniques should be adopted or show virtual dissections

RFERENCEMANUALS:

1. Practical Zoology- Invertebrates S.S. Lal

2. Practical Zoology - Invertebrates P.S. Verma

3. Practical Zoology - Invertebrates K.P. Kurl

4. Ruppert and Barnes (2006) Invertebrate Zoology,8th Edition, Holt Saunders International Edition

AP STATE COUNCIL OF HIGHER EDUCATION

w.e.f. 2020-21 (Revised in April, 2020) **ZOOLOGY –**

SEMESTER II

PAPER – II: ANIMAL DIVERSITY – BIOLOGY OF CHORDATES

HOURS :60 (5X12) **Max. Marks:100**

Course Outcomes:

By the completion of the course the graduate should able to -

CO1 Describe general taxonomic rules on animal classification of chordates

CO2 Classify Protochordata to Mammalia with taxonomic keys

CO3 Understand Mammals with specific structural adaptaions

CO4 Understand the significance of dentition and evolutionary significance

CO5 Understand the origin and evolutionary relationship of different phyla from Prochordata to mammalia.

Learning objectives

1. To understand the animal kingdom .
2. To understand the taxonomic position of Protochordata to Mammalia.
3. To understand the general characteristics of animals belonging to Fishes to Reptilians.
4. To understand the body organization of Chordata.
5. To understand the taxonomic position of Protherian mammals.

ZOOLOGY SYLLABUS FOR II SEMESTER

PAPER – II: ANIMAL DIVERSITY – BIOLOGY OF CHORDATES

HOURS: 60 (5X12) **Max. Marks: 100**

Unit - I

1.1 General characters and classification of Chordata upto classes

1.2 Protochordata- Salient features of Cephalochordata , Affinities of Cephalochordata.

1.3 Salient features of Urochordata

1.4 Structure and life history of *Herdmania*

1.5 Retrogressive metamorphosis –Process and Significance

Unit - II

2.1 Cyclostomata, General characters, Comparison of *Petromyzon* and *Myxine*

2.2 Pisces : General characters and classification of Fishes up to orders Added

2.3 *Scoliodon*: External features, Digestive system, Respiratory system, Structure and function of Heart, Structure and functions of the Brain.

2.4 Migration in Fishes

2.5 Types of Scales

2.6 Dipnoi

Unit - III

3.1 General characters of Amphibia

3.2 Classification of Amphibia up to orders with examples.

3. 3 *Ranahexadactyla*: External features, Digestive system, Respiratory system, Structure and function of Heart, structure and functions of the Brain

3.4 Reptilia: General characters of Reptilia, Classification of Reptilia upto orders withexamples

3.5 *Calotes*:External features, Digestive system, Respiratory system, Structure and function of Heart, structure and function of Brain

3.6. Identification of Poisonous snakes and Skull in reptiles

Unit - IV

4.1 Aves General characters and classification of Aves up to orders Added

4.2 *Columba livia*: External features, Digestive system, Respiratory system, Structure and function of Heart, structure and function of Brain

4.3 Migration in Birds

4.4 Flight adaptation in birds

Unit - V

5.1 General characters of Mammalia

5.2 Classification of Mammalia upto sub - classes with examples

5.3 Comparision of Prototherians, Metatherians and Eutherians

5.4 Dentition in mammals

Co-curricular activities (suggested)

- Preparation of charts on Chordate classification (with representative animal photos) and retrogressive metamorphosis
- Thermocol or Clay models of Herdmania and Amphioxus
- Visit to local fish market and identification of local cartilaginous and bony fishes
- Maintaining of aquarium by students
- Thermocol model of fish heart and brain
- Preparation of slides of scales of fishes
- Visit to local/nearby river to identify migratory fishes and prepare study notes
- Preparation of Charts on above topics by students (Eg: comparative account of vertebrate heart/brain/lungs, identification of snakes etc.)
- Collecting and preparation of Museum specimens with dead frogs/snakes/lizards etc., and/or their skeletons
- Additional input on types of snake poisons and their antidotes (student activity).
- Collection of bird feathers and submission of report on Plumology
- Taxidermic preparation of dead birds for Zoology museum
- Map pointing of prototherian and metatherian mammals
- Chart preparation for dentition in mammals

REFERENCE BOOKS

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- Arumugam, N. Chordate Zoology, Vol. 2. SarasPlublication. 278 pages. 200 figs.
- A.J. Marshall, 1995. Textbook of zoology, Vertebrates. (The McMillan Press Ltd., UK). 852 pages. (Revised edition of Parker &Haswell, 1961).
- M. EkambaranathaAyyar, 1973. A manual of zoology. Part II. (S. ViswanathanPvt. Ltd., Madras).
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- A.K. Sinha, S. Adhikari& B.B. Ganguly, 1978. Biology of animals. Vol. II. Chordates. (New Central Book Agency, Calcutta). 560 pages.
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- G.S. Sandhu, 2005. Objective Chordate Zoology. Campus Books, vii, 169 pp.
- Sandhu, G.S. & H. Bhaskar, H. 2004. Textbook of Chordate Zoology. Campus Books, 2 vols., xx, 964 p., figs.
- Veena, 2008. Lower Chordata. (Sonali Publ.), 374 p., tables, 117 figs.

ZOOLOGY MODEL PAPER FOR II SEMESTER

ZOOLOGY - PAPER - II

ANIMAL DIVERSITY – BIOLOGY OF CHORDATES

Time: 3 hrs **Max. Marks: 75**

I. Answer any FIVE of the following: **5x5=25**

Draw labeled diagrams wherever necessary

1. *Amphioxus*
2. Placoid scale
3. Quill feather
4. Prototheria
5. Anadromous migration
6. *Draco*
7. Emu
8. Apoda

II. Answer any FIVE of the following: **5x10=50**

Draw labeled diagrams wherever necessary

9. Explain the life history of Herdmania

OR

Explain the origin and general characters of chordates

10. Compare the characters of *Petromyzon* and *Myxine*

OR

Describe the structure of heart of *Scoliodon*

11. Describe the brain of *Ranahexadactyla*

OR

Explain the external features of *Calotes*

12. Write an essay on flight adaptations in birds

OR

Explain the respiratory system of *Columba livia*

13. Compare the characters of Metatheria and Eutheria

OR

Write an essay on dentition in mammals

[redacted]

ZOOLOGY PRACTICAL SYLLABUS FOR II SEMESTER

ZOOLOGY - PAPER - II

ANIMAL DIVERSITY - BIOLOGY OF CHORDATES

Periods: 24 **Max. Marks: 50**

Learning Outcomes:

- To understand the taxidermic and other methods of preservation of chordates
- To identify chordates based on special identifying characters
- To understand internal anatomy of animals through demo or virtual dissections, thus directing the student for "empathy towards the fellow living beings"
- To maintain a neat, labeled record of identified museum specimens

OBSERVATION OF THE FOLLOWING SLIDES / SPOTTERS / MODELS

1. Protochordata :*Herdmania, Amphioxus, Amphioxus* T.S through pharynx.
2. Cyclostomata :*Petromyzon and Myxine.*
3. Pisces : *Pristis, Torpedo, Hippocoampus ,Exocoetus, Echeneis, Labeo, Catla, Clarius,Channa, Anguilla*.
4. Amphibia :*Ichthyophis, Amblystoma, Axolotl larva, Hyla,*
5. Reptilia: *Draco, Chamaeleon, Uromastix,,Testudo, Trionyx, Russels viper, Naja,* Krait, *Hydrophis, Crocodile.*
6. Aves : *Psittacula, Eudynamis, Bubo, Alcedo.*
7. Mammalia: *Ornithorhynchus*,*Pteropus,Funambulus.*

Dissections-

1. *Scoliodon*IX and X, Cranial nerves
2. *Scoliodon*Brain
3. Mounting of fish scales

Note: 1. Dissections are to be demonstrated only by the faculty or virtual.

2.Laboratory Record work shall be submitted at the time of practical examination.

REFERENCE BOOKS:

1. S.S.Lal, Practical Zoology – Vertebrata
2. P.S.Verma, A manual of Practical Zoology – Chordata

AP STATE COUNCIL OF HIGHER EDUCATION

w.e.f. 2020-21 (Revised in April, 2020) **ZOOLOGY –**

SEMESTER III

PAPER – III: CELL BIOLOGY, GENETICS, MOLECULAR BIOLOGY AND EVOLUTION

HOURS:60 (5X12) **Max. Marks:100**

Course Outcomes:

The overall course outcome is that the student shall develop deeper understanding of what life is and how it functions at cellular level. This course will provide students with a deep knowledge in Cell Biology, Animal Biotechnology and Evolution and by the completion of the course the graduate shall able to –

CO1 To understand the basic unit of the living organisms and to differentiate the organisms by their cell structure.

CO2 Describe fine structure and function of plasma membrane and different cell organelles of eukaryotic cell.

CO3 To understandthe history of origin of branch of genetics, gain knowledge on heredity, interaction of genes, various types of inheritance patterns existing in animals

CO4 Acquiring in-depth knowledge on various of aspects of genetics involved in sex determination, human karyotyping and mutations of chromosomes resulting in various disorders

CO5 Understand the central dogma of molecular biology and flow of genetic information from DNA to proteins.

CO6 Understand the principles and forces of evolution of life on earth, the process of evolution of new species and apply the same to develop new and advanced varieties of animals for the benefit of the society

Learning Objectives

- To understand the origin of cell and distinguish between prokaryotic and eukaryotic cell
- To understand the role of different cell organelles in maintenance of life activities
- To provide the history and basic concepts of heredity, variations and gene interaction
- To enable the students distinguish between polygenic, sex-linked, and multiple allelic modes of inheritance.
- To acquaint student with basic concepts of molecular biology as to how characters are expressed with a coordinated functioning of replication, transcription and translation in all living beings
- To provide knowledge on origin of life, theories and forces of evolution
- To understand the role of variations and mutations in evolution of organisms

ZOOLOGY SYLLABUS FOR III SEMESTER

PAPER – III: CELL BIOLOGY, GENETICS, MOLECULAR BIOLOGY AND EVOLUTION

HOURS: 60 (5X12) **Max. Marks: 100**

Unit – I Cell Biology

1.1 Definition, history, prokaryotic and eukaryotic cells, virus, viroids, mycoplasma

Deleted

1.2 Electron microscopic structure of animal cell.

1.3 Plasma membrane –Models and transport functions of plasma membrane.

.4Structure and functions of Golgi complex, Endoplasmic Reticulum and Lysosomes

1.5 Structure and functions of Ribosomes, Mitochondria, Nucleus, Chromosomes

(Note: 1. General pattern of study of each cell organelle – Discovery, Occurrence, Number, Origin, Structure and Functions with suitable diagrams**)**

2. Need not study cellular respiration under mitochondrial functions)

Unit – II Genetics - I

2. 1 Mendel's work on transmission of traits

2. 2 Gene Interaction – Incomplete Dominance, Codominance, Lethal Genes

2. 3 Polygenes (General Characteristics & examples); Multiple Alleles (General Characteristics and Blood group inheritance

2. 4 Sex determination (Chromosomal, Genic Balance, Hormonal, Environmental and Haplo-diploidy types of sex determination)

2. 5 Sex linked inheritance (X-linked, Y-linked & XY-linked inheritance)

Unit – III Genetics - II

3.1 Mutations & Mutagenesis

3.2 Chromosomal Disorders (Autosomal and Allosomal)

3.3 Human Genetics – Karyotyping, Pedigree Analysis (basics)

3.4 Basics on Genomics and Proteomics

UNIT IV: Molecular Biology

4.1 Central Dogma of Molecular Biology

4.2 Basic concepts of -

a. DNA replication – Overview (Semi-conservative mechanism, Semi-discontinuous mode, Origin & Propagation of replication fork)

b. Transcription in prokaryotes – Initiation, Elongation and Termination, Post-transcriptional modifications (basics)

c. Translation – Initiation, Elongation and Termination

4.3 Gene Expression in prokaryotes (Lac Operon); Gene Expression in eukaryotes

Unit - V

5.1 Origin of life

5.2 Theories of Evolution: Lamarckism, Darwinism, Germ PlasmTheroy, Mutation Theory

5.3Neo-Darwinism: Modern Synthetic Theory of Evolution, Hardy-Weinberg Equilibrium

5.4Forces of Evolution: Isolating mechanisms, Genetic Drift, Natural Selection, Speciation

Co-curricular activities (Suggested)

- Model of animal cell
- Working model of mitochondria to encourage creativity among students
- Photo album of scientists of cell biology
- Charts on plasma membrane models/cell organelles
- Observation of Mendelian / Non-Mendelian inheritance in the plants of college botanical garden or local village as a student study project activity
- Observation of blood group inheritance in students, from their parents and grand parents
- Karyotyping and preparation of pedigree charts for identifying diseases in family history
- Charts on chromosomal disorders
- Charts on central dogma/lac operon/genetic code
- Model of semi-conservative model of DNA replication
- Model of tRNA and translation mechanism
- Power point presentation of transcription or any other topic by students
- Draw geological time scale and highlight important events along the time line

- Chart on industrial melanism to teach directed selection, Darwin's finches to teach genetic drift, collection of data on weight of children born in primary health centres to teach stabilizing selection etc.

REFERENCES:

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2. Cell Biology by De Robertis
3. Bruce Alberts, Molecular Biology of the Cell
4. Rastogi, Cytology
5. Varma & Aggarwal, Cell Biology
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14. Instant Notes in Molecular Biology by Bios scientific publishers and Viva Books Private Limited
15. Hall, B. K. and Hallgrimsson, B. (2008). Evolution. IV Edition. Jones and Bartlett Publishers
16. Campbell, N. A. and Reece J. B. (2011). Biology. IX Edition, Pearson, Benjamin, Cummings.
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21. Gupta P.K., 'Genetics

ZOOLOGY MODEL PAPER FOR III SEMESTER

ZOOLOGY - PAPER - III

CELL BIOLOGY, GENETICS, MOLECULAR BIOLOGY AND EVOLUTION

Time : 3 hrs **Max. Marks : 75**

I. Answer any FIVE of the following : **5x5=25**

Draw labeled diagrams wherever necessary

1.

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II. Answer any FIVE of the following: **5x10=50**

Draw labeled diagrams wherever necessary

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OR



ZOOLOGY PRACTICAL SYLLABUS FOR III SEMESTER

ZOOLOGY - PAPER - III

CELL BIOLOGY, GENETICS, MOLECULAR BIOLOGY AND EVOLUTION

Periods: 24 **Max. Marks: 50**

Learning Objectives:

- Acquainting and skill enhancement in the usage of laboratory microscope
- Hands-on experience of different phases of cell division by experimentation
- Develop skills on human karyotyping and identification of chromosomal disorders
- To apply the basic concept of inheritance for applied research
- To get familiar with phylogeny ad geological history of origin & evolution of animals

I. Cell Biology

1. Preparation of temporary slides of Mitotic divisions with onion root tips
2. Observation of various stages of Mitosis and Meiosis with prepared slides
3. Mounting of salivary gland chromosomes of *Chiranomous*

II. Genetics

1. Study of Mendelian inheritance using suitable examples and problems
2. Problems on blood group inheritance and sex linked inheritance
3. Study of human karyotypes (Down's syndrome, Edwards, syndrome, Patau syndrome, Turner's syndrome and Klinefelter syndrome)

III. Evolution

1. Study of fossil evidences
2. Study of homology and analogy from suitable specimens and pictures
3. Phylogeny of horse with pictures
4. Study of Genetic Drift by using examples of Darwin's finches (pictures)
5. Visit to Natural History Museum and submission of report

REFERENCE BOOKS

1. Burns GW. 1972. *The Science of Genetics. An Introduction to Heredity.* Mac Millan Publ. Co.Inc.
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AP STATE COUNCIL OF HIGHER EDUCATION

w.e.f. 2020-21 (Revised in April, 2020) **ZOOLOGY –**

SEMESTER IV

PAPER – IV: ANIMAL PHYSIOLOGY, CELLULAR METABOLISM AND EMBRYOLOGY

HOURS : 60 (5X12) **Max. Marks: 100**

Course Outcomes:

This course will provide students with a deep knowledge in Physiology, Cellular metabolism and Molecular Biology and by the completion of the course the graduate shall able to –

CO1 Understand the functions of important animal physiological systems including digestion, cardio-respiratory and renal systems.

CO2 Understand the muscular system and the neuro-endocrine regulation of animal growth, development and metabolism with a special knowledge of hormonal control of human reproduction.

CO3 Describe the structure, classification and chemistry of biomolecules and enzymes responsible for sustenance of life in living organisms

CO4 Develop broadunderstanding the basic metabolic activities pertaining to the catabolism and anabolism of various biomolecules

CO5 Describe the key events in early embryonic development starting from the formation of gametes upto gastrulation and formation of primary germ layers.

Learning Objectives

- To achieve a thorough understanding of various aspects of physiological systems and their functioning in animals.
- To instil the concept of hormonal regulation of physiology, metabolism and reproduction in animals.
- To understand the disorders associated with the deficiency of hormones
- To demonstrate a thorough knowledge of the intersection between the disciplines of Biology and Chemistry.
- To provide insightful knowledge on the structure and classification of carbohydrates, proteins, lipids and enzymes
- To demonstrate an understanding of fundamental biochemical principles such as the function of biomolecules, metabolic pathways and the regulation of biochemical processes
- To make students gain proficiency in laboratory techniques in biochemistry and orient them to apply the scientific method to the processes of experimentation and hypothesis testing.

ZOOLOGY SYLLABUS FOR IV SEMESTER

PAPER – IV: ANIMAL PHYSIOLOGY, CELLULAR METABOLISM AND EMBRYOLOGY

HOURS: 60 (5X12) **Max. Marks: 100**

UNIT I Animal Physiology - I

1.1 Process of digestion and assimilation

1.2 Respiration - Pulmonary ventilation, transport of oxygen and CO_2

(Note: Need not study cellular respiration here)

1.3 Circulation - Structure and functioning of heart, Cardiac cycle

1.4 Excretion - Structure and functions of kidney urine formation, counter current Mechanism

UN IT II Animal Physiology - II

2.1Nerve impulse transmission - Resting membrane potential, origin and propagation of action potentials along myelinated and non-myelinated nerve fibers

2.2Muscle contraction - Ultra structure of muscle, molecular and chemical basis of muscle contraction

2.3 Endocrine glands - Structure, functions of hormones of pituitary, thyroid, parathyroid, adrenal glands and pancreas

2.4 Hormonal control of reproduction in a mammal

UNIT III Cellular Metabolism – I (Biomolecules)

3.1 Carbohydrates - Classification of carbohydrates. Structure of glucose

3.2 Proteins - Classification of proteins. General properties of amino acids

3.3 Lipids - Classification of lipids

3.4 Enzymes: Classification and Mechanism of Action

UNITIV Cellular Metabolism – II

4.1Carbohydrate Metabolism - Glycolysis, Krebs cycle, Electron Transport Chain, Glycogen metabolism, Gluconeogenesis

4.2 Lipid Metabolism – β-oxidation of palmitic acid

4.3 Protein metabolism - Transamination, Deamination and Urea Cycle

Unit – V Embryology

5.1 Gametogenesis

5.2 Fertilization

5.3 Types of eggs

5.4 Types of cleavages

5. 5 Development of Frog upto formation of primary germ layers

Co-curricular activities (Suggested)

- Chart on cardiac cycle, human lung, kidney/nephron structure etc.
- Working model of human / any mammalian heart.
- Chart of sarcomere/location of endocrine glands in human body
- Chart affixing of photos of people suffering from hormonal disorders
- Student study projects such as identification of incidence of hormonal disorders in the local primary health centre, studying the reasons thereof and measures to curb or any other as the lecturer feels good in nurturing health awareness among students
- Chart on structures of biomolecules/types of amino acids (essential and non-essential)Chart preparation by students on Glycolysis / kreb's cycle/urea cycle etc.
- Model of electron transport chain
- Preparation of models of different types of eggs in animals
- Chart on frog embryonic development, fate map of frog blastula, cleavage etc.

REFERENCE BOOKS

1. Eckert H. *Animal Physiology: Mechanisms and Adaptation.* W.H. Freeman & Company.
2. Floray E. *An Introduction to General and Comparative Animal Physiology.* W.B. Saunders
   Co., Philadelphia.
3. Goel KA and Satish KV. 1989. *A Text Book of Animal Physiology*, Rastogi Publications, Meerut, U.P.
4. Hoar WS. *General and Comparative Physiology.* Prentice Hall of India, New Delhi.
5. Lehninger AL. Nelson and Cox. *Principles of Biochemistry.* Lange Medical Publications, New Delhi.
6. Prosser CL and Brown FA. *Comparative Animal Physiology.* W.B. Saunders Company, Philadelphia.
7. Developmental Biology by Balinksy
8. Developmental Biology by Gerard Karp
9. Chordate embryology by Varma and Agarwal
10. Embryology by V.B. Rastogi
11. Austen CR and Short RV. 1980. *Reproduction in Mammals*. Cambridge University Press.
12. Gilbert SF. 2006. *Developmental Biology,* 8th Edition. Sinauer Associates Inc., Publishers,Sunderland, USA.
13. Longo FJ. 1987. *Fertilization.* Chapman & Hall, London.
14. Rastogi VB and Jayaraj MS. 1989. *Developmental Biology.*KedaraNath Ram Nath Publishers, Meerut, Uttar Pradesh.
15. Schatten H and Schatten G. 1989. *Molecular Biology of Fertilization.* Academic Press, New York.

ZOOLOGY MODEL PAPER FOR IV SEMESTER

ZOOLOGY - PAPER - IV

ANIMAL PHYSIOLOGY, CELLULAR METABOLISM AND EMBRYOLOGY

Time : 3 hrs **Max. Marks : 75**

I. Answer any FIVE of the following : **5x5=25**

Draw labeled diagrams wherever necessary

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II. Answer any FIVE of the following: **5x10=50**

Draw labeled diagrams wherever necessary

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ZOOLOGY PRACTICAL SYLLABUS FOR IV SEMESTER

ZOOLOGY - PAPER - IV

ANIMAL PHYSIOLOGY, CELLULAR METABOLISM AND EMBRYOLOGY

Periods: 24 **Max. Marks: 50**

Learning Objectives:

- Identification of an organ system with histological structure
- Deducing human health based on the information of composition of blood cells
- Demonstration of enzyme activity *in vitro*
- Identification of various biomolecules of tissues by simple colorimetric methods and also quantitative methods
- Identification of different stages of earl embryonic development in animals

I. ANIMAL PHYSIOLOGY

1. Qualitative tests for identification of carbohydrates, proteins and fats
2. Study of activity of salivary amylase under optimum conditions
3. T.S. of duodenum, liver, lung, kidney, spinal cord, bone and cartilage
4. Differential count of human blood

II. CELLULAR METABOLISM

1. Estimation of total proteins in given solutions by Lowry's method.
2. Estimation of total carbohydrate by Anthrone method.
3. Qualitative tests for identification of ammonia, urea and uric acid
4. Protocol for Isolation of DNA in animal cells

III. EMBRYOLOGY

1. Study of T.S. of testis, ovary of a mammal
2. Study of different stages of cleavages (2, 4, 8 cell stages)
3. Construction of fate map of frog blastula

REFERENCE BOOKS:

- Harper’s Illustrated Biochemistry
- Cell and molecular biology: Concepts & experiments. VI Ed. John Wiley &sons. Inc.
- Lab Manual on Blood Analysis and Medical Diagnostics, S. Chand and Co. Ltd.
- Laboratory techniques by Plummer

AP STATE COUNCIL OF HIGHER EDUCATION

w.e.f. 2020-21 (Revised in April, 2020) **ZOOLOGY –**

SEMESTER IV

COURSE – 5: IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

HOURS : 60 (5X12) **Max. Marks: 100**

Course Outcomes:

This course will provide students with a deep knowledge in immunology, genetics, embryology and ecology and by the completion of the course the graduate shall able to –

CO1 To get knowledge of the organs of Immune system, types of immunity, cells and organs of immunity.

CO2 To describe immunological response as to how it is triggered (antigens) and regulated (antibodies)

CO3 Understand the applications of Biotechnology in the fields of industry and agriculture including animal cell/tissue culture, stem cell technology and genetic engineering.

CO4 Get familiar with the tools and techniques of animal biotechnology.

Learning Objectives

- To trace the history and development of immunology
- To provide students with a foundation in immunological processes
- To be able to compare and contrast the innate versus adaptive immune systems and humoral versus cell-mediated immune responses
- Understand the significance of the Major Histocompatibility Complex in terms of immune response and transplantation
- To provide knowledge on animal cell and tissue culture and their preservation
- To empower students with latest biotechnology techniques like stem cell technology, genetic engineering, hyridoma technology, transgenic technology and their application in medicine and industry for the benefit of living organisms
    - To explain *in vitro* fertilization, embryo transfer technology and other reproduction manipulation methodologies.
    - To get insight in applications or recombinant DNA technology in agriculture, production of therapeutic proteins.

- To understand principles of animal culture, media preparation.

ZOOLOGY SYLLABUS FOR SEMESTER - IV

COURSE – 5: IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

HOURS : 60 (5X12) **Max. Marks: 100**

Unit – I **Immunology – I (Overview of Immune system)**

1.1 Introduction to basic concepts in Immunology

1.2 Innate and adaptive immunity, Vaccines and Immunization programme

1.3 Cells of immune system

1.4 Organs of immune system

Unit – II **Immunology – II (Antigens, Antibodies, MHC and Hypersensitivity)**

2.1 Antigens: Basic properties of antigens, B and T cell epitopes, haptens and adjuvants; Factors influencing immunogenicity

2.2 Antibodies: Structure of antibody, Classes and functions of antibodies

2.3 Structure and functions of major histocompatibility complexes

2.4 Exogenous and Endogenous pathways of antigen presentation and processing

2.5 Hypersensitivity – Classification and Types

Unit – III **Techniques**

3.1 Animal Cell, Tissue and Organ culture media: Natural and Synthetic media,

3.2 Cell cultures: Establishment of cell culture (primary culture, secondary culture, types of cell lines; Protocols for Primary Cell Culture);

Modified as Cell cultures: primary culture, secondary culture, types of cell lines

Established Cell lines (common examples such as MRC, HeLa, CHO, BHK, Vero); Organ culture; Cryopreservation of cultures

3.3 Stem cells: Types of stem cells and applications

3.4 Hybridoma Technology: Production & applications of Monoclonal antibodies (mAb)

Unit – IV **Applications of Animal Biotechnology**

4.1 Genetic Engineering:Basic concept, Vectors, Restriction Endonucleases and Recombinant DNA technology

4.2 Gene delivery:Microinjection, electroporation, biolistic method (gene gun),

liposome and viral-mediated gene delivery

4.3 Transgenic Animals: Strategies of Gene transfer; Transgenic - sheep, - fish; applications

4.4 Manipulation of reproduction in animals: Artificial Insemination, *In vitro* fertilization, super ovulation, Embryo transfer, Embryo cloning

Unit - V

5.1. PCR:Basics of PCR.

5.2 DNA Sequencing: Sanger's method of DNA sequencing- traditional and automated sequencing (2 hrs)

5.3 Hybridization techniques: Southern, Northern and Western blotting

5.4 DNA fingerprinting: Procedure and applications

5.5 Applications in Industry and Agriculture: Fermentation: Different types of Fermentation and Downstream processing; Agriculture: Monoculture in fishes, polyploidy in fishes Deleted

Co-curricular activities (suggested)

- Organizing awareness on immunization importance in local village in association with NCC and NSS teams
- Charts on types of cells and organs of immune system
- Student study projects on aspects such as – identification of allergies among students (hypersensitivity), blood groups in the class (antigens and antibodies duly reported) etc., as per the creativity and vision of the lecturer and students
- Visit to research laboratory in any University as part of Zoological tour and exposure and/ or hands-on training on animal cell culture.
- Visit to biotechnological laboratory in University or any central/state institutes and create awareness on PCR, DNA finger printing and blot techniques or Visit to a fermentation industry or Visit to a local culture pond and submit report on culture of fishes etc.

REFERENCE BOOKS

1. Immunology by Ivan M. Riott
2. Immunology by Kubey
3. Sreekrishna V. 2005. *Biotechnology –I, Cell Biology and Genetics.* New Age International Publ.New Delhi, India.

ZOOLOGY MODEL PAPER FOR V SEMESTER

COURSE – 5: IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

Time: 3 hrs **Max. Marks: 75**

I. Answer any FIVE of the following: **5x5=25**

Draw labeled diagrams wherever necessary

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II. Answer any FIVE of the following: **5x10=50**

Draw labeled diagrams wherever necessary

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ZOOLOGY PRACTICAL SYLLABUS FOR V SEMESTER

COURSE – 5: IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

Periods: 24 **Max. Marks: 50**

Learning Objectives:

- Acquainting student with immunological techniques vis-à-vis theory taught in the class room
- Interconnect the theoretical and practical knowledge of immunity with the outer world for the development of a healthier life.
- Demonstrate basic laboratory skills necessary for Biotechnology research
- Promoting application of the lab techniques for taking up research in higher studies

I. IMMUNOLOGY

1. Demonstration of lymphoid organs (as per UGC guidelines)

2. Histological study of spleen, thymus and lymph nodes (through prepared slides)

3. Blood group determination

4. Demonstration of

    a. ELISA

    b. Immunoelectrophoresis

II. Animal biotechnology

1. DNA quantification using DPA Method.
2. Techniques: Western Blot, Southern Hybridization, DNA Fingerprinting
3. Separation, Purification of biological compounds by paper, Thin-layer and Column chromatography
4. Cleaning and sterilization of glass and plastic wares for cell culture.
5. Preparation of culture media.

REFERENCE BOOKS

1. Immunology Lab Biology 477 Lab Manual; Spring 2016 Dr. Julie Jameson

2. Practical Immunology A Laboratory Manual; **LAP LAMBERT Academic Publishing**

3. Manual of laboratory experiments in cell biology by Edward, G

4. Laboratory Techniques by Plummer

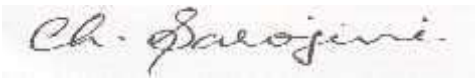
SUBJECT EXPERTS

Dr. K.Veeraiah
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Nagarjuna University
Nagarjuna Nagar

Dr.G.Srinivas
Lecturer in Zoology
& Co ordinator JKC,
O/o CCE, Vijayawada

SYLLABUS VETTED BY

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Dept of Zoology
Acharya Nagarjuna University
Nagarjuna Nagar



Dr.SAROJINI CHILUVURI

Chairperson of ANU UG BoS of ZOOLOGY

ANDHRAPRADESHSTATECOUNCILOFHIGHEREDUCATION
(A Statutory body of the Government of Andhra Pradesh)
REVISED UG SYLLABUS UNDER CBCS
(Implemented from Academic Year - 2020-21)
PROGRAMME: FOUR YEAR B.SC. (Hons)
Domain Subject: **ZOOLOGY**

Skill Enhancement Courses (SECs) for Semester V, from 2022-23

(Syllabus with Learning Outcomes, References, Co-curricular Activities & Model Q.P. Pattern)

Structure of SECs for Semester–V

(To choose one pair from the four alternate pairs of SECs)

Univ Code	Course Number 6&7	Name of Course	Hours/Week Theory +Practical	Credits Theory+ Practical	Marks	
					IA–20 FW- 05	Sem End T+P
	6A	SUSTAINABLE AQUACULTURE MANAGEMENT	3+3	3+2	25	75+50
	7A	POST HARVEST TECHNOLOGY OF FISH AND FISHERIES	3+3	3+2	25	75+50
		OR				
	6B	LIVE STOCK MANAGEMENT-I (BIOLOGY OF DAIRY ANIMALS	3+3	3+2	25	75+50
	7B	LIVE STOCK MANAGEMENT -II (DAIRY PRODUCTION AND MANAGEMENT)	3+3	3+2	25	75+50
		OR				
	6C	POULTRY MANAGEMENT- I (POULTRY FARMING)	3+3	3+2	25	75+50
	7C	POULTRY MANAGEMENT- II (POULTRY PRODUCTION AND MANGEMENT	3+3	3+2	25	75+50
		OR				
	6D	SERI CULTURE -I***	3+3	3+2	25	75+50
	7D	SERI CULTURE -II	3+3	3+2	25	75+50

*** To be taught by Zoology Teachers

Note: For Semester–V, for the domain subject Zoology, any one of the four pairs of SECs shall be chosen as courses 6 and 7, i.e., 6A & 7A or 6B & 7B or 6C & 7C or 6D & 7D. The pair shall not be broken (ABCD allotment is random, not on any priority basis).

Note-2: One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate skills related to the domain subject in students. The syllabus of SEC will be partially skill oriented. Hence, teachers shall also impart practical training to students on the skills embedded in syllabus citing related real field situations.

Dr. Ch. Sarojini
21.07.2022

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four – year B.Sc. (Hons)
Domain Subject: **ZOOLOGY**
IV Year B. Sc. (Hons)–Semester –V

Max. Marks: 100+50

Course6 A: **SUSTAINABLE AQUACULTURE MANAGEMENT**
(Skill Enhancement Course (Elective), -Credits: 05)

I. Learning Outcomes:

Students at the successful completion of this course will be able to

- Evaluate the present status of aquaculture at the Global level and National level
- Classify different types of ponds used in aquaculture
- Demonstrate induced breeding of carps
- Acquire critical knowledge on commercial importance of shrimps
- Identify fin and shell fish diseases

II. **Syllabus**: (*Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit: 1

1.1 Present status of Aquaculture – Global and National scenario
1.2 Major cultivable species for aquaculture: freshwater, brackish water and marine.
1.3 Traditional, extensive, modified extensive, semi-intensive and intensive cultures of fish and shrimp.
1.4 Design and construction of fish and shrimp farms

Unit: 2

2.1 Functional classification of ponds – head pond, hatchery, nursery ponds
2.2 Functional classification of ponds -rearing, production, stocking and quarantine ponds
2.3 Need of fertilizer and manure application in culture ponds
2.4 Physio-chemical conditions of soil and water optimum for culture (Temperature, depth, turbidity, light, water, PH, BOD, CO_2 and nutrients)

Unit: 3

3.1. Induced breeding in fishes
3.2. Culture of Indian major carps: Pre-stocking management (Dewatering, drying, ploughing / desilting; Predators, weeds and algal blooms and their control, Liming and fertilization)
3.3. Culture of Indian major carps - Stocking management
3.4. Culture of Indian major carps - post-stocking management

Unit: 4

4.1 Commercial importance of shrimp & prawn
4.2 *Macrobrachium rosenbergii*- biology, seed production.
4.3 Culture of *L. vannamei* – hatchery technology and culture practices
4.4 Mixed culture of fish and prawns

Unit: 5

5.1 Viral diseases of Fin Fish & shell fish
5.2 Fungal diseases of Fin & Shell fish
5.3 Bacterial diseases of Finfish & Shell fish
5.4 Prophylaxis in aquaculture

Dr. Ch. Sarojini 2
21.07.2022

III. References:

1. Pillay TVR & M.A.Dill, 1979. Advances in Aquaculture. Fishing News Books Ltd., London
2. Stickney RR 1979. Principles of Warm Water Aquaculture. John Wiley & Sons Inc.1981
3. Boyd CE 1982. Water Quality Management for Pond Fish Culture. Elsivier Scientific Publishing Company.
4. Bose AN et.al. 1991. Costal Aquaculture Engineering. Oxford & IBH Publishing Company Pvt. Ltd.

Web Links:

1. http://www.fao.org/fishery/docs/CDrom/FAO_Training/FAO_Training/General/x6708e/x6708e06.htm
2. http://aquaticcommons.org/1666/1/Better-Practice3_opt.pdf
3. https://www.notesonzoology.com/india/fishery/fish-diseases-symptoms-and-control-fishery/871

Course6 A: SUSTAINABLE AQUACULTURE MANAGEMENT PRACTICAL SYLLABUS

IV. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

- Identify the characaters of Fresh water cultivable species
- Etimate physico chemical characateristics of water used for aquaculture
- Examine the diseases of fin and shell fish
- Suggest measures to prevent diseases in aquaculture

V. Practical (Laboratory) Syllabus: (30hrs) (Max.50Marks)

1. Fresh water Cultivable species any (Fin & Shell Fish Specimens – Observation of morphological characters by observation and drawings)-5
2. Brackish water cultivable species (Fin &Shell fish- Specimens- Observation of Morphological Character by observing drawing) -5
3. Hands on training on the use of kits for determination of water quality in aquaculture (DO, Salinity, pH, Turbidity- Testing kits to be used for the estimation of various parameters/ Standard procedure can be demonstrated for the same)
4. Demonstration of Hypophysation (Procedure of hypophysation to be demonstrated in the practical lab with any edible fish as model)
5. Viral diseases of Fin & Shell Fish (Observation of histo pathological slides / Charts/ Models of viral pathogens in fin/ shell fish – one edible specimen can be used for observation of same in the laboratory)
6. Bacterial diseases of Fin & Shell Fish (Observation of histo pathological slides / Charts/ Models of Bacterial pathogens in fin/ shell fish – One edible specimen can be used for observation of same in the laboratory)
7. Fungal diseases - Fin & Shell Fish (Observation of histo pathological slides / Charts/ Models of Bacterial pathogens in fin / shell fish – One edible specimen can be used for observation of same in the laboratory)

Dr. Ch. Sarojini
21.07.2022

VI. Lab References

1. Boyd CE 1982. Water Quality Management for Pond Fish Culture. Elsevier Scientific Publishing Company
2. http://www.fao.org/fishery/docs/CDrom/FAO_Training/FAO_Training/General/x6708e/x6708e06.htm
3. http://aquaticcommons.org/1666/1/Better-Practice3_opt.pdf
4. https://www.notesonzoology.com/india/fishery/fish-diseases-symptoms-and-control-fishery/871

Web resources suggested by the teacher concerned and the college librarian including reading material

VII. Co-Curricular Activities

a) **Mandatory**:*(Student training by teacher in field skills: Total 15 hrs., Lab:10 + field 05)*

1. For Teacher: Training of students by the teacher in laboratory/field for not less than 15 hours on Breeding- Induced breeding in carps -hatchery technology of *L. Vennami*- Farming techniques- disease diagnostic techniques—concepts –Demonstration @ any aqua laboratory
2. For Student: Students shall (individually) visit a Hatchery/Farm/ Aqua diagnostic center and make careful observations of the process method and implements- protocols and report on the same in 10 pages hand written Fieldwork/Project work Report.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work: Title page, student details, index page, details of place visited, observations made, findings and acknowledgements.
5. (IE).Unit tests.

b) Suggested Co-Curricular Activities

1. Preparation of Model/Charts of Cultivable species of fin fish shell fish
2. Preparation of Model/Chart of Ideal fish Pond- with the standards prescribed.
3. Observation of aquaculture activities in their area (Observation of any activity related to aquaculture in the vicinity of the college/village)
4. Preparation of Model – charts of Fin /Shell fish Diseases with eco-friendly material.
5. Assignments, Group discussion, Seminar, Quiz, Collection of Material, Video preparation etc., Invited lecture

Dr. Ch. Sarojini
21.07.2022

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four – year B.Sc. (Hons)
Domain Subject: ZOOLOGY
IV Year B. Sc.(Hons)–Semester –V

Max Marks: 100+50

Course 7 A: **POSTHARVEST TECHNOLOGY OF FISH AND FISHERIES**
(Skill Enhancement Course (Elective), - Credits: 05)

I. Learning Outcomes:

Students at the successful completion of this course will be able to

- Identify the types of preservation methods employed in aquaculture
- Choose the suitable Processing methods in aquaculture
- Maintain the standard quality control protocols laid down in aqua industry
- Identify the best Seafood quality assurance system

II. **Syllabus:** *Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit – I Handling and Principles of fish Preservation

1. 1 Handling of fresh fish, storage and transport of fresh fish, post mortem changes (rigor mortis and spoilage), spoilage in marine fish and freshwater fish.

1.2 Principles of preservation – cleaning, lowering of temperature, rising of temperature, denudation, use of salt, use of fish preservatives, exposure to low radiation of gamma rays.

Unit – II Methods of fish Preservation

2.1 Traditional methods - sun drying, salt curing, pickling and smoking.

2.2. Advanced methods – chilling or icing, refrigerated sea water, freezing, canning, irradiation and Accelerated Freeze drying (AFD).

Unit – III Processing and preservation of fish and fish by-products

3.1Fish products – fish minced meat, fish meal, fish oil, fish liquid (ensilage), fish protein concentrate, fish chowder, fish cake, fish sauce, fish salads, fish powder, pet food from trash fish, fish manure.

3.2 Fish by-products – fish glue, isinglass, chitosan, pearl essence, shark fins, fish Leather and fish maws.

Unit – IV Sanitation and Quality control

4.1 Sanitation in processing plants - Environmental hygiene and Personal hygiene in processing plants.

4.2 Quality Control of fish and fishery products – pre-processing control, control during processing and control after processing.

Unit – V Quality Assurance, Management and Certification

5.1. Seafood Quality Assurance and Systems: Good Manufacturing Practices (GMPs); Good Laboratory Practices (GLPs); Standard Operating Procedures (SOPs); Concept of Hazard Analysis and Critical Control Points (HACCP) in seafood safety.

5.2 National and International standards – ISO 9000: 2000 Series of Quality Assurance System, *Codex Aliment Arius.*

Dr. Ch. Sarojini
21.07.2022

III. References:

1. Santharam R, N Sukumaran and P Natarajan 1987. A manual of aquaculture, Oxford- IBH, NewDelhi
2. Lakshmi Prasad's, Fish Processing Technology 2012, Arjun Publishing House
3. Dr Sunitha Rai, Fish Processing Technology, 2015, Random Publications
4. Safety and Quality Issues in Fish Processing (Woodhead Publishing Series in Food Science, Technology and Nutrition)by H A Bremner
5. K.A Mahanthy, Innovations in Fishing and Fish Processing Technologies, January 2021

Web Resources:

1. http://ecoursesonline.iasri.res.in/mod/page/view.php?id=145743
2. https://ecourses.icar.gov.in/e-Leaarningdownload3_new.aspx?Degree_Id=03

Course 7 A: POSTHARVEST TECHNOLOGY OF FISH AND FISHERIES
PRACTICAL SYLLABUS

IV. Learning Outcomes: On successful completion of this practical course, student shall be able to:

- Identify the quality of aqua processed products.
- Determine the quality of fishery by products by observation
- Analyze the protocols of aqua processing methods

V. **Practical (Laboratory) Syllabus:**

1. Evaluation of fish/ fishery products for organo leptic, chemical and microbial quality.
2. Preparation of dried, cured and fermented fish products
   For detailed procedure method visit sites:
3. Examination of salt, protein, moisture in dried / cured products
4. Examination of spoilage of dried / cured fish products, marinades, pickles, sauce.
5. Preparation of isinglass, collagen and chitosan from shrimp and crab shell.
6. Developing flow charts and exercises in identification of hazards – preparation of hazard analysis worksheet
7. Corrective action procedures in processing of fish- flow chart- work sheet preparation
   (** Refer the following web sites for complete procedure method and estimations of above listed practicals)

VI. References:

1. Dr Sunitha Rai, Fish Processing Technology, 2015, Random Publications
2. https://ecourses.icar.gov.in/e-Leaarningdownload3_new.aspx?Degree_Id=03
3. https://vikaspedia.in/agriculture/fisheries/post-harvest-and-marketing/processing-in-fisheries/fermented-products
4. https://krishi.icar.gov.in/jspui/bitstream/123456789/20500/1/Fermentation%20technology%20for%20fish.pdf
5. http://jebas.org/00200620122014/Abujam%20et%20al%20JEBAS.pdf
6. https://krishi.icar.gov.in/jspui/bitstream/123456789/20770/1/Training%20Manual_Hygienic%20drying%20and%20packing%20of%20fish.pdf
7. https://krishi.icar.gov.in/jspui/bitstream/123456789/20770/1/Training%20Manual_Hygienic%20drying%20and%20packing%20of%20fish.pdf
8. https://agritech.tnau.ac.in/fishery/fish_byproducts.html
9. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5352841/
10. http://www.fao.org/3/i1136e/i1136e.pdf
11. http://www.fao.org/3/x5989e/X5989e01.htm#What%20is%20sensory%20assessment)

Web resources suggested by the teacher concerned and the college librarian including reading material

Dr. Ch. Sarojini 21.07.2022

VII. Co-Curricular Activities

a) **Mandatory:** *(Lab/field training of students by teacher (lab 10 + field 05):*

1. For Teacher: Training of students by the teacher in laboratory/field for not less than 15hours on various steps of post-harvest techniques of fishes, on the advanced techniques in post-harvest technology – Training of students on other employability skills in the Post-harvest sector of Aquaculture Industry- like Processing, Packing, marketing of processed aqua products.
2. For Student: Students shall (individually) visit - Any fish/shrimp Processing Plant/Packing industry and make observations on post harvesting techniques and submit a brief handwritten Fieldwork/Project work Report with pictures and data /survey in 10 pages.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work: *Title page, student details, index page, details of place visited, observations made, findings and acknowledgements*
5. (IE): Unit tests,

b) Suggested Co-Curricular Activities

1. Observation of fish/shrimp processing plants – visit web sites of processing companies and record the details of that Unit
2. Interaction with local fishermen to know the method of preservation and details with the available traditional technology
3. Collection of web resources on the Quality assurance, quality control measures in Aqua Industries- cross checking the standards during the visit to any processing units.
4. Assignments, Seminar, Group discussion, Quiz, Collection of Material, Invited lecture, Video preparation etc.,

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Dr. Ch. Sarojini
21.07.2022

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four – year B.Sc. (Hons)
Domain Subject: ZOOLOGY
IV Year B. Sc.(Hons)–Semester – V

Max Marks: 100+50

Course6 B: **LIVE STOCK MANAGEMENT-I**
(BIOLOGY OF DAIRY ANIMALS)
(Skill Enhancement Course (Elective), - Credits: 05)

I. Learning Outcomes:

- Students at the successful completion of the course will be able to
- Select the suitable breeds of livestock for rearing
- Relate the anatomy of udder with letdown of milk
- Identify and manipulate the reproductive behavior of cattle
- Inspect the economics of dairy farming
- Apprise the various breeding techniques employed in live stock

II. **Syllabus:** (*Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit 1: Livestock census; Breeds of Dairy cattle, Buffaloes and Goats. Indigenous, Exotic and Crossbred Cattle breeds

Unit 2: Anatomy of Udder; Development of udder; Lacto genesis and Galactopoises; Letdown ofmilk.

Unit 3: Artificial insemination; Oestrous cycle; Symptoms of heat in cows and buffaloes. Conception, Pregnancy diagnosis in cattle. Multi ovulation and embryo transfer technique. Cloning.

Unit4: Economic traits of Dairy cattle. Methods of selection of dairy animals.

Unit5: Systems of Dairy cattle breeding. Inbreeding, out breeding, Cross breeding, Grading up.Breeding systems (Cross breeding of cattle and Grading up of buffaloes).

III. References:

1. Textbook of Animal Husbandry-GC Benarjee
2. Handbook of Animal Husbandry –ICAR Edition
3. Principles and practices of Dairy Farm–Jagdish Prasad

Web resources:

1. http://ecoursesonline.iasri.res.in/course/index.php?categoryid=42
2. https://vetsebooks.blogspot.com/p/e-books.html
3. https://www.basu.org.in/study-materials/veterinary-science/
4. https://vikaspedia.in/agriculture/livestock/cattle-buffalo/breeds-of-cattle-buffalo

Dr. Ch. Sarojini
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Course 6 B: LIVE STOCK MANAGEMENT-I-PRACTICAL SYLLABUS (BIOLOGY OF DAIRY ANIMALS)

IV. Learning Outcomes:

On successful completion of this practical course, student shall be able to

1. Examine the points of dairy cow
2. Understand the behavioral changes of cow during the reproductive period
3. Differentiate the merits and demerits of cross breeds in cattle

V. Practical(Laboratory) Syllabus:(30hrs) (Max.50Marks)

1. Points dairy cow. (Explanation with observation of charts- Model evaluation to be performed by the student in the laboratory)
2. Identification of different breeds of dairy cattle and buffaloes.(Observation of Charts of breeds in the laboratory- at least 3 breeds should be identified by the students in their locality with video, photo)
3. Male and female reproductive systems of cow – Model/ Chart (Student has to draw a labeled diagram of the male and female reproductive systems of cow – acquire skill to identify the parts).
4. Symptoms of heat in cow (Study and Understanding the physiological symptoms during heat).
5. Artificial insemination (Flow chart of implements – Procedure- precautions)
6. Pregnancy diagnosis in cattle.
7. Study comparative merits of cows and buffaloes; zebu and cross bred cows (Examination of merits

VI. Lab References:

1. Principles and practices of Dairy Farm–Jagadish Prasad
2. Dairy cow points: https://www.icar.org/Guidelines/05-Conformation-Recording.pdf
3. Pregnancy test protocol: https://cgspace.cgiar.org/bitstream/handle/10568/109408/Milk%20testing%20lab%20protocol.pdf?sequence=1&isAllowed=y

Web resources suggested by the teacher concerned and the college librarian including reading material

VII. Co-Curricular Activities

a) **Mandatory**:*(Lab/ field training of students by teacher :(lab:10 + filed: 05):*

1. For Teacher: Training of students by the teacher in laboratory/field for not less than 15hours on principles and practices of dairy industry- breeds –artificial insemination- reproductive behavior of cows etc. as per the syllabus above.
2. For Student: Students shall individually visit to any of the nearby cattle rearing centers/ veterinary hospital/Raithu Bharosa Kendra and make observations of the procedure and quality enhancement activities and submit a handwritten Fieldwork/Project work Report in 10 pages.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work Report: *Title page, student details, index page, details of place visited, observations made, findings and acknowledgements*
5. (IE)Unit tests,

b) Suggested Co-Curricular Activities

1. Collection of various cattle breed images from the web to prepare a album
2. Visit the sites of Veterinary colleges in India and preparation of brief report on the videos and content/ employment details
3. Sketch a model dairy farm with details
4. Invited lecture and presentation on related topics by experts
5. Seminar, Assignment, Group discussion. Quiz, Collection of Material, Invited lecture, Video preparation etc.

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21.07.2022

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code

Four – year B.Sc. (Hons)
Domain Subject: ZOOLOGY
IV Year B. Sc.(Hons)–Semester –V

Max Marks: 100+50

Course 7B: **LIVE STOCK MANAGEMENT -II**
(DAIRY PRODUCTION AND MANAGEMENT)
(Skill Enhancement Course (Elective), - Credits: 05)

I. Learning Outcomes:

Students at the successful completion of the course will be able to

- Identify and suggest the suitable housing system for the dairy farming
- Understand management practices for the dairy farming
- Learn the process of milk pasteurization
- Prepare cream from milk

II. Syllabus: (*Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit1: Systems of Housing of Dairy cattle- Loose Housing and Conventional Dairy Barns. Drawing of layouts for dairy cattle dwellings; Criteria for selecting site for establishing Dairy farm buildings; Water requirement of dairy animals.

Unit2: Management of different classes of Dairy animals- Milk producing animals, pregnant animals dry animals, heifers and calves. Management practices for Dairy farm; Identification, Dehorning, Castration, Deworming, Vaccination, Disinfection, and Milking.

Unit 3: (a) Pasteurization of milk: Definition, objects of pasteurization, objections to pasteurization,Principles of heat exchange. Methods of pasteurization: LTLT, HTST and Uperization. **(b)Sterilization of milk.** Homogenization: Factors influencing homogenization

Unit 4: Market milk: Toned milk, double toned milk, Reconstituted milk, Standardized milk and fullcream milk–Standards and methods of manufacture.

Unit 5: Cream: Types of cream, composition, methods of cream separation, gravity and centrifugal methods, types of cream separators, factors affecting fat losses in skim milk and fat percentage in cream.

III. References:

1. Textbook of Animal Husbandry-G C Benarjee
2. Handbook of Animal Husbandry –ICAR Edition
3. Principles and practices of Dairy Farm–Jagdish Prasad
4. http://ecoursesonline.iasri.res.in/course/index.php?categoryid=42
5. https://vetsebooks.blogspot.com/p/e-books.html
6. https://www.basu.org.in/study-materials/veterinary-science/
7. https://vikaspedia.in/agriculture/livestock/cattle-buffalo/breeds-of-cattle-buffalo

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Course 7 B: LIVE STOCK MANAGEMENT -II – **PRACTICAL SYLLABUS**
(DAIRY PRODUCTION AND MANAGEMENT)

IV. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

- Design a model dairy farm layout
- Understand procedure of milk pasteurization at milk processing centers
- Identify various important management practices in dairy farming

V. **Practical (Laboratory) Syllabus**: (30hrs) (Max.50 Marks)

1. Dairy Farm layout (In the laboratory student has to sketch a dairy farm with all its components)
2. Identification of cows (students have to identify the breeds of cows form the images/charts – have to identify any two breeds in the vicinity of the college/ their locality).
3. Dehorning of calves : (Method - protocol- precautions)
4. Castration of bulls (Method – Apparatus- Time-importance)
5. Deworming of dairy cattle : (Schedule – method- benefits)
6. Pasteurization of milk (Batch Method- procedure- Observation)
7. Sterilization of milk (In bottle sterilization- procedure – protocol)
8. Cream separation (By gravity method- procedure- hands on experiment)

VI. Lab References

1. Handbook of Animal Husbandry –ICAR Edition
2. Dairy farm layout : https://www.youtube.com/watch?v=dmukHUEUvKc
3. Dehorning procedure : http://www.omafra.gov.on.ca/english/livestock/dairy/facts/09-003.htm
4. Castration of bulls: https://vikaspedia.in/agriculture/livestock/general-management-practices-of-livestock/castration-of-ruminants
5. Deworming: https://kvk.icar.gov.in/API/Content/PPupload/k0347_10.pdf
6. Pasteurization of milk : http://www.jnkvv.org/PDF/08042020170652part%203.pdf
7. http://ecoursesonline.iasri.res.in/mod/page/view.php?id=1690
8. Cream separation: http://ecoursesonline.iasri.res.in/mod/page/view.php?id=147910

Web resources suggested by the teacher concerned and the college librarian including reading material

VII. Co-Curricular Activities

a) **Mandatory:** *(Lab/field training of students by teacher; lab 10+ field :05)*

1. For Teacher: Training of students by the teacher in laboratory and filed for not less than 15 hours on skills of dairy management – housing-management of dairy animals of various stages- procedure of preparation of marketable milk with procedures like sterilization, pasteurization and other techniques)
2. For Student: Student shall (individually) visit a nearby dairy farm- house hold cattle rearing – make observations on aspects like housing – management – feed- milk- revenue- breed selection- qualities of breed –etc. A handwritten Fieldwork/Project work Report to be submitted in the given format.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work Report: *Title page, student details, index page, details of place visited, observations made, findings and acknowledgements.*
5. (IE)Unit tests.

b) Suggested Co-Curricular Activities

1. Sketch model dairy house with details
2. Web resources on Protocols in the management of stages of cattle
3. Properties of varieties of milk from the market observation
4. Assignment, Seminar, Invited lecture, Group discussion. Quiz, Collection of Material, Video preparation etc.

Dr. Ch. Sarojini
24.07.2022

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four – year B.Sc. (Hons)
Domain Subject: ZOOLOGY
IV Year B. Sc.(Hons)–Semester –V

Max. Marks: 100

Course6 C: **POULTRY MANAGEMENT- I (POULTRY FARMING)**
(Skill Enhancement Course (Elective), - Credits: 05 (3+2))

I. Learning Outcomes:

Students at the successful completion of the course will be able to

- Evaluate the status of Indian Poultry Industry
- Explain the Scientific Poultry keeping
- Compare the diversified Poultry practices
- Inspect the different breeds of chicken

II. **Syllabus**: (*Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit 1 Indian poultry Industry

1.1 Importance of poultry farming and poultry development in India.
1.2 Present status and future prospectus of poultry Industry
1.3 Classification of poultry based on genetics Utility

Unit -2 Scientific Poultry Keeping

2.1 Modern breeds of Chicken
2.2 Present day egg production lines- meat production lines
2.3 Mini breeds- dwarfism in mini-Leghorns

Unit-3 Diversified Poultry

3.1 Ducks and Geese-classification- rearing system-classification-advantages
3.2 Guinea fouls - guinea fowl farming in India-Production-varieties
3.3 Emu-rearing- Economical aspects-commercial products

Unit-4 Desi Chickens:

4.1 Indigenous breeds and economical aspects of desi chicken
4.2 Indigenous breeds-Aseel-Chittagong-Kadaknath-Bursa
4.3 Improved varieties in India – Giriraja-Vanaraja-Girirani-Kalinga brown, Gramapriya, Swarnandhra

Unit -5 Breeds from Central Avian Research Institute – Izatnagar

5.1 CARI Nirbheek - CARI- Shyama-HITCARI (Naked Neck Cross)
5.2 CARI- Priya Layer, CARI- Sonali Layer,
5.3 CARIBRO-VISHAL, CARI-RAINBRO,
5.4 Nandanam chicken-I, Nandanam Chicken-II, Nandanm-Quail

III. References:

1. Text Book of Poultry Science, P V Sreenivasaiah, Write and Print Publications, ISBN No. 9788192970592, 8192970590
2. Poultry Science Practices, Nilothpal Ghosh, CBS Publication & Distributions, 2015
3. Principles of Poultry Science, 1996, CAB Publishers, ISBN 9780851991221
4. A Text Book of Animal Husbandry, C. C. Banerjee, Oxford and IBH, Publish Co, ISBN: 9788120412606

Web sources

1. https://www.drvet.in/p/e-books.html

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21.07.2022

2. https://byjus.com/biology/animal-husbandry-poultry-farming/
3. https://www.helpforag.app/2018/02/livestock-production-and-management-lpm_14.html?m=1

Course6 C: POULTRY MANAGEMENT- I (POULTRY FARMING)
PRACTICAL SYLLABUS

IV. Learning Outcomes: On successful completion of this practical course, student shall be able to:

- Identify different types of Poultry rearing practices
- Evaluate the efficacy of different types of poultry practices in maximizing yield
- Understand the importance of different hybrid breeds in poultry

V. Practical(Laboratory) Syllabus:(30hrs) (Max.50Marks)

1. Different types of Poultry rearing (Students has to observe and draw the different types of poultry rearing systems)
2. Different types of poultry Housing - Models / Images/charts
3. Different layer breeds images/charts/ Models (Observation of characters)
4. Types of broilers images/charts/ Models (Identification of important Characters)
5. CARI breeds characters –images/charts
6. Nandanam breeds- images/charts (Identification of characters)

*** (This practical is 70 % (Web based /virtual) 30% physical: student and teachers must browse the web for the specimens models – write down the important characters based on the web resources)

VI. Lab references

1. A Text Book of Animal Husbandry, C. C. Banerjee, Oxford and IBH, Publish Co, ISBN: 9788120412606

Web resources suggested by the teacher concerned and the college librarian including reading material

VII. **Co-Curricular Activities:**

a) **Mandatory**:*(Student training by teacher in field skills: total15hours (lab:10, field 05))*

1. For Teacher: Training of students by the teacher in laboratory and field for not less than 15hours on the techniques of identification of layers, broilers and management practices in poultry.
2. For Student: Students shall Individually visit a Poultry farm, make observations and report on the Rearing, Housing, Brooding, Feeding and water management activities. The student shall submit a handwritten Fieldwork/Project work Report on the observations along with pictures in the given format not exceeding 10 pages to teacher.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work: *Title page, student details, index page, details of place visited, observations made, findings and acknowledgements.*
5. Unit tests. (IE)

b) Suggested Co-Curricular Activities

1. Web resources – visiting the web sites of CARI-IZATNAGAR-https://cari.icar.gov.inprocuring additional information on the poultry breeds
2. Web resources- visiting the web site of NANADANAM http://www.tanuvas.ac.in/ippmmadhavaram_tech.html
3. Collection of additional data on different types of Poultry breeds
4. Seminar, Assignment, Group discussion. Quiz, Collection of Material, Invited Lecture, Video preparation etc.

Dr. Ch. Sarojini
26.07.2022

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four – year B.Sc. (Hons)
Domain Subject: ZOOLOGY
IV Year B. Sc–Semester –V

Max. Marks: 100+50

Course 7 C: **POULTRY MANAGEMENT -II**
(POULTRY PRODUCTION AND MANGEMENT)
(Skill Enhancement Course (Elective), - Credits: 05)

I. Learning Outcomes:

Students at the successful completion of the course will be able to

- Suggest measure for Health care in Poultry
- Evaluate the economics of poultry production
- Elaborate the poultry Breeder flock management
- Differentiate the poultry hatchery practices

II. **Syllabus:** (*Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit-1 HEALTH CARE

1.1 Common poultry diseases: bacterial, viral, fungal, parasitic and nutritional deficiencies.
1.2 Vaccination schedule for commercial layers and broilers: factors that govern vaccination schedule; vaccination principles type, methods, pre and post vaccination care.
1.3 Disinfection: Types of disinfectants; mode of action; recommended procedure; precaution and handling.

Unit-2 ECONOMICS

2.1 Economics of layer and broiler production
2.2 Projects reports in different systems of rearing for layer & broilers.
2.3 Feasibility studies on poultry rearing- in context of small units and their profitability.
2.4 Export/import of poultry and poultry products.

Unit-3 BREEDER FLOCK MANAGEMENT

3.1 Layer and broiler breeder flock management housing & space requirements.
3.2 Different stage of management during life cycle; Light management during growing and laying period, Artificial insemination.
3.3 Feeding: Feed restriction, separate male feeding. Nutrient requirement of layer and broiler breeders of different age groups.

Unit-4 BREEDER HEALTHCARE

4.1 Vaccination of breeder flock; difference between vaccination schedule of broilers and commercial birds.
4.2 Common diseases of breeders (Infectious and metabolic disorders)-prevention.
4.3 Fertility disorder- etiology, diagnosis and corrective measures. Selection and culling of breeder flocks

Unit-5 HATCHERY PRACTICES

5.1 Management principles of incubation.
5.2Factors affecting fertility and hatchability. Selection, care and incubation of hatching eggs. Fumigation; sanitation and hatchery hygiene.
5.3 Importance of hatchery records, break even analysis of unhatched eggs.
5.4 Computer applications for hatchery management

III. References:

1. HVS Chauhan, S. Roy, Poultry Diseases, Diagnosis and Treatment, New Age International

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Publishers-2018

2. https://www.drvet.in/p/e-books.html
3. https://byjus.com/biology/animal-husbandry-poultry-farming/
4. https://www.helpforag.app/2018/02/livestock-production-and-management-lpm_14.html?m=1

Course 7C: POULTRY MANAGEMENT –II- **PRACTICAL SYLLLABUS** (POULTRY PRODUCTION AND MANGEMENT)

IV. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

- Identify Poultry diseases by observation
- Analyze Poultry establishment feasibility
- Understand the Poultry Records

V. Practical (Laboratory) Syllabus:(30hrs) (Max.50 Marks)

1. Poultry Viral diseases – Observation of histo pathological slides
2. Poultry Fungal Diseases- Observation of histo pathological slides
3. Poultry Bacterial Diseases-Observation of histo pathological slides
4. Feasibility study of Poultry establishment: (Preparation of feasibility study report with given parameters)
5. Rearing of Layers – (Preparation of Flow chart
6. Rearing of broiler- Flow chart
7. Hatchery records- Model study/analysis- Report with modified data

VI. Lab references :

1. HVS Chauhan, S. Roy, Poultry Diseases, Diagnosis and Treatment, New Age International Publishers-2018
2. Flow chart hatchery : http://lms.tanuvas.ac.in/mod/resource/view.php?id=45106
3. Feasibility report: https://www.manage.gov.in/stry&fcac/content/19.%20Project%20Report%20on%20Layer%20Poultry.pdf

Web resources suggested by the teacher concerned and the college librarian including reading material

VII. Co-Curricular Activities

a) **Mandatory**:*(Lab/filed training of students by teacher: (lab10+ field 05)*

1. For Teacher: Training of students by the teacher laboratory and field for not less than 15hours on skills in different practices employed in poultry with regard to the disease management – analysis of poultry project- preparation of flow chart – Observation ofPoultry records – computerization activities
2. For Student: students shall (individually) visit a Layer/ Broiler Poultry farming places (small scale/corporate), make observations on practices- resources – management and marketing - analysis and submit a handwritten Fieldwork/Project work Report of 10 pages with necessary images.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work: *Title page, student details, index page, details of place visited, observations made, findings and acknowledgements.*
6. (IE): Unit tests.

b) **Suggested Co-Curricular Activities**

1. Preparation of Poultry diseases charts
2. Preparation of feasibility report poultry establishment with different variables
3. Seminar, Assignment, Group discussion. Quiz, Collection of Material, Invited Lecture, Video preparation etc.

Dr. Ch. Sarojini
21.07.2022

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four – year B.Sc. (Hons)
Domain Subject: ZOOLOGY
IV Year B. Sc.(Hons)–Semester –VY

Max. Marks: 100+50

Course6 D: **SERI CULTURE -I***
(BIOLOGY AND CULTIVATION OF MULBERRY)
(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

- Students at the successful completion of this course will be able to
- Evaluate the general status of Sericulture in India
- Understand the development of sericulture Botany
- Evaluate the use of Silk worm breeds
- Differentiate among various silkworm breeds
- Apprise the economics of silk rearing

II. Syllabus: *(Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit-1 A general introduction to Sericulture

1.1 Sericulture map of India: Components of Sericulture.

1.2 Textile fibers: Types- natural and synthetic fibers- types of silk produced in India; Importance of mulberry silk:

1.3 Sericulture organization in India; role of state departments of Sericulture, Central Silk Board and NGOs in Sericulture development

Unit-2 Sericultural Botany.

2.1 Taxonomy of mulberry and food plants of silkworms: Study of salient features of the families- Marceau.

2.2 Morphology of mulberry: different varieties of mulberry.

2.3 Anatomy of mulberry: internal structure of stem, root and leaf; secondary growth in root and stem.

Unit- 3 Floral biology of mulberry

3.1 Floral biology of mulberry: Sexual behavior, different types of anthers and ovule in mulberry; micro- and megaspore genesis.

3.2 Development of male and female gametophytes; pollination, fertilization

3.3 Development of endosperm, embryo and seed; polyembryony and parthenocarpy in mulberry.

Unit-4 Silkworm Biology.

4.1 Characteristic features of the order Lepidoptera; detailed study of the families- Saturnidae and Bombycid. Classification of sericigenous insects.

4.2 Classification of silkworms based on moultinism, voltinism and geographical distribution; popular silkworm breeds and hybrids of Karnataka; their economic traits

Unit-5 Morphology and anatomy of reproductive systems of silk moth.

5.1 Life cycle of *Bombyx Mori;* morphology of egg, larva, pupa and adult.

Dr. Ch. Sarojini
21.07.2022

* *This course shall be completely taught by Zoology faculty.*

III. References:

1. Hortmann and Kesler (1993) Plant Propagation, principles and practices. Prentice Hall, Hemel Nemstead.
2. Krishna Murthy, N.(1981)Plant growth substances including application in Agriculture. Tata McGraw Hill Pub. Co. Ltd. New Delhi.
3. Shankar, M.A (1998) Handbook on mulberry Nutrition, Multiplex, Bangalore.
4. Subbarao, N.S (1998) Bio fertilizers in Agriculture. Oxford & IBH Pub. Co, Pvt. Ltd, New Delhi.
5. A text Book on Mulberry Crop Protection. Govindaiah, V.P Gupta, D.D Sharma, S. Rajadurai and V. Nishitha Naik, Published by Central Silk Board, Bangalore-68, India.2005.
6. Rajanna L.Das P.K, Ravindra S, Bhogesha K , Mishra R.K.Singhvi N.R, Katigar R.S and Jayaram H. Mulberry Cultivation and Physiology Central Silk Board, Bangalore,Dec.2005

Web resources:

1. http://www.fao.org/3/ad108e/ad108e0a.htm
2. https://onlinecourses.swayam2.ac.in/cec19_bt05/preview
3. https://www.skuastkashmir.ac.in/DisplaySInformation.aspx?id=16&pid=20592
4. http://www.fao.org/3/x9895E/x9895e04.htm
5. https://www.notesonzoology.com/sericulture/moriculture/common-indian-mulberry-plants-and- their-morphological-characteristics/347

Web resources suggested by the teacher concerned and the college librarian including reading material

Course6 D: SERI CULTURE -I – **PRACTICAL SYLLABUS**

IV. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

- Develop sericulture map of India
- Develop charts on production of silk
- Examine the popular varieties of mulberry
- Display the silk glands of silk worm

V. Practical (Laboratory) Syllabus: (30hrs) (Max.50 Marks)

1. Sericulture map of India and Karnataka.
2. Preparation of histograms and pie charts on:
3. Production of textile fibers in India.
4. Pie chart on mulberry and non-mulberry silk production in India.
5. Life cycle of *Bombyx mori*- Morphology of egg, larva, pupa and adult of *Bombyx mori.*
6. Sex separation in larva, pupa and adult of the silkworm *Bombyx mori.*
7. Dissection and display of: Digestive system of larva. Silk glands.

Dr. Ch. Sarojini
21.07.2022

VI. Lab References :

1. Rajanna L,Das P.K, Ravindra S, Bhogesha K , Mishra R.K,Singhvi N.R, Katigar R.S and Jayaram H. Mulberry Cultivation and Physiology Central Silk Board, Bangalore,Dec.2005

Web sources suggested by the teacher concerned and the college librarian including reading material

VII. **Co-Curricular Activities** :

a) **Mandatory**: *(Student training by teacher in field skills: total15hrs, Lab: 10+ filed 05):*

1. For Teacher: Training of students by the teacher in the laboratory and field for not less than 15hours on the skills of preparation of Sericulture Map of India – identification of Mulberry plants – plantation- observation of Silk worm reproductive biology- observation of silk glands

2. **For Student:** Students shall (individually) visit any local Mulberry Plantation area and Silk worm Rearing center – make observations on plants, procedures and yield. Observations and outcomes shall be submitted as Fieldwork/Project work Report not exceeding 10 pages to teacher in the given format.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work: *Title page, student details, index page, details of place visited, observations made, findings and acknowledgements.*
5. (IE)Unit tests.

6. **b) Suggested Co-Curricular Activities**

1. Webbased : Collection of additional information of mulberry plants
2. Charts /Models preparation of silkworm developmental stages

7. Seminar, Invited lecture, .Assignment, Group discussion. Quiz, Collection of Material, Video preparation etc.

Dr. Ch. Sarojini
21.07.2022

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four – year B.Sc.(Hons)
Domain Subject: ZOOLOGY
IV Year B. Sc.(Hons)–Semester –VY

Max Marks: 100+50

Course 7 -D: SERICULTURE - II (BIOLOGY AND REARING OF SILKWORM)

(Skill Enhancement Course (Elective), - Credits: 05)

I. Learning Outcomes:

Students at the successful completion of this course will be able to

- Design low cost rearing house preparation for silk worm rearing
- Formulate procedure of sanitation of rearing house
- Make use of Chawki rearing practice
- Decide and suggest the correct time for harvest
- Develop and Maintain the records related to sericulture

II. Syllabus: (*Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit-1

1.1 Rearing house: Location, orientation, plan and utilities; model rearing house; low-cost rearing house.

1.2 Rearing appliances-shelf and shoot rearing; requirements of rearing appliances (per unit rearing of 100dfls).

Unit-2

2.1 Disinfection of rearing house and rearing appliances: (disinfectants formalin, bleaching powder, chlorine dioxide, slaked lime and iodine compounds);

2.2 Rearing and personal hygiene.

Unit-3

3.1 Incubation- definition, requirement of environmental conditions, incubation devices; identification of stages of development; black boxing and its importance.

3.2 Chawki rearing: Preparation; brushing and its methods; types of chawki rearing - traditional and improved method; optimum environmental conditions; methods and frequency of feeding; methods of bed cleaning; spacing; moulting and care during moult.

Unit -4

4.1 Late age silkworm rearing: Methods; optimum environmental conditions; feeding quantity and frequency; methods of bed cleaning; spacing; moulting and care during moult.

4.2. Identification of spinning larva; spinning; mounting and mounting density; types of mountages, their advantages and disadvantages; environmental requirements during spinning.

Unit -5

5.1 Harvesting: Time of harvesting; sorting, storage/ preservation

5.2 Packaging and transport of cocoons; leaf-cocoon ratio; Maintenance of rearing records.

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21.07.2022

III. References:

1. Charley, S.R. (1982). Culture and Sericulture. Academic Press Inc., New York, U.S.A
2. Chowdhury, S.N. (1998) Muga Culture. Central Silk Board, Bangalore, India
3. Dokuhon, Z.S. (1998). Illustrated Textbook on Sericulture. Oxford & IBH publishing Co., Pvt. Ltd.Calcutta.
4. Hamamura, Y. (2001). Silkworm rearing on Artificial Diet. Oxford & IBH publishing Co., Pvt. Ltd. New Delhi.
5. Hasao Aruga (1994). Principles of Sericulture (Translated from Japanese) Oxford & IBH publishing Co., Pvt. Ltd. New Delhi.

Web Resources:

1. http://www.fao.org/3/ad108e/ad108e0a.htm
2. https://onlinecourses.swayam2.ac.in/cec19_bt05/preview
3. https://www.skuastkashmir.ac.in/DisplayStnformation.aspx?id=16&pid=20592

Course 7 -D: SERICULTURE –II-**PRACTICAL SYLLABUS**
(BIOLOGY AND REARING OF SILKWORM)

IV. Learning Outcomes:

- On successful completion of this practical course, student shall be able to :
- Appreciate the morphology of silkworm
- Realize the importance of and initiate measures to disinfect the importance of disinfection of rearing houses and rearing appliances
- Differentiate the methods of incubation of silkworm eggs
- Prioritize the records in silkworm rearing

V. **Practical (Laboratory) Syllabus**:(30hrs) (Max.50 Marks)

1. Morphology and structure of silkworm egg, fertilization, Diapause development
2. Rearing house: Location, orientation, plan and utilities; model rearing house; low-cost rearing house.
3. Disinfection of rearing house and rearing appliances;
4. Incubation of silkworm eggs- Methods; black boxing; maintenance of temperature and humidity; Brushing: Methods; chawki rearing; use of paraffin paper and blue polythene sheet.
5. Bed cleaning: use of bed cleaning net and disposal of bed refuses and silkworm litter.
6. Moulting: Identification of moulting larva, care during moulting; mounting and mounting density; harvesting of cocoons; assessment of cocoons; types of mountages;
7. Study the mulberry leaf by graph paper method : (for calculating the leaf area)

VI. Lab References

1. HasaoAruga (1994). Principles of Sericulture (Translated from Japanese) Oxford & IBH publishing Co., Pvt. Ltd. New Delhi.

Web resources suggested by the teacher concerned and the college librarian including reading material

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21.07.2022

VII. Co-Curricular Activities

a) **Mandatory**: *(Lab/field training of students by teacher (lab10+filed5))*

1. For Teacher: Training of students by the teacher in laboratory and field for not less than 15hours on the skills/techniques of Rearing of Silk moth
2. For Student: Students shall (individually) visit to Silk worm rearing center and observe all the procedures. He/she shall prepare a Fieldwork/Project work Report on the observations made in the given format not exceeding 10 pages and submit to teacher.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work Report: *Title page, student details, index page, details of place visited, observations made, findings and acknowledgements.*
5. (IE). Unit tests.

b) Suggested Co-Curricular Activities

1. Model Chart preparation of chawki rearing
2. Cocoon collection and observation of characteristics
3. Mountage images / charts preparation
4. Seminar, Invited Lecture, Assignment, Seminar, Group discussion. Quiz, Seminar, Quiz, Collection of Material, Video preparation etc.

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21.07.2022

ACHARYANAGARJUNA UNIVERSITY :: NAGARJUNA NAGAR – 522 510

REVISED UG SYLLABUS UNDER CBCS

(Implemented from Academic Year, 2020-21)
Course: B.Sc. ZOOLOGY

Skill Enhancement Courses (SECs) for Semester V, from 2022-23

Suggested Question Paper Pattern for V Semester for the all papers

Max.Marks:75 Time:3 hrs

SECTION – A (Total: 10 Marks)

Very Short Answer Questions (10 Marks: 5x2)

1. .....
2. .....
3. .....
4. .....
5. .....

SECTION - B (Total: 5x5=25Marks)
(Answer any Five questions. Each answer carries 5 marks)
(At least1 question should be given from each Unit)

6. .....
7. .....
8. .....
9. .....
10. .....
11. .....
12. .....
13. .....

SECTIONC

(Total: 4x10 = 40 Marks) (Answer any four questions. Eachanswercarries10 marks(At least 1question should be given from each Unit)

14. .....
15. .....
16. .....
17. .....
18. .....
19. .....

@@@@@@@@@@@@

Draft Syllabus Prepared by;

1. Dr.N. Srinivas, Associate Professor, PR (A) Govt. College, Kakinada.
2. Sri G. Srirangam Mathew, Academic Officer, APSCHE, Guntur and
3. Prof. K. Veeraiah, Professor in Zoology, Acharya Nagarjuna University, Guntur.

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21.07.2022

6B. LIVE STOCK MANAGEMENT-I (BIOLOGY OF DAIRY ANIMALS

PRACTICAL MODEL QUESTION PAPER

Time : 3 hrs

Max marks : 50

1. Identification of different breeds of dairy cattle and buffaloes any two **(2X5=10)**
2. Male / Female reproductive systems of cow – Model/Chart **5 Marks**
3. Artificial insemination (Flow chart of implements – Procedure-precautions) **10 Marks**
4. Pregnancy diagnosis in cattle. **5 Marks**
5. Study comparative merits of cows and buffaloes; zebu and cross bred cows **10 Marks**

Record Submission 5 Marks

Field work report 5 Marks

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7B. LIVE STOCK MANAGEMENT -II(DAIRY PRODUCTION AND MANAGEMENT)

PRACTICAL MODEL QUESTION PAPER

Time : 3 hrs

Max marks : 50

1. sketch a Dairy Farm layout with all its components **10 Marks**
2. Identification of cows **any two** breeds **2 X 5 = 10 Marks**
3. Dehorning of calves - Castration of bulls - Deworming of dairy cattle **any two** **2 X 5 = 10 Marks**
4. Pasteurization of milk - Sterilization of milk - Cream separation **any two** **2 X 5 = 10 Marks**

Record Submission 5 Marks

Field work report 5 Marks

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6A. SUSTAINABLE AQUACULTUREMANAGEMENT

PRACTICAL MODEL QUESTION PAPER

Time : 3 hrs

Max marks : 50

1. Fresh water Cultivable species any two (2X3=6)
2. Brackish water cultivable species any two (2X3=6)
3. Determination of water quality parameters in aquaculture (DO, Salinity, pH, Turbidity) any one 10 Marks
4. any two Viral diseases of Fin & Shell Fish (2X3=6)
5. any two Bacterial diseases of Fin & Shell Fish (2X3=6)
6. any two Fungal diseases - Fin & Shell Fish (2X3=6)

Record Submission 5 Marks

Field work report 5 Marks

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7A. POST HARVEST TECHNOLOGY OF FISH AND FISHERIES

PRACTICAL MODEL QUESTION PAPER

Time : 3 hrs

Max marks : 50

1. Evaluation of fish/ fishery products for organo leptic, chemical and microbial quality. – any one **6 Marks**
2. Preparation of dried, cured and fermented fish products any one **6 Marks**
3. Examination of salt, protein, moisture in dried / cured products any one **6 Marks**
4. Examination of spoilage of dried / cured fish products, marinades, pickles, sauce. any one **6 Marks**
5. Preparation of isinglass, collagen and chitosan from shrimp and crab shell. any one **6 Marks**
6. Developing flow charts and exercises in identification of hazards – preparation of hazardanalysis worksheet

OR

7. Corrective action procedures in processing of fish- flow chart- work sheet preparation

10 Marks

Record Submission 5 Marks

Field work report 5 Marks

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21.07.2022

6C. POULTRY MANAGEMENT – I (POULTRY FARMING)

PRACTICAL MODEL QUESTION PAPER

Time : 3 hrs

Max marks : 50

1. Submission of poultry Housing - Models / Images/charts **10 Marks**
2. Identification of **any two** layer breeds images/charts/ Models **2 X 5=10**
3. Identification of **any two** broilers images/charts/ Models **2 X 5=10**
4. Identification of **any one** CARI breeds **5 Marks**
5. Identification of **any one** Nandanam breeds **5 Marks**

Record Submission 5 Marks

Field work report 5 Marks

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7C. POULTRY MANAGEMENT - II (POULTRY PRODUCTION AND MANAGEMENT)

PRACTICAL MODEL QUESTION PAPER

Time : 3 hrs

Max marks : 50

1. Any two Poultry Viral diseases –	**2 X 5=10** Marks
2. Any two Poultry Fungal Diseases-	**2 X 5=10** Marks
3. Any two Poultry Bacterial Diseases-	**2 X 5=10** Marks
4. Rearing of Layers – Preparation of Flow chart	**1 X 5 = 5** Marks
5. Rearing of broiler- Flow chart	**1 X 5 = 5** Marks

Record Submission	5 Marks
Field work report	5 Marks

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6D. SERI CULTURE –I

PRACTICAL MODEL QUESTION PAPER

Time : 3 hrs

Max marks : 50

1. Dissect and display the Digestive system of *Bombyx mori, Silk worm* larva and draw a neat labeled diagram **10 Marks**
2. Sericulture map of India and Karnataka. **10 Marks**
3. Preparation of histograms and pie charts on Production of textile fibers in India, mulberry and non-mulberry silk production in India. **2 X 5 = 10**
4. Life cycle of *Bombyx mori*- Morphology of egg/ larva/ pupa / adult of *Bombyx mori any two* **2 X 5 = 10**

Record Submission 5 Marks

Field work report 5 Marks

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7D. SERI CULTURE -II

PRACTICAL MODEL QUESTION PAPER

Time : 3 hrs

Max marks : 50

1. Draw and Describe Morphology and structure of silkworm egg/ Fertilization/ Diapause development any one **10 Marks**

2. Procedure of Rearing house / Disinfection of rearing house and rearing appliances any one **10 Marks**

3. Incubation of silkworm eggs/ Bed cleaning any one **10 Marks**

4. Moulting/Study the mulberry leaf by graph paper method any one **10 Marks**

Record Submission 5 Marks

Field work report 5 Marks

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21.07.2022

A.P. STATE COUNCIL OF HIGHER EDUCATION

GUIDELINES FOR THE REVISED CHOICE BASED CREDIT SYSTEM CBCS (W.E.F 2020-21)

I. Preamble:

Choice Based CreditSystem (CBCS) was introduced, under the aegis of Andhra Pradesh State Council of Higher Education (APSCHE), at the insistence of the University Grants Commission, for the general undergraduate programmes, i.e., BA, BCom, BSc, BCA, BBA, UG Honours etc., by the affiliating universities in all government, aided and private degree colleges in the state of Andhra Pradesh in 2015 - 2016.

The system of CBCS has been in vogue for the undergraduate programmes in all the advanced countries for several decades and proved to be advantageous to the students of higher education because of its features like courses in place of papers, availability of diverse courses, scope for choice, weightages with credits, space for multiple kinds of teaching, learning and assessing methods which can effectively cater to the diverse needs of students.

As the existing CBCS would be completing five years by 2019-20, the APSCHE decided to revise and strengthen the scheme while addressing the following issues.

a. Overcoming the shortages in the existing system.
b. Consolidating the system in its true spirit by providing multiple choices in domain as well as general courses.
c. Revising the curricular framework wherever needed.
d. Orienting syllabus to the course outcomes as advised by UGC
e. Updating of syllabus to match to the present needs
f. Replacing papers with courses
g. Introducing better skill-oriented courses to align with the emerging and employment areas.

For carrying out the above task, the APSCHE constituted a Committee for recommending revised curricular framework and updated syllabus of UG Programmes,

i.e., B.A., B.Com., B.Sc., BCA, BBA, UG Honouss etc., under CBCS pattern from the year 2020-21.

Based on the recommendations of the Committee, the following Guidelines are formulated. These Guidelines of Curricular Framework with revised Choice Based Credit System comes into effect from the academic year 2020 – 2021, to be strictly adhered for all Undergraduate Programmes offered in Affiliated Colleges and Autonomous Colleges.

1. The Curricular Framework for UG – Arts; UG – Science and UG – Commerce are appended as Annexures – I, II & III respectively.
2. **Life Skill Courses:** There will be 4 Life Skill Courses in place of earlier 10 foundation courses with the same hours, credits and maximum marks. The objective is to inculcate the required simple life-long skills. While the course in 'Environmental Education' continued to be mandatory, in case of others, students can opt one out of three courses, unlike in the existing system, where no choice is being given to students.
3. **Skill Development Courses:** A new set of 4 Skill Development Courses will be offered with 2 hours of teaching per week, two credits, 50 maximum marks and only external assessment. These courses are intended to train students in broad-based multiple career oriented general skills, in Arts, Commerce and Science streams but open to all students. A wider choice is given to students as they can choose one course from a total of six courses (two from each stream).
4. The preferred departments for teaching LSCs and SDCs are appended.
5. To ensure accountability among the teachers teaching LSCs and SDCs courses, the workload of these is to be reckoned for the calculation of workload of teachers.
6. **Core Courses:** Three core courses of Domain subjects will be in the first three semesters, and the fourth and fifth courses will be in the fourth semester. Two domain SECs will be in the fifth semester. There will be uniformly five Core Courses in each Domain Subject in BA and BSc, and 15 in BCom.

7. **Skill Enhancement Courses:** Two Skill Enhancement Courses will be offered for each domain subject, in Semester V. The two Skill Enhancement Courses of each domain subject will be linked for a wider basic and practical experience to students.
8. Programmes like BCA, BBA, UG Honours etc. will broadly have a similar framework as prescribed for B.Com considering them as single major subject programme.
9. Table-1: Main Features of the Courses in the Revised Curricular Framework.

Subject/Course	Hours / Week Theory	Hours / Week Practicals	Total Hours	Credits	Max Marks Internal Assessment	Max Marks University Exam	Total
Life Skills Course	02	-	02	02	-0-	50	50
Skill Development Course	02	-	02	02	-0-	50	50
Language Subject	04	-	04	03	25	75	100
Domain Arts/Commerce Subject	05	-	05	04	25	75	100
Domain Science Subject	04	02	05	05 (4+1)	25	75	100
Mathematics	06	-	06	05	25	75	100

10. The four courses of LSCs, SDCs and three courses of Languages (as they exist now) will be offered in the first three semesters as shown in the table below. The detailed structure is shown in Tabel-2 below.

Courses of	***Sem-I***	***Sem-II***	***Sem-III***	***Sem-IV***	***Sem-V***
Life Skills	1 (02)	1 (02)	2 (04)		
Skill Development	1 (02)	2 (04)	1 (02)		
Language – 1	C-1 (04)	C-2 (04)	C-3 (04)		
Language – 2	C-1 (04)	C-2 (04)	C-3 (04)		
Domain Sub -1	C-1 (06)	C-2 (06)	C-3 (06)	C-4 (06)	SEC-1(06)

				C-5 (06)	SEC-2 (06)
Domain Sub -2	C-1 (06)	C-2 (06)	C-3 (06)	C-4 (06) C-5 (06)	SEC-1(06) SEC-2 (06)
Domain Sub -3	C-1 (06)	C-2 (06)	C-3 (06)	C-4 (06) C-5 (06)	SEC-1(06) SEC-2 (06)
Total Hours/Week	30	32	32	36	36

* Figures in parenthesis are hours per week of Core Courses of Science. In respect of Arts and Commerce Courses, the hours per week for Core Courses will be 5.
** SEC1 and SEC-2 in Sem-V are C-6 and C-7 respectively.

11. Teaching of two appropriate LSCs/SDCs are to be assigned to the language departments to mitigate the workload shortage for the language subjects, as being done in respect of Foundation Courses in the previous system. The workload for teaching LSCs and SDCs by the respective language department shall be reckoned while calculating their workload.
12. The syllabus was revised and updated keeping the Leaning Outcomes in view for ensuring higher order learning and skills, a requirement in higher education. The Universities and colleges shall make certain that teaching, learning and assessment are outcome oriented.
13. In the affiliation system which imposes limitations in assessing students, the internal assessment is crucial in ensuring the right learning. Universities and colleges may strengthen the internal assessment without disturbing its flexibility.
14. Co-curricular activities play an important role in promoting experiential self-learning and field-based learning in students, especially in learning higher order skills. The measurable pedagogical activities can be a small part of internal assessment.
15. The respective Boards of Studies of the affiliating universities/autonomous colleges may modify the syllabus prepared by the subject committees as mentioned above to a limited extent, without disturbing the Frame work recommended above.
16. In view of the advantages of using ICT in teaching and learning, the universities and colleges may offer ‘online courses’ on extra credits. They may take into consideration the standardized online courses offered by various government/public agencies and also may design their own new online courses following due procedures.

17. Similarly, online programmes such as Webinars, with greater participation of students, may be encouraged in colleges.
18. The system of credit transfer facilitates students getting better training at appropriate places. The universities may discuss and develop a uniform system and guidelines in this regard across the state. The number of credits earned under credit transfer shall, however, be limited to a small number. APSCHE will issue separate guidelines.
19. To ensure inculcating social responsibility and compassionate commitment among the students, the summer vacation in the intervening 1st and 2nd years of study shall be for Community Service. Detailed guidelines on the Community Service will be circulated shortly.
20. To make the students employable, an Apprenticeship / Internship / On the job training shall be undertaken by the students in the intervening summer vacation between the 2nd and 3rd years.
21. During the entire 6th Semester, the student shall undergo Apprenticeship / Internship / On the Job Training. This is to ensure that the students develop hands on technical skills which will be of great help in facing the world of work.
22. APSCHE shall issue guidelines for the implementation and assessment of the Apprenticeship / Internship / On the job Training.

LIST OF LIFE SKILL COURSES

Semester	No. of Courses	Choices	Preferred Teaching Dept.
I	**01**	Computer Applications	Computers
		Human Values and Professional Ethics	English/Telugu/Any Dept
		Entrepreneurship	Commerce
II	**01**	Information and Communication Technology	Computers
		Indian Culture and Science	History/Telugu
		Elementary Statistics	Statistics/Maths/Economics/ Commerce
III	**02**	Health and Hygiene	Zoology/Botany
		Personality Development and Leadership	English/ Any Dept
		Analytical Skills	Maths/Statistics
		Environmental Education	Botany/Zoology/Environmental Sciences/Any Dept.

List of Skill Development Courses along with their Semester-wise allotment with choices. Preferred Teaching Departments are given in the parenthesis.

Sem	No. of Courses	**Stream – A (Arts)**	**Stream – B (Commerce)**	**Stream – C (Science)**
I	**01**	Tourism Guidance (History) Public Relations (Pol Sci /English)	Secretaryship Insurance Promotion	Electrical Appliances (Physics) Plant Nursery (Botany)
II	**02**	Journalistic Reporting (English) Survey & Reporting (Economics/History) Social Work Methods (Pol Sci) Performing Arts (Telugu)	Agricultural Marketing Business Communication (English) Advertising Logistics & Supply Chain	Solar Energy (Physics) Fruit & Vegetable Preservation (Botany) Dairy Techniques (Zoology) Food Adulteration (Chemistry)
III	**01**	Financial Markets (Economics) Disaster Management (English /Telugu)	Online Business Retailing	Environment Audit (Chemistry) Poultry Farming (Zoology)

ANNEXURE - I CBCS CURRICULAR FRAMEWORK (2020 - 21 ONWARDS) - BACHELOR OF ARTS

Subjects		SEM I		SEM II		SEM III		SEM IV		SEM V		SEM VI			
		Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits		
Languages															
English		4	3	4	3	4	3								
Language (H/T/S)		4	3	4	3	4	3								
Life Skill Courses		2	2	2	2	2+2	2+2								
Skill Development Courses		2	2	2+2	2+2	2	2								
Core Papers															
Major 1	Core 1,2,3,& 4	5	4	5	4	5	4	5	4			THIRD PHASE of APPRENTICESHIP Entire 5th / 6th Semester		FIRST and SECOND PHASES (2 spells) of APPRENTICESHIP between 1st and 2nd year and between 2nd and 3rd year (two summer vacations).	
Major 2	Core 1,2,3,& 4	5	4	5	4	5	4	5	4						
Major 3	Core 1,2,3,& 4	5	4	5	4	5	4	5	4						
Major 1	Core -5							5	4						
Major 2	Core -5							5	4						
Major 1	Skill Enhancement Core Courses 6 & 7									5	4				
										5	4				
Major 2	Skill Enhancement Core Courses 6 & 7									5	4				
										5	4				
Major 2	Skill Enhancement Core Courses 6 & 7									5	4				
										5	4				
Hrs/W (Academic Credits)		27	22	29	24	29	24	30	24	30	24	0	12	4	4
Project Work															
Extension Activities (Non Academic Credits)															
NCC/NSS/Sports/Extra Curricular									2						
Yoga							1		1						
Extra Credits															
Hrs/W (Total Credits)		27	22	29	24	29	25	30	27	30	24	0	12	4	4

ANNEXURE - II CBCS CURRICULAR FRAMEWORK (2020 - 21 ONWARDS) - BACHELOR OF SCIENCES

Subjects		SEM I		SEM II		SEM III		SEM IV		SEM V		SEM VI			
		Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits		
Languages															
English		4	3	4	3	4	3								
Language (H/T/S)		4	3	4	3	4	3								
Life Skill Courses		2	2	2	2	2+2	2+2								
Skill Development Courses		2	2	2+2	2+2	2	2								
Major 1	Core 1,2,3,& 4	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1						
Major 2	Core 1,2,3,& 4	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1						
Major 3	Core 1,2,3,& 4	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1						
Major 1	Core -5							4+2	4 + 1						
Major 2	Core -5							4+2	4 + 1						
Major 3	Core -5							4+2	4 + 1						
Major 1	Skill Enhancement Courses (6 & 7)									4+2	4 + 1				
										4+2	4 + 1				
Major 2	Skill Enhancement Courses (6 & 7)									4+2	4 + 1				
										4+2	4 + 1				
Major 3	Skill Enhancement Courses (6 & 7)									4+2	4 + 1				
										4+2	4 + 1				
Hrs/W (Academic Credits)		30	25	32	27	32	27	36	30	36	30		12	4	4
Project Work															
Extension Activities	(Non														
NCC/NSS/Sports/Extra Curricular									2						
Yoga							1		1						
Extra Credits															
Hrs/W (Total Credits)		30	25	32	27	32	28	36	33	36	30		12	4	4

THIRD PHASE of APPRENTICESHIP Entire 5th / 6th Semester

FIRST and SECOND PHASES (2 spells) of APPRENTICESHIP between 1st and 2nd year and between 2nd and 3rd year (two summer vacations).

ANNEXURE - III CBCS CURRICULAR FRAMEWORK (2020 - 21 ONWARDS) - B.Com., BBA, BCA etc.

Subjects	SEM I		SEM II		SEM III		SEM IV		SEM V		SEM VI			
	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits		
Languages														
English	4	3	4	3	4	3								
Language (H/T/S)	4	3	4	3	4	3								
Life Skill Courses	2	2	2	2	2+2	2+2								
Skill Development Courses	2	2	2+2	2+2	2	2								
Core Courses* **														
Core	5	4	5	4	5	4	5	4			THIRD PHASE of APPRENTICESHIP Entire 5th / 6th Semester		FIRST and SECOND PHASES (2 spells) of APPRENTICESHIP between 1st and 2nd year and between 2nd and 3rd year (two summer vacations).	
Core	5	4	5	4	5	4	5	4						
Core	5	4	5	4	5	4	5	4						
Core							5	4						
Core							5	4						
Core							5	4						
(Domain Related) Skill Enhancement Courses** (SECs)**									5	4				
									5	4				
									5	4				
									5	4				
									5	4				
									5	4				
Hrs/W (Academic Credits)	27	22	29	24	29	24	30	24	30	24	0	12	4	4
Project Work														
Extension Activities														
NCC/NSS/Sports/Extra Curricular								2						
Yoga						1		1						
Extra Credits														
Hrs/W (Total Credits)	27	22	29	24	29	25	30	27	30	24	0	12	4	4

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

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REVISED SYLLABUS OF B Com (GENERAL AND COMPUTER APPLICATIONS) UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR B Com

(General and Computer Applications)

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Fifteen Courses of 1, 2, 3 & 4 Semesters)

(To be Implemented from 2020-21 Academic Year)

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

CBCS – UG SYLLABUS SUBJECT REVIEW COMMITTEE

(To be implemented from the Academic Year 2020-21)

PROGRAMME: Three-Year BCom (General and Computer Applications)

Domain Subject: Commerce

(Syllabus with Outcomes, Co-curricular Activities, References for Fifteen Courses of 1, 2, 3 & 4 Semesters)

Structure of COMMERCE Syllabus under CBCS for 3-year B Com Programme (with domain subject covered during the first 4 Semesters with 15 Courses)

Sl. No	Code	Sem	Courses	Name of Course (Each Course consists 5 Units with each Unit having 12 hours of class-work)	Hours/ Week	Credits	Marks	
							Mid Sem	Sem End
1		I	1A	Fundamentals of Accounting (Gen & CA)	5	4	25	75
2		I	1B	Business Organization and Management (Gen & CA)	5	4	25	75
3		I	1C	Business Environment (Gen)/ Information Technology (CA)	5	4	25	75
4		II	2A	Financial Accounting (Gen & CA)	5	4	25	75
5		II	2B	Business Economics (Gen & CA)	5	4	25	75
6		II	2C	Banking Theory &Practice (Gen) / E-commerce and Web Designing (CA)	5	4	25	75
7		III	3A	Advanced Accounting (Gen & CA)	5	4	25	75
8		III	3B	Business Statistics (Gen & CA)	5	4	25	75
9		III	3C	Marketing (Gen)/ Programming with C & C++ (CA)	5	4	25	75
10		IV	4A	Corporate Accounting (Gen & CA)	5	4	25	75
11		IV	4B	Cost and Management Accounting (Gen & CA)	5	4	25	75
12		IV	4C	Income Tax (Gen & CA)	5	4	25	75
13		IV	4D	Business Laws (Gen & CA)	5	4	25	75
14		IV	4E	Auditing (Gen &CA)	5	4	25	75
15		IV	4F	Goods and Service Tax (Gen)/ Data Base Management System (CA)	5	4	25	75
Total					**75**	**60**	**375**	**1125**

(Gen &CA)B Com (General) and B Com (Computer Applications)

PROGRAMME: THREE-YEAR B Com

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

I Year B Com (Gen & CA)–Semester – I

Course1A: Fundamentals of Accounting

Learning Outcomes:

At the end of the course, the student will able to

- Identify transactions and events that need to be recorded in the books of accounts.
- Equip with the knowledge of accounting process and preparation of final accounts of sole trader.
- Develop the skill of recording financial transactions and preparation of reports in accordance with GAAP.
- Analyze the difference between cash book and pass book in terms of balance and make reconciliation.
- Critically examine the balance sheets of a sole trader for different accounting periods.
- Design new accounting formulas & principles for business organisations.

Syllabus:

Unit-I – Introduction

Need for Accounting – Definition – Objectives, – Accounting Concepts and Conventions – GAAP - Accounting Cycle - Classification of Accounts and its Rules – BookKeeping and Accounting - Double Entry Book-Keeping - Journalizing - Posting to Ledgers, Balancing of Ledger Accounts (including Problems).

Unit-II: Subsidiary Books:

Types of Subsidiary Books - Cash Book, Three-column Cash Book- Petty Cash Book (including Problems).

Unit-III: **Trial Balance and Rectification of Errors:**

Preparation of Trial balance - Errors – Meaning – Types of Errors

Unit-IV: Bank Reconciliation Statement:

Need for Bank Reconciliation - Reasons for Difference between Cash Book and Pass Book Balances- Preparation of Bank Reconciliation Statement - Problems on both Favourable and Unfavourable Balance (including Problems).

Unit -V: Final Accounts:

Preparation of Final Accounts: Trading account – Profit and Loss account – Balance Sheet – Final Accounts with Adjustments (including Problems).

References:

1. Ranganatham G and Venkataramanaiah, Fundamentals of Accounting, S Chand Publications
2. T.S.Reddy& A. Murthy, Financial Accounting, Margham Publications
3. S N Maheswari and SK Maheswari, Financial Accounting, Vikas Publications
4. R L Gupta & V K Gupta, Principles and Practice of Accounting, Sultan Chand & Sons
5. S.P. Jain & K.L Narang, Accountancy-I, Kalyani Publishers
6. Tulasian, Accountancy -I, Tata McGraw Hill Co.
7. V.K.Goyal, Financial Accounting, Excel Books
8. K. Arunjothi, Fundamentals of Accounting; Maruthi Publications
9. Prof EChandraiah : Financial Accounting Seven Hills International Publishers

Suggested Co-Curricular Activities:

- Bridge Course for Non-commerce Students
- Practice of Terminology of Accounting
- Quiz, Word Scramble
- Co-operative learning
- Seminar
- Co-operative learning
- Problem Solving Exercises
- Matching, Mismatch
- Creation of Trial Balance
- Visit a firm (Individual and Group)
- Survey on sole proprietorship and prepare final accounts of concern
- Group Discussions on problems relating to topics covered in syllabus
- Examinations (Scheduled and surprise tests)
- Any similar activities with imaginative thinking beyond the prescribed syllabus

PROGRAMME: THREE-YEAR B COM

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

I Year B Com (Gen & CA) – Semester – I

Course 1B: Business Organization and Management

Learning Outcomes:

At the end of the course, the student will be able to

- Understand different forms of business organizations.
- Comprehend the nature of Joint Stock Company and formalities to promote a Company.
- Describe the Social Responsibility of Business towards the society.
- Critically examine the various organizations of the business firms and judge the best among them.
- Design and plan to register a business firm. Prepare different documents to register a company at his own.
- Articulatenew models of business organizations.

Syllabus:

Unit-I –Introduction Concepts of Business, Trade, Industry and Commerce: Business – Meaning, Definition, Features and Functions of Business - Trade Classification – Aids to Trade – Industry Classification and Commerce - Factors Influencing the Choice of Suitable form of Organisation

Unit –II– **Forms of Business Organizations:** Features,Merits and Demerits of Sole Proprietor Ship and Partnership Business - Features Merits and Demits of Joint Stock Companies - Public Sector Enterprises (PSEs) - Multinational Corporations (MNCs)- Differences between Private Limited Public Limited Company

Unit-III -Company Incorporation: Preparation of Important Documents for Incorporation of Company - Certificate of Incorporation and Certificate of Commencement of Business - Contents of Memorandum and Articles of Association - Contents of Prospectus

Unit-IV- Management: Meaning Characteristics - Fayol's 14 Principles of Management - Administration Vs Management - Levels of Management

Unit-V-Functions of Management: Different Functions of Management - Meaning – Definition – Characteristics Merits and Demits of Planning

Reference Books:

1. Industrial Organization and Management,C.B.Guptha, Sultan Chand.
2. Business Organization - C.D.Balaji and G. Prasad, Margham Publications, Chennai.
3. Business Organization -R.K.Sharma and Shashi K Gupta, Kalyani Publications.
4. Business Organization & Management: Sharma Shashi K. Gupta, Kalyani Publishers
5. Business Organization & Management: C.R. Basu, Tata McGraw Hill
6. Business Organization & Management: M.C. Shukla S. Chand,
7. Business Organisation and Management, Dr.NeeruVasishth, Tax Mann Publications.
8. Business Organisation and Management, Dr B E V L Naidu, Seven Hills International Publishers, Hyderabad

Suggested Co-Curricular Activities:

- Book Reading
- Student Seminars, Debates
- Quiz Programmes
- Assignments
- Co-operative learning
- Individual / Group Field Studies
- Group Discussions on problems relating to topics covered by syllabus
- Collecting prospectus of different companies through media
- Collection of news reports and maintaining a record of paper-cuttings relating to topics covered in syllabus
- Talk on current affairs about business, industry etc.
- Simple project work on development of Certificate of Incorporation, Prospectus and Certificate of commencement of business
- Biography of well-known management thinkers and managers of gigantic companies
- Examinations (Scheduled and surprise tests)

PROGRAMME: THREE-YEAR B COM

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

I Year B Com (Gen & CA) – Semester – I

Course 1C: Business Environment

Learning Outcomes:

At the end of the course, the student will able to;

- Understand the concept of business environment.
- Define Internal and External elements affecting business environment.
- Explain the economic trends and its effect on Government policies.
- Critically examine the recent developments in economic and business policies of the Government.
- Evaluate and judge the best business policies in Indian business environment.
- Develop the new ideas for creating good business environment.

SYLLABUS:

Unit–I:Overview of Business Environment: Business Environment – Meaning – Characteristics – Scope -Macro and Micro Dimensions of Business Environment - Environmental Analysis.

Unit – II:Economic Environment: Economic Environment – Nature of the Economy – Structure of Economy – Economic Policies & Planning the Economic Condition – NITI Ayog – National Development Council – Five Year Plans

Unit–III: Economic Policies: Economic Reforms and New Economic Policy – New Industrial Policy – Competition Law – Fiscal Policy – Objectives and Limitations – Monetary Policy and RBI

Unit – IV:Social, Political and Legal Environment: Concept of Social Responsibility of Business towards Stakeholders - Demonetisation, GST and their Impact - Political Stability - Legal Changes.

Unit–V:Global Environment : Globalization – Meaning – Role of WTO – WTO Functions

Suggested Readings:

1. K. Aswathappa : Essentials of Business Environment, Himalaya Publishing House
2. Francis Cherunilam : Business Environment,Himalaya Publishing House
3. Dr S Sankaran: : Business Environment, MarghamPublications
4. S.K. Mishra and V.K. Puri : Economic Environment of Business, HPH
5. Rosy Joshi and Sangam Kapoor : Business Environment, Kalyanai Publications
6. A C Fernando: Business Environment, Pearson
7. Dr V Murali Krishna, Business Environment, Spectrum Publications
8. Namitha Gopal, Business Environment, McGraw Hill

Suggested Co-Curricular Activities:

- Seminar on overview of business environment
- Debate on micro v/s macro dimensions of business environment
- Co-operative learning
- Seminar on Monetary policies of RBI
- Debate on social, political and legal environment
- Group Discussions on Global environment and its impact on business
- To learn about NITI Ayog and National Development Council
- Seminars on Economic policies like New Industrial policy, Fiscal policy etc.
- Reports on WTO,BRICS, SAARC etc.
- Examinations (Scheduled and surprise tests) on all units

PROGRAMME: THREE-YEAR B COM

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

I Year B Com (Gen & CA)– Semester – II

Course 2A: Financial Accounting

Learning Outcomes:

At theend of the coursethe student will able to;

- Understand the concept of consignment and learn the accounting treatment of the various aspects of consignment.
- Analyze the accounting process and preparation of accounts in consignment and joint venture.
- Distinguish Joint Venture and Partnership and to learn the methods of maintaining records under Joint Venture.
- Determine the useful life and value of the depreciable assets and maintenance of Reserves in business entities.
- Design an accounting system for different models of businesses at his own using the principles of existing accounting system.

Syllabus

Unit-I:Depreciation: Meaning and Causes of Depreciation - Methods of Depreciation: Straight Line – Written Down Value –Annuity and Depletion Method (including Problems).

Unit-II:Provisions and Reserves: Meaning – Provision vs. Reserve – Preparation of Bad Debts Account – Provision for Bad and Doubtful Debts – Provision for Discount on Debtors – Provision for Discount on Creditors - Repairs and Renewals Reserve A/c (including Problems).

Unit-III: Bills of Exchange: Meaning of Bill – Features of Bill – Parties in the Bill – Discounting of Bill – Renewal of Bill – Entries in the Books of Drawer and Drawee (including Problems).

Unit-IV: Consignment Accounts: Consignment - Features - Proforma Invoice - Account Sales – Del-credere Commission - Accounting Treatment in the Books of Consigner and Consignee - Valuation of Closing Stock

Unit-V: Joint Venture Accounts: JointVenture - Features - Difference between Joint-Venture and Consignment – Accounting Procedure – Methods of Keeping Records–One Vendor Keeps the Accounts (including Problems).

Reference Books:

1. Ranganatham G and Venkataramanaiah, **Financial Accounting-II,** S Chand Publications, New Delhi.
2. T. S. Reddy and A. Murthy - **Financial Accounting**, Margham Publications.
3. R.L. Gupta & V.K. Gupta, **Principles and Practice of Accounting**, Sultan Chand.
4. SN Maheswari and SK Maheswari – **Financial Accounting**, Vikas Publications.
5. S.P. Jain & K.L Narang,**Accountancy-I**, Kalyani Publishers.
6. Tulsan, **Accountancy-I**, Tata McGraw Hill Co.
7. V.K. Goyal, **Financial Accounting**, Excel Books
8. T.S. Grewal, **Introduction to Accountancy**, Sultan Chand & Co.
9. Haneef and Mukherjee, **Accountancy-I**, Tata McGraw Hill.
10. Arulanandam and Ramana, **Advanced Accountancy**, Himalaya Publishers.
11. S.N.Maheshwari&V.L.Maheswari, **Advanced Accountancy-I**, Vikas Publishers.
12. Prof E Chandraiah, **Financial Accounting**, Seven Hills International Publishers.

Suggested Co-Curricular Activities:

- ★ Quiz Programs
- ★ Problem Solving Exercises
- ★ Co-operative learning
- ★ Seminar
- ★ Group Discussions on problems relating to topics covered by syllabus
- ★ Reports on Proforma invoice and account sales
- ★ Visit a consignment and joint venturefirms(Individual and Group)
- ★ Collection of proforma of bills and promissory notes
- ★ Examinations (Scheduled and surprise tests)
- ★ Any similar activities with imaginative thinking beyond the prescribed syllabus

PROGRAMME: THREE-YEAR B COM

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

I Year B Com (Gen & CA)– Semester – II

Course 2B: Business Economics

Learning Outcomes:

At the end of the course, the student will able to;

- Describe the nature of economics in dealing with the issues of scarcity of resources.
- Analyze supply and demand analysis and its impact on consumer behaviour.
- Evaluate the factors,such as production and costs affecting firmsbehaviour.
- Recognize market failure and the role of government in dealing with those failures.
- Use economic analysis to evaluate controversial issues and policies.
- Apply economic models for managerial problems, identify their relationships, and formulate the decision making tools to be applied for business.

Syllabus

Unit-I: Introduction: Meaning and Definitions of Business Economics - Nature and Scope of Business Economics -Micro and Macro Economics and their Interface.

Unit-II: Demand Analysis: Meaning and Definition of Demand – Determinants to Demand –Demand Function -Law of Demand – Demand Curve – Exceptions to Law of Demand - Elasticity of Demand – Measurements of Price Elasticity of Demand

Unit – III: Production, **Cost and Revenue Analysis**: Concept of Production Function – Law of Variable Proportion -Law of Returns to Scale - Classification of Costs -Break Even Analysis - Advantages

Unit-IV: Market Structure: Concept of Market – Classification of Markets -Perfect Competition – Characteristics – Equilibrium Price -Monopoly – Characteristics – Equilibrium Under Monopoly.

Unit-V: National Income: Meaning – Definition – Measurements of National Income - Concepts of National Income -Components of National Income-Problems in Measuring National Income

References:

1. Business Economics -S.Sankaran, Margham Publications, Chennai.
2. Business Economics - Kalyani Publications.
3. Business Economics - Himalaya Publishing House.
4. Business Economics - Aryasri and Murthy, Tata McGraw Hill.
5. Business Economics -H.L Ahuja, Sultan Chand & Sons
6. Principles of Economics -Mankiw, Cengage Publications
7. Fundamentals of Business Economics -Mithani, Himalaya Publishing House
8. Business Economics -A.V. R. Chary, Kalyani Publishers, Hyderabad.
9. Business Economics -Dr K Srinivasulu, Seven Hills International Publishers.

Suggested Co-Curricular Activities:

- Assignments
- Student Seminars
- Quiz , JAM
- Study Projects
- Group Discussion
- Graphs on Demand function and demand curves
- Learning about markets
- The oral and written examinations (Scheduled and surprise tests),
- Market Studies
- Individual and Group project reports,
- Annual talk on union and state budget
- Any similar activities with imaginative thinking beyond the prescribed syllabus

PROGRAMME: THREE-YEAR B COM

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

I Year B Com (Gen)– Semester – II

Course 2C:Banking Theory and Practice

Learning Outcomes:

At the end of the course, the student will able to;

- Understand the basic concepts of banks and functions of commercial banks.
- Demonstrate an awareness of law and practice in a banking context.
- Engage in critical analysis of the practice of banking law.
- Organize information as it relates to the regulation of banking products and services.
- Critically examine the current scenario of Indian Banking system.
- Formulate the procedure for better service to the customers from various banking innovations.

Syllabus:

Unit-I: Introduction:

Meaning & Definition of Bank – Functions of Commercial Banks – Credit Creation with Examples - Kinds of Banks – Central Banking Vs. Commercial Banking.

Unit-II: Banking Systems:

Unit Banking, Branch Banking, Investment Banking - Innovations in Banking – E banking - Online and Offshore Banking, Internet Banking - Anywhere Banking - ATMs – RTGS-NEFT – Mobile Banking

Unit-III: Types of Banks:

Indigenous Banking - Cooperative Banks, Regional Rural Banks, SIDBI, NABARD - EXIM bank

Unit-IV: Banker and Customer:

Meaning and Definition of Banker and Customer – Types of Customers – General Relationship and Special Relationship between Banker and Customer - KYC Norms.

Unit-V: Collecting Banker and Paying Banker:

Concepts - Duties & Responsibilities of Collecting Banker – Holder for Value – Holder in Due Course – Statutory Protection to Collecting Banker - Responsibilities of Paying Banker - Payment Gateways.

Books for Reference:

1. Banking Theory: Law &Practice : K P M Sundram and V L Varsheney, Sultan Chand &Sons.
2. Banking Theory, Law and Practice : B. Santhanam; Margam Publications.
3. Banking Theory and Practice, Seven Hills International Publishers, Hyderabad.
4. Banking and Financial Systems: Aryasri, Tata McGraw-Hill Education India.
5. Introduction to Banking :VijayaRaghavan,Excel books.
6. Indian Financial System :M.Y.Khan, McGraw Hill Education.
7. Banking Theory and Practice, Jagroop Singh, Kalyani Publishers.

Suggested Co-Curricular Activities:

- Debates
- Student Seminars
- Quiz Programmes
- Visit to Bank premises
- Guest Lecture by Banking Official
- Prepare a statement on periodical declarations of RBI like SLR, REPO etc
- Collection, display and Practicing of filling of different forms used in banks
- Survey on customers satisfaction of Banking services
- Know about KYC norms
- Talk on latest trends in banking industry
- Online Banking
- Individual and group project reports
- Current Affairs of Banking Sector
- Examinations (Scheduled and surprise tests)
- Any similar activities with imaginative thinking beyond the prescribed syllabus

PROGRAMME: THREE-YEAR B COM

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

II Year B Com (Gen &CA)– Semester – III

Course 3A:Advanced Accounting

Learning Outcomes:

At the end of the course, the student will able to;

- Understand theconcept of Non-profit organisations and its accounting process
- Comprehend the concept of single-entry system and preparation of statement of affairs
- Familiarize with the legal formalities at the time of dissolution of the firm
- Prepare financial statements for partnership firm on dissolution of the firm.
- Employ critical thinking skills to understand the difference between the dissolution of the firm and dissolution of partnership

Syllabus

Unit-I:**Accounting for Non Profit Organisations**: Non Profit Entities- Meaning - Features of Non-Profit Entities –Provisions as per Sec 8 - Accounting Process- Preparation of Accounting Records - Receipts and Payments Account- Income and Expenditure Account - Preparation of Balance Sheet (including problems).

Unit-II: Single Entry System: Features – Differences between Single Entry and Double Entry – Disadvantages of Single Entry- Ascertainment of Profit and Preparation of Statement of Affairs (including Problems).

Unit-III:Hire Purchase System: Features –Difference between Hire Purchase and Instalment Purchase Systems - Accounting Treatment in the Books of Hire Purchaser and Hire Vendor - Default and Repossession (including Problems).

Unit-IV: Partnership Accounts-I: Meaning – Partnership Deed - Fixed and Fluctuating Capitals-Accounting Treatment of Goodwill - Admission and Retirement of a Partner(including problems).

Unit-V: Partnership Accounts-II: Dissolution of a Partnership Firm – Application of Garner v/s Murray Rule in India – Insolvency of one or more Partners (including problems).

References:

1. Advanced Accountancy: T S Reddy and A Murthy by Margham Publications.
2. Financial Accounting: SN Maheswari& SK Maheswari by Vikas Publications.
3. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta, Sultan Chand & Sons.
4. Advanced Accountancy: R.L.Gupta&Radhaswamy, Sultan Chand &Sons..
5. Advanced Accountancy (Vol-II): S.N.Maheshwari&V.L.Maheswari, Vikas publishers.
6. Advanced Accountancy: Dr. G. Yogeshwaran, Julia Allen - PBP Publications.
7. Accountancy–III: Tulasian, Tata McGraw Hill Co.
8. Accountancy–III: S.P. Jain & K.L Narang, Kalyani Publishers.
9. Advanced Accounting (IPCC): D. G. Sharma, Tax Mann Publications.
10. Advanced Accounting: Prof B Amarnadh, Seven Hills International Publishers.
11. Advanced Accountancy: M Shrinivas& K Sreelatha Reddy, Himalaya Publishers.

Suggested Co-Curricular Activities:

- Quiz Programs
- Problem Solving exercises
- Co-operative learning
- Seminar
- Visit a single-entry firm, collect data and Creation of Trial Balance of the firm
- Visit Non-profit organization and collect financial statements
- Critical analysis of rate of interest on hire purchase schemes
- Visit a partnership firm and collect partnership deed
- Debate on Garner v/s Murray rule in India and outside India
- Group Discussions on problems relating to topics covered by syllabus
- Examinations (Scheduled and surprise tests) on all units

PROGRAMME: THREE-YEAR B COM

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

II Year B Com (Gen & CA)– Semester – III

Course 3B: Business Statistics

Learning Outcomes:

At the end of the course, the student will able to;

- Understand the importance of Statistics in real life
- Formulate complete, concise, and correct mathematical proofs.
- Frame problems using multiple mathematical and statistical tools, measuring relationships by using standard techniques.
- Build and assess data-based models.
- Learn and apply the statistical tools in day life.
- Create quantitative models to solve real world problems in appropriate contexts.

Syllabus:

Unit 1: Introduction to Statistics: Definition – Importance, Characteristics and Limitations of Statistics -Classification and Tabulation – Frequency Distribution Table -Diagrams and Graphic Presentation of Data (including problems)

Unit 2: Measures of Central Tendency: Types of Averages – Qualities of Good Average - Mean, Median, Mode, and Median based Averages-Geometric Mean – Harmonic Mean(including problems)

Unit 3: Measures of Dispersion: Meaning and Properties of Dispersion – Absolute and Relative Measures - Types of Dispersion-Range - Quartile Deviation (Semi – Inter Quartile Range) -Mean Deviation - Standard Deviation - Coefficient of Variation. (including problems)

Unit 4: Skewness and Kurtosis: Measures of Skewness: Absolute and Relative Measures- Co-efficient of Skewness: Karl Pearson's, Bowley's and Kelly's - Kurtosis: Meso kurtosis, Platy kurtosis and Leptokurtosis (including problems)

Unit 5: Measures of Relation: Meaning and use of Correlation – Types of Correlation - Karlpearson's Correlation Coefficient - Probable Error-Spearman's Rank-Correlation (including problems)

Suggested Readings:

1. Business Statistics, Reddy C.R., Deep Publications.
2. Statistical Methods: Gupta S.P.Sultan Chand & Sons.
3. Statistics-Problems and Solutions: Kapoor V.K, Sultan Chand &Sons.
4. Fundamentals of Statistics: Elhance. D.N
5. Business Statistics, Dr.P.R.Vittal, Margham Publications
6. Business Statistics, LS Agarwal, Kalyani Publications.
7. Statistics: Dr V Murali Krishna, Seven Hills International Publishers.
8. Fundamentals of Statistics: Gupta S.C. Sultan Chand &Sons.
9. Statistics-Theory, Methods and Applications: Sancheti, D.C. & Kapoor V.K.
10. Business Statistics: J.K. Sharma, Vikas Publishers.
11. Business Statistics: Bharat Jhunjhunwala, S Chand Publishers.
12. Business Statistics: S.L.Aggarval, S.L.Bhardwaj and K.Raghuveer, Kalyani Publishers.

Suggested Co-Curricular Activities

- Student Seminars,Quiz
- Problem Solving Exercises
- Observe Live Population Clocks – India and world
- Collection of statistical data of village/town, District, State, Nation
- Participate in Crop Cutting Experiments at villages
- Percentiles in CET exams
- Practice Statistical Functions in MS Excel
- Draw diagrams and Graphs in MS Excel
- Use statistical tools in real life like class/college results, local production etc
- Prepare questionnaire and schedule
- Application of averages in everyday life
- Examinations (Scheduled and surprise tests)
- Any similar activities with imaginative thinking beyond the prescribed syllabus

PROGRAMME: THREE-YEAR B COM

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

II Year B Com (Gen)– Semester – III

Course 3C:Marketing

Learning Outcomes:

At the end of the course, the student will able to;

- Develop an idea about marketing and marketing environment.
- Understand the consumer behaviourand market segmentation process.
- Comprehendthe product life cycle and product line decisions.
- Know the process of packaging and labeling to attract the customers.
- Formulate new marketing strategies for a specific new product.
- Develop new product line and sales promotion techniques for a given product.
- Design and develop new advertisements to given products.

Syllabus:

Unit-I: **Introduction:** Concepts of Marketing: Need, Wants and Demand - Marketing Concepts – Marketing Mix - 4 P's of Marketing – Marketing Environment.

Unit-II: **Consumer Behaviour and Market Segmentation:** Buying Decision Process – Stages – Buying Behaviour – Market Segmentation –Bases of Segmentation - Selecting Segments – Advantages of Segmentation.

Unit-III: Product Management: Product Classification – Levels of Product - Product Life Cycle - New Products, Product Mix and Product Line Decisions - Design, Branding, Packaging and Labelling.

Unit-IV: Pricing Decision: Factors Influencing Price – Determination of Price - Pricing Strategies: Skimming and Penetration Pricing.

Unit-V: Promotion and Distribution: Promotion Mix - Advertising - Sales promotion - Publicity – Public Relations - Personal Selling and Direct Marketing - Distribution Channels – Online Marketing

References:

1. Philip Kotler, Marketing Management, Prentice Hall of India.
2. Philip Kotler & Gary Armstrong, Principles of Marketing, Pearson Prentice Hall.
3. Stanton J. William & Charles Futrel, Fundamentals of Marketing, McGraw Hill.
4. V.S. Ramaswamy S. NamaKumari, Marketing Management – Planning, McMillan.
5. The Consumer Protection Act 1986 and Consumer Protection Act 2019.
6. Dhruv Grewal and Michael Levy,Marketing, McGraw Hill Education.
7. Dr L Natarajan, Financial Markets, Margham Publications.
8. Dr M Venkataramanaiah, Marketing, Seven Hill International Publishers.
9. C N Sonanki, Marketing, Kalyani Publications.

Suggested Co-Curricular Activities:

- Quiz programs
- Seminars
- Practice of Terminology of Marketing
- Guest lectures on various topics by marketing agents,
- Observing consumer behaviour on field trips to local markets
- Visit a manufacturing industry/firm for product manufacturing process
- Showing Graphs on Pricing decisions
- Analyse the advertisements
- Product demonstration by the student
- Conducting the survey on middle man in marketing process
- Making a advertisement
- Examinations (Scheduled and surprise tests)

PROGRAMME: THREE-YEAR B COM

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

II Year B Com (Gen & CA)– Semester – IV

Course 4A:Corporate Accounting

Learning Outcomes:

At the end of the course, the student will able to;

- Understand the Accounting treatment of Share Capital and aware of process of book building.
- Demonstratetheprocedure for issue of bonus shares and buyback of shares.
- Comprehend the important provisions of Companies Act, 2013 and prepare final accounts of a company with Adjustments.
- Participate in the preparation of consolidated accounts for a corporate group.
- Understand analysis of complex issues, formulation ofwell-reasoned arguments and reachingbetter conclusions.
- Communicate accounting policy choiceswith reference to relevant laws and accounting standards.

SYLLABUS:

Unit-I:

Accounting for Share Capital: Kinds of Shares – Types of Preference Shares – Issue of Shares at Par, Discount and Premium - Forfeiture and Reissue of Shares (including problems).

Unit-II:

Issue and Redemption of Debentures and Issue of Bonus Shares: Accounting Treatment for Debentures Issued and Repayable at Par, Discount and Premium -Issue of Bonus Shares - Buyback of Shares - (including problems).

Unit-III:

Valuation of Goodwill: Need and Methods - Average Profit Method, Super Profits Method – Capitalization Method and Annuity Method (Including problems).

Unit –IV:

Valuation Shares: Need for Valuation - Methods of Valuation - Net Assets Method, Yield Basis Method, Fair Value Method (including problems).

UNIT – V:

Company Final Accounts: Provisions of the Companies Act, 2013 - Preparation of Final Accounts – Adjustments Relating to Preparation of Final Accounts – Profit and Loss Account and Balance Sheet – (including problems with simple adjustments).

Reference Books:

1. Corporate Accounting – T.S Reddy and Murthy, MarghamPublications, Chennai.
2. Advanced Accounts: M C Shukla, T S Grewal and S C Gupta, S Chand Publications
3. Corporate Accounting – Haneef & Mukherji, Tata McGraw Hill Publications.
4. Corporate Accounting – RL Gupta & Radha Swami,Sultan Chand & sons
5. Corporate Accounting – P.C. Tulsian, S.Chand Publishers
6. Advanced Accountancy: Jain and Narang,,Kalyani Publishers
7. Advanced Accountancy: R.L. Gupta and M.Radhaswamy, S Chand.
8. Advanced Accountancy :Chakraborthy, Vikas Publishers
9. Corporate Accounting: S.N. Maheswari, S.K. Maheswari, Vikas Publishing House.
10. Advanced Accounts: M.C. Shukla, T.S. Grewal, S.C. Gupta, S. Chand & Company
11. Corporate Accounting: Umamaheswara Rao, Kalyani Publishers
12. Corporate Accounting: Dr ChandaSrinivas, SevenHills International Publishers,
13. Advanced Accountancy: Arulanandam& Raman, Himalaya Publishing House.

Suggested Co-Curricular Activities:

- Assignments
- Problem Solving Exercises
- Collect and fill the share application form of a limited Company
- Collect Prospectus of a company and identify its salient features
- Collect annual report of a Company and List out its assets and Liabilities.
- Collect the annual reports of company and calculate the value of goodwill under different methods
- Power point presentations on types of shares and share capital
- Group Discussions on problems relating to topics covered by syllabus

PROGRAMME: THREE-YEAR B COM

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

II Year B Com (Gen & CA)– Semester – IV

Course 4B:Cost and Management Accounting

Learning Outcomes:

At the end of the course, the student will able to;

- Understand various costing methods and management techniques.
- Apply Cost and Management accounting methods for both manufacturing and service industry.
- Prepare cost sheet, quotations, and tenders to organization for different works.
- Analyze cost-volume-profit techniques to determine optimal managerial decisions.
- Compare and contrast the financial statements of firms and interpret the results.
- Prepare analysis of various special decisions, using relevant management techniques.

SYLLABUS:

UNIT-I: Introduction:

Cost Accounting: Definition – Features – Objectives – Functions – Scope – Advantages and Limitations - Management Accounting: Features – Objectives – Functions –
Elements of Cost - Preparation of Cost Sheet (including problems)

UNIT-II: Material and Labour Cost:

Techniques of Inventory Control – Valuation of Material Issues: FIFO - LIFO - Simple and Weighted Average Methods

Labour: Direct and Indirect Labour Cost – Methods of Payment of Wages- Incentive Schemes -Time Rate Method, Piece Rate Method, Halsey, Rowan Methods and Taylor Methodsonly(including problems)

UNIT-III: Job Costing and Batch Costing:

Definition and Features of Job Costing – Economic Batch Quantity (EBQ) – Preparation of Job Cost Sheet – Problems on Job Cost Sheet and Batch Costing(including problems)

UNIT-IV: Financial Statement Analysis and Interpretation:

Financial Statements - Features, Limitations. Need, Meaning, Objectives, and Process of Financial Statement Analysis- Comparative Analysis – Common Size Analysis and Trend Analysis (including problems)

UNIT-V: Marginal Costing:

Meaning and Features of Marginal Costing – Contribution –Profit Volume Ratio- Break Even Point – Margin of Safety – Estimation of Profit and Estimation of Sales(including problems)

References:

1. S.P. Jain and K.L. Narang – Advanced Cost Accounting, Kalyani Publishers.
2. M.N. Arora – A test book of Cost Accounting, Vikas Publishing House Pvt. Ltd.
3. S.P. Iyengar – Cost Accounting, Sultan Chand & Sons.
4. Nigam & Sharma – Cost Accounting Principles and Applications, S.Chand& Sons.
5. S.N. Maheswari– Principles of Management Accounting, Sultan Chand & Sons.
6. I.M.Pandey – Management Accounting, Vikas Publishing House Pvt. Ltd.
7. Sharma & Shashi Gupta – Management Accounting, Kalyani Publishers.
8. Murthy & Guruswamy – Management Accounting, Tata McGraw Hill, New Delhi.
9. S.P. Gupta – Management Accounting, S. Chand Publishing, New Delhi.
10. Umamaheswara Rao and Ranganath, Cost Accounting, Kalyani Publishers.
11. Dr V Murali Krishna – Cost Accounting, Seven Hills International Publishers.

Suggested Co-Curricular Activities:

- Debate on methods of payments of wages
- Seminars
- Problem Solving Exercises
- Seminar on need and importance of financial statement analysis
- Graphs showing the breakeven point analysis
- Identification of elements of cost in services sector by Visiting any service firm
- Cost estimation for the making of a proposed product
- Listing of industries located in your area and methods of costing adopted by them
- Collection of financial statements of any two organization for two years and prepare a common Size Statements
- Collection of cost sheet and pro-forma of quotation
- Examinations (Scheduled and surprise tests)

PROGRAMME: THREE-YEAR B COM

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

II Year B Com (Gen& CA)– Semester – IV

Course 4C:Income Tax

Learning Outcomes:

At the end of the course, the student will able to;

- Acquire the complete knowledge of the tax evasion, tax avoidance and tax planning.
- Understand the provisions and compute income tax for various sources.
- Grasp amendments made from time to time in Finance Act.
- Compute total income and define tax complicacies and structure.
- Prepare and File IT returns of individual at his own.

Syllabus:

Unit-I: Introduction: Income Tax Act-1961 - Basic Concepts: Income, Person, Assessee - Assessment Year, Previous Year, Rates of Tax, Agricultural Income,ResidentialStatusof Individual -Incidence of Tax – IncomesExempt from Tax (theory only).

Unit-II: Income from Salaries: Basis of Charge, Tax Treatment of Different Types of Salaries Allowances, Perquisites, Profits in Lieu of Salary, Deductions from Salary Income, Computation of Salary Income (including problems).

Unit-Ill: Income from House Property and Profits and Gains from Business: Annual Value, Let-out/Self Occupied/Deemed to be Let-out house -Deductions from Annual Value - Computation of Income from House Property

Definition of Business and Profession – Procedure for Computation of Income from Business – Revenue and Capital Nature of Incomes and Expenses – Allowable Expenses – Expenses Expressly Disallowed – Computation (including problems).

Unit-IV: Income from Capital Gains - Income from Other Sources: Meaning of Capital Asset – Types – Procedure for Computation of Long-term and Short-term Capital Gains/Losses

Meaning of Other Sources - General Incomes – Specific Incomes – Computation (including problems).

Unit-V: Computation of Total Income of an Individual: Deductions under Section 80 - Computation of Total Income (Simple problems).

Reference Books:

1. Dr. Vinod; K. Singhania; Direct Taxes – Law and Practice, Taxman Publications
2. T. S. Reddy and Dr. Y. Hari Prasad Reddy - Taxation , by Margham Publications
3. Premraj and Sreedhar, Income Tax, Hamsrala Publications
4. B.B. Lal - Direct Taxes; Konark Publications
5. Dr. Mehrotra and Dr. Goyal -Direct Taxes, Law and Practice, Sahitya Bhavan Publication.
6. Balachandran&Thothadri- Taxation Law and Practice, PHI Learning.
7. V.P. Gaur and D.B. Narang - Income Tax, Kalyani Publications
8. Dr Y Kiranmayi - Taxation, Jai Bharath Publishers
9. Income Tax, Seven Lecture Series, Himalaya Publications

Suggested Co-Curricular Activities:

- Seminar on different topics of Income tax
- Quiz programs
- Problem Solving Exercises
- Debate on Tax Evasion and Avoidance
- Practice of provisions of Taxation
- Visit a Tax firm
- Talk on Finance Bill at the time of Union Budget
- Guest lecture by Chartered Accountant
- Presentation of tax rates
- Practice of filing IT Returns online
- Group Discussions on problems relating to topics covered by syllabus
- Examinations (Scheduled and surprise tests)

PROGRAMME: THREE-YEAR B COM

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

II Year B Com (Gen & CA)– Semester – IV

Course 4D:Business Law

Learning Outcomes:

At the end of the course, the student will able to;

- Understand the legal environment of business and laws of business.
- Highlight the security aspects in the present cyber-crime scenario.
- Apply basic legal knowledge to business transactions.
- Understand the various provisions of Company Law.
- Engage critical thinking to predict outcomes and recommend appropriate action on issues relating to business associations and legal issues.
- Integrate concept of business law with foreign trade.

Syllabus:

Unit-I: Contract:

Meaning and Definition of Contract - Essential Elements of Valid Contract -Valid, Void and Voidable Contracts - Indian Contract Act, 1872

Unit-II: Offer, Acceptance and Consideration:

Definition of Valid Offer, Acceptance and Consideration - Essential Elements of a Valid Offer, Acceptance and Consideration.

Unit-Ill: Capacity of the Parties and Contingent Contract:

Rules Regarding to Minors Contracts - Rules Relating to Contingent Contracts - Different Modes of Discharge of Contracts - Rules Relating to Remedies to Breach of Contract.

Unit-IV: Sale of Goods Act 1930 and Consumer Protection Act 2019:

Contract of Sale - Sale and Agreement to Sell - Implied Conditions and Warranties - Rights of Unpaid Vendor- Definition of Consumer - Person - Goods - Service - Consumer Dispute - Consumer Protection Councils - Consumer Dispute Redressal Mechanism

Unit-V: Cyber Law:

Overview and Need for Cyber Law - Contract Procedures - Digital Signature – Safety Mechanisms.

References:

1. J. Jaysankar, Business Laws, Margham Publication. Chennai.
2. ND Kapoor, Business Laws, S Chand Publications.
3. Balachandram V, Business law, Tata McGraw Hill.
4. Tulsian, Business Law, Tata McGraw Hill.
5. Pillai Bhagavathi, Business Law,SChand Publications.
6. Business Law, Seven Hills Publishers, Hyderabad.
7. K C Garg, Business Law, Kalyani Publishers.

Suggested Co-Curricular Activities

- Seminar on Basics of Indian Contract Act,1872
- Quiz programs
- Co-operative learning
- Seminar on Cyber Law
- Group Discussions
- Debate on Offer, Agreement, and Contract
- Creation of Contract by abiding rules of Indian Contract Act,1872
- Making a sale by abiding rules of Sale of Goods Act,1930
- Guest lecture by a Lawyer/Police officer
- Celebrating consumers day by creating awareness among the students
- Examinations (Scheduled and surprise tests)
- Any similar activities with imaginative thinking beyond the prescribed syllabus

PROGRAMME: THREE-YEAR B COM

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

II Year B Com (Gen& CA)– Semester – IV

Course 4E:Auditing

Learning Outcomes:

At the end of the course, the student will able to;

- Understanding the meaning and necessity of audit in modern era
- Comprehend the role of auditor in avoiding the corporate frauds
- Identify the steps involved in performing audit process
- Determine the appropriate audit report for a given audit situation
- Apply auditing practices to different types of business entities
- Plan an audit by considering concepts of evidence, risk and materiality

SYLLABUS:

Unit-I: Introduction: Meaning – Objectives – Importance of Auditing – Characteristics - Book Keeping vs Auditing - Accounting vs Auditing – Role of Auditor in Checking Corporate Frauds.

Unit-II: Types of Audit: Based on Ownership,Time and Objective - Independent, Financial, Internal, Cost,Tax, Government, Secretarial Audits

Unit-III: Planning of Audit: Steps to be taken at the Commencement of a New Audit – Audit Programme - Audit Note Book– Audit Working Papers - Audit Evidence - Internal Check, Internal Audit and Internal Control.

Unit-IV: Vouching and Investigation: Definition and Importance of Vouching – Objectives of Vouching -Vouching of Cash and Trading Transactions – Investigation - Auditing vs. Investigation

Unit-V: Company Audit and Auditors Report: Auditor's Qualifications – Appointment andReappointment – Rights, Duties, Liabilities and Disqualifications - Audit Report: Contents –Preparation - Relevant Provisions of Companies Act, 2013.

References:

1. S.Vengadamani, “Practical Auditing”, Margham Publications, Chennai.
2. Ghatalia, “Principles of Auditing”, Allied Publishers Pvt. Ltd., New Delhi.
3. Pradeesh Kumar, BaldevSachdeva&Jagwant Singh, “Auditing Theory and Practice,Kalyani Publications
4. N.D. Kapoor, “Auditing”, S Chand, New Delhi.
5. R.G. Saxena, “Principles and Practice of Auditing”, Himalaya Publishing House New Delhi
6. JagadeshPrakesh, “Principles and Practices of Auditing”, Kalyani Publications
7. Kamal Gupta and Ashok Gupta, “Fundamentals of Auditing”, Tata McGraw Hill
8. B.N. Tondan, “Practical Auditing”, S.Chand, New Delhi.
9. K J Vijaya Lakshmi & A S Roopa, Auditing, Seven Hills International Publishers, Hyderabad

Suggested Co-Curricular Activities:

- Seminars
- Visit the audit firms
- Visit an audit firm, write about the procedure followed by them in Auditing the books of accounts of a firm.
- Guest lecture by an auditor
- Collect the information about types of audit conducted in any one Organization
- Collection of audit reports
- Group Discussions
- Draft an audit program.

PROGRAMME: THREE-YEAR B COM

(General and Computer Applications)

Course Code:

Domain Subject: Commerce

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

II Year B Com (Gen)– Semester – IV

Course 4F:Goods and Service Taxes

Learning Outcomes:

At the end of the course, the student will able to;

- Understand the basic principles underlying the Indirect Taxation Statutes.
- Examine the method of tax credit. Input and Output Tax credit and Cross Utilisation of Input Tax Credit.
- Identify and analyze the procedural aspects under different applicable statutes related to GST.
- Compute the assessable value of transactions related to goods and services for levy and determination of duty liability.
- Develop various GST Returns and reports for business transactions in Tally.

Syllabus:

Unit I: Introduction: Overview of GST - Concepts –Taxes Subsumed under GST – Components of GST- GST Council- Advantages of GST-GST Registration.

Unit II: GST Principles –Vijay Kelkar Sha Committee Recommendations - Comprehensive Structure of GST Model in India: Single, Dual GST – GST Rates - Taxes Exempted from GST- Taxes and Duties outside the purview of GST- Taxation of Services

Unit-III: Tax Invoice- Bill of Supply-Transactions Covered under GST-Composition Scheme- Reverse Charge Mechanism- Composite Supply -Mixed Supply.

Unit-IV: Time of Supply of Goods & Services: Value of Supply - Input Tax Credit - Distribution of Credit -Matching of Input Tax Credit - Availability of Credit in Special Circumstances- Cross utilization of ITC between the Central GST and the State GST.

Unit-V:GST Returns: Regular Monthly Filing Returns-Composition Quarterly Filing Returns-GSTR-1, GSTR-2, GSTR 2A, GSTR-3, GSTR 3B -Annual Returns GSTR-9, GSTR 9A, GSTR 9B& GSTR 9C - Records to be Maintained under GST

References:

1. T. S. Reddy and Dr. Y. Hari Prasad Reddy, Business Taxation (Goods and Services Taxes),Margham Publications.
2. Taxmann's Basics of GST.
3. Taxmann's GST: A practical Approach.
4. Theory & Practice of GST, Srivathsala, Himalaya Publishing House.
5. Goods and Services Tax in India - Notifications on different dates.
6. GST Bill 2012.
7. Background Material on Model GST Law, Sahitya Bhawan Publications.
8. The Central Goods and Services Tax Act, 2017, No. 12 of 2017 Published by Authority,
9. Ministry of Law and Justice, New Delhi, the 12thApril, 2017.
10. Theory & Practice of GST: Dr. Ravi M.N, BPB Publications.

Suggested Co-Curricular Activities

- Seminars
- Show the flow chart of GST Suvidha Provider (GST).
- Practice of Terminology of Goods and Service Tax
- Prepare chart showing rates of GST
- Follow GST Council meeting updates regularly
- Creation of GST Vouchers and Tax invoices
- Visit a Tax firm (Individual and Group)
- Guest lecture by GST official
- Prepare Tax invoice under the GST Act.
- Practice on how to file a Returns
- Debate on Single GS, Dual GST
- Group Discussions on Goods and Services outside the Purview of GST

Recommended Format for Question Paper

For Courses 1A, 2A, 3A, 3B, 4A, 4B, 4C

Time: 3 Hours] *[Max. Marks : 75*

Section-A ***[5X5=25]***

Answer any **FIVE** of the following questions.

(at least 4 problems must be given*)*

1 Contents of **Unit-I**

2 Contents of **Unit-II**

3 Contents of **Unit-III**

4 Contents of **Unit-IV**

5 Contents of **Unit-V**

6 Contents of **Unit-I to Unit V**

7 Contents of **Unit-I to Unit V**

8 Contents of **Unit-I to Unit V**

Section-B **[5X10=50]**

Answer **FIVE** questions

9 a Contents of **Unit-I**(Theory/Problem)

(OR)

9 b Contents of **Unit-I**(Problem)

10 a Contents of **Unit-II**(Theory/Problem)

(OR)

10 b Contents of **Unit-II**(Problem)

11 a Contents of **Unit-III**(Theory/Problem)

(OR)

11 b Contents of **Unit-III**(Problem)

12 a Contents of **Unit-IV**(Theory/Problem)

(OR)

12 b Contents of **Unit-IV**(Problem)

13 a Contents of **Unit-V**(Theory/Problem)

(OR)

13 b Contents of **Unit-V**(Problem)

Recommended Format for Question Paper

For Courses 1B, 1C, 2B, 2C, 3C, 4D, 4E,4F

Time: 3 Hours] *[Max. Marks : 75*

Section-A ***[5X5=25]***

Answer any **FIVE** of the following questions.

1 Contents of **Unit-I**

2 Contents of **Unit-II**

3 Contents of **Unit-III**

4 Contents of **Unit-IV**

5 Contents of **Unit-V**

6 Contents of **Unit-I to Unit V**

7 Contents of **Unit-I to Unit V**

8 Contents of **Unit-I to Unit V**

Section-B **[5X10=50]**

Answer **FIVE** questions

9 a Contents of **Unit-I**

(OR)

9 b Contents of **Unit-I**

10 a Contents of **Unit-II**

(OR)

10 b Contents of **Unit-II**

11 a Contents of **Unit-III**

(OR)

11 b Contents of **Unit-III**

12 a Contents of **Unit-IV**

(OR)

12 b Contents of **Unit-IV**

13 a Contents of **Unit-V**

(OR)

13 b Contents of **Unit-V**

SUBJECT EXPERTS

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SYLLABUS VETTED BY

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REVISED SYLLABUS OFBCom (Computer Applications) (Hons)
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: FOUR-YEAR B Com (Computer Applications) (Hons)

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Fifteen Courses of 1, 2, 3 & 4 Semesters)

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PROGRAMME: Four-Year BCom(Computer Applications) (Hons)
(w.e.f. 2020-21 Admitted Batch)

Domain Subject: Commerce (Computer Applications)
(Syllabus with Outcomes, Co-curricular Activities,ReferencesforFifteen Courses of 1, 2, 3 & 4 Semesters)

Structure of B.Com (Computer Applications)Programme under Revised CBCS

Sl. No	Code	Sem	Courses	Name of Course (Each Course consists 5 Units with each Unit having 12 hours of class-work)	Hours/ Week	Credits	Marks	
							Mid Sem	Sem End
1		I	1A	Fundamentals of Accounting	5	4	25	75
2		I	1B	Business Organization and Management	5	4	25	75
3		I	1C	**Information Technology**	3	3	25	75
		I	1C-P	**Information Technology practicals**	2	1	-	50
4		II	2A	Financial Accounting	5	4	25	75
5		II	2B	Business Economics	5	4	25	75
6		II	2C	**E-commerce and Web Designing**	3	3	25	75
		II	2C-P	**E-commerce and Web Designing - lab**	2	1	-	50
7		III	3A	Advanced Accounting	5	4	25	75
8		III	3B	Business Statistics	5	4	25	75
9		III	3C	**Programming with C & C++**	3	3	25	75
		III	3C-P	**Programming with C & C++**	2	1	-	50
10		IV	4A	Corporate Accounting	5	4	25	75
11		IV	4B	Cost and Management Accounting	5	4	25	75
12		IV	4C	Income Tax	5	4	25	75
13		IV	4D	Business Laws	5	4	25	75
14		IV	4E	**Object Oriented Programming With Java**	3	3	25	75
		IV	4E-P	**Object Oriented Programming With Java**	2	1	-	50
15		IV	4F	**Data Base Management System**	3	3	25	75
		IV	4F-P	**Data Base Management System**	2	1	-	50
Total					**75**	**60**	**375**	**1375**

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PROGRAMME: FOUR-YEAR B Com (Computer Applications) (Hons)

Domain Subject: Computer Applications
Semester-wise Syllabus under CBCS(w.e.f. 2020-21 Admitted Batch)

II Year B Com (CA), Semester – IV
Discipline: COMPUTER APPLICATIONS

Course 4F: Database Management System

(Five units with each unit having 12 hours of class work)

Model Outcomes for Database Management System

At the end of the course, the students is expected to DEMONSTRATE the following cognitive abilities (thinking skill) and psychomotor skills.

F. Remembers and states in a systematic way (Knowledge)

1. Understand the role of a database management system in an organization.
2. Understand basic database concepts, including the structure and operation of the relational data model.
3. Understand and successfully apply logical database design principles, including E-R diagrams and database normalization
4. Understand Functional Dependency and Functional Decomposition

G. Explains (Understanding)

5. To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.
6. Perform PL/SQL programming using concept of Cursor Management, Error Handling, Packages

H. Critically examines, using data and figures (Analysis and Evaluation)

7. Apply various Normalization techniques
8. Model an application's data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model

D. Working in 'Outside Syllabus *Area' under a Co-curricular Activity*(Creativity)
Design and implement a small database project

E. Construct simple and moderately advanced database queries using Structured Query Language (SQL)(Practical skills)

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SYLLABUS

Course 4F: Database Management System

Unit	Details
I	**Overview of Database Management System** Introduction, Data and Information, Database, Database Management System, Objectives of DBMS, Evolution of Database Management System, Classification of Database Management System.
II	**File-Based System** File Based System. Drawbacks of File-Based System, DBMS Approach, Advantage of DBMS, Data Models, Components of Database System, Database Architecture, DBMS Vendors and their products.
III	**Entity-Relationship Model:** Introduction, The Building Blocks of an Entity-Relationship, Classification of Entity Set, Attribute Classification, Relationship Degree, Relationship Classification, Generalization and Specialization, Aggregation and Composition, CODD's Rules, Relational Data Model, Concept of Relational Integrity.
IV	**Structured Query Language** Introduction, History of SQL Standards, Commands in SQL, Data types in SQL, Data Definition Language (DDL),Selection Operation Projection Operation, Aggregate Functions, Data Manipulation Language, Table Modification, Table Truncation, Imposition of Constraints, Set Operations.
V	**PL/SQL:** Introduction, Structure of PL/SQL,PL/SQL Language Elements, Data Types, Control Structure, Steps to Create a PL/SQL Program, Iterative Control Cursors, Steps to Create a Cursor, Procedure, Functions, Packages, Exceptions Handling, Database Triggers, Types of triggers.

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Learning Resources (Course 4F: Database Management System)

References:

1. Paneerselvam:Database Management system,PHI.
2. David Kuklinski, Osborne, Data management system McGraw Hill Publication.
3. Shgirley Neal And Kenneth LC Trunik Database management system in Business-PHI.
4. Godeon C. EVEREST, Database Management-McGraw Hill Book Company.
5. MARTIN,Database Management-Prentice Hall of India, New Delhi.
6. BipinC.Desai ,`An Introduction to Database System`,Galgotia Publications
7. Korth, Database Management System.
8. Navathe, Database Management System.
9. S. Sumathi, S. Esakkirajan,Fundamentals of Relational Database Management System

Online resources:

http:// www.onlinegdb.com/

http:// www.tutorialspoint.com/

http://learnsql.com

https://www.codecademy.com/learn/learn-sql/

https://www.w3schools.com/sql/default.asp

Practical Component: @ 2 hours/week/batch

1. Create tables department and employee with required constraints.
2. Initially only the few columns (essential) are to be added. Add the remaining columns separately by using appropriate SQL command.
3. Basic column should not be null
4. Add constraint that basic should not be less than 5000.
5. Calculate hra, da, gross and net by using PL/SQL program.
6. The percentage of hra and da are to be stored separately.
7. When the da becomes more than 100%, a message has to be generated and with user permission da has to be merged with basic.
8. Empno should be unique and has to be generated automatically.

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RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity)
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams)
4. Field studies (individual observations and recordings as per syllabus content and related areas (Individual or team activity)
5. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

General

3. Group Discussion
4. Visit to Software Technology parks / industries

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted:

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Coding exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports,
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work

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PROGRAMME: FOUR-YEAR B Com(Computer Applications) (Hons)

Domain Subject: Computer Applications

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

II Year B Com (CA)– Semester – IV

Course 4E: Object Oriented Programming with Java

Learning Outcomes:

At the end of the course, the student will able to;

- Understanding the meaning and necessity of audit in modern era
- Comprehend the role of auditor in avoiding the corporate frauds
- Identify the steps involved in performing audit process
- Determine the appropriate audit report for a given audit situation
- Apply auditing practices to different types of business entities
- Plan an audit by considering concepts of evidence, risk and materiality

SYLLABUS:

Unit I: Introduction to OOPs: Problems in Procedure Oriented Approach, Features of Object Oriented Programming

Introduction to Java: Features of Java, The Java Virtual Machine (JVM), Parts of Java program, Naming Conventions in Java, Data Types in Java, Operators in Java, Reading Input using scanner Class, Displaying Output using System. out.println (), Command Line Arguments.

Unit II: Control Statements in Java: if... else, do... while Loop, while Loop, For loop, Switch Statement, break Statement, continue Statement

Arrays: Types of Arrays, array name, length,

Strings: Creating Strings, String Class Methods, String Comparison, Immutability of Strings.

Unit III: Classes and Objects: Object Creation, Initializing the Instance Variables, Access Specifiers, Constructors

Inheritance: Inheritance, Types of Inheritance

Polymorphism: Method overloading, Operator overloading

Abstract Classes: Abstract Method and Abstract Class

Unit IV: Packages: Package, Different Types of Packages, Creating Package and Accessing a Package

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Streams: Stream classes, Creating a File using File Output Stream, Reading Data from a File using File Input Stream, Creating a File using File Writer, Reading a File using File Reader

Unit V: Exception Handling: Errors in Java Program, Exceptions, throws Clause, throw Clause, Types of Exceptions
Threads: Single Tasking, Multi-Tasking, Uses of Threads, Creating a Thread and Running it, Terminating the Thread, Thread Class Methods.

References:

1. The Complete Reference JAVA Seventh Edition Herbert Schildt. Tata McGraw Hill Edition.
2. Core Java: An Integrated Approach, Dr. R. Nageswara Rao &Kogent Learning Solutions Inc.
3. E. Balaguruswamy, Programming with JAVA, A primer, 3e, TATA McGrawHill Company

Online Resources:

https://stackify.com/java-tutorials/
https://www.w3schools.com/java/
https://www.javatpoint.com/java-tutorial
https://www.tutorialspoint.com/java/index.html

Practical Component:@ 2 hours/week/batch

1. Write a program to implement command line arguments.
2. Write a program to read Student Name, Reg.No, Marks and calculate Total, Percentage,and Result. Display all the details of students .
3. Write a program to perform String Operations.
4. Java program to implement Addition of two N X N matrices.
5. Java program to implement bubble sort.
6. Java program to demonstrate the use of Constructor.
7. Calculate area of the following shapes using method overloading.
   a.Rectangle b. Circle c. Square
8. Implement multilevel inheritance
9. Java program for to display Serial Number from 1 to 5 by creating two Threads
10. Java program to demonstrate the following exception handlings
    a. Divided by Zero b. Array Index Out of Bound c. Arithmetic Exception

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Acharya Nagarjuna University

Nagarjunanagar, Guntur, Andhra Pradesh

REVISED SYLLABUS OFBCom (Computer Applications) (Hons)
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: FOUR-YEAR B Com (Computer Applications) (Hons)

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)
For Fifteen Courses of 1, 2, 3 & 4 Semesters)

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ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION
(A Statutory body of the Government of Andhra Pradesh)

CBCS – UG SYLLABUS SUBJECT REVIEW COMMITTEE
(w.e.f. 2020-21 Admitted Batch)
PROGRAMME: Three-Year BA/BCom(Computer Applications)

Domain Subject: Commerce (Computer Applications)
(Syllabus with Outcomes, Co-curricular Activities, Referencesfor Fifteen Courses of 1, 2, 3 & 4 Semesters)

Structure of BA/B.Com (Computer Applications)Programme under Revised CBCS

Sl. No	Code	Sem	Courses	Name of Course (Each Course consists 5 Units with each Unit having 12 hours of class-work)	Hours/ Week	Credits	Marks	
							Mid Sem	Sem End
1		I	1A	Fundamentals of Accounting	5	4	25	75
2		I	1B	Business Organization and Management	5	4	25	75
3		I	1C	**Information Technology**	3	3	25	75
4		I	1C-P	**Information Technology - Practical**	2	1		50
5		II	2A	Financial Accounting	5	4	25	75
6		II	2B	Business Economics	5	4	25	75
7		II	2C	**E-commerce and Web Designing**	3	3	25	75
8		II	2C-P	**E-commerce and Web Designing - Practical**	2	1		50
9		III	3A	Advanced Accounting	5	4	25	75
10		III	3B	Business Statistics	5	4	25	75
11		III	3C	**Programming with C & C++**	3	3	25	75
12		III	3C-P	**Programming with C & C++ - Practical**	2	1		50
13		IV	4A	Corporate Accounting	5	4	25	75
14		IV	4B	Cost and Management Accounting	5	4	25	75
15		IV	4C	Income Tax	5	4	25	75
16		IV	4D	Business Laws	5	4	25	75
17		IV	4E	Auditing	5	4	25	75
18		IV	4F	**Data Base Management System**	3	3	25	75
19		IV	4F-P	**Data Base Management System - Practical**	2	1		50
Total					**75**	**60**	**375**	**1325**

Note: external practical exams to be conducted for **B.Com/B.A (Computer Applications)** students on par with B.Sc. (Computer Science) Students.

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PROGRAMME: Four-Year BCom(Computer Applications) (Hons)
(w.e.f. 2020-21 Admitted Batch)

Domain Subject: Commerce (Computer Applications)
(Syllabus with Outcomes, Co-curricular Activities,ReferencesforFifteen Courses of 1, 2, 3 & 4 Semesters)

Structure of B.Com (Computer Applications)Programme under Revised CBCS

Sl. No	Code	Sem	Courses	Name of Course (Each Course consists 5 Units with each Unit having 12 hours of class-work)	Hours/ Week	Credits	Marks	
							Mid Sem	Sem End
1		I	1A	Fundamentals of Accounting	5	4	25	75
2		I	1B	Business Organization and Management	5	4	25	75
3		I	1C	**Information Technology**	3	3	25	75
		I	1C-P	**Information Technology practicals**	2	1	-	50
4		II	2A	Financial Accounting	5	4	25	75
5		II	2B	Business Economics	5	4	25	75
6		II	2C	**E-commerce and Web Designing**	3	3	25	75
		II	2C-P	**E-commerce and Web Designing - lab**	2	1	-	50
7		III	3A	Advanced Accounting	5	4	25	75
8		III	3B	Business Statistics	5	4	25	75
9		III	3C	**Programming with C & C++**	3	3	25	75
		III	3C-P	**Programming with C & C++**	2	1	-	50
10		IV	4A	Corporate Accounting	5	4	25	75
11		IV	4B	Cost and Management Accounting	5	4	25	75
12		IV	4C	Income Tax	5	4	25	75
13		IV	4D	Business Laws	5	4	25	75
14		IV	4E	**Object Oriented Programming With Java**	3	3	25	75
		IV	4E-P	**Object Oriented Programming With Java**	2	1	-	50
15		IV	4F	**Data Base Management System**	3	3	25	75
		IV	4F-P	**Data Base Management System**	2	1	-	50
Total					**75**	**60**	**375**	**1375**

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Nagaraju

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PROGRAMME: FOUR-YEAR B Com (Computer Applications) (Hons)

Domain Subject: Computer Applications
Semester-wise Syllabus under CBCS(w.e.f. 2020-21 Admitted Batch)

II Year B Com (CA), Semester– IV
Discipline: COMPUTER APPLICATIONS

Course 4F: Database Management System

(Five units with each unit having 12 hours of class work)

Model Outcomes for Database Management System

At the end of the course, the students is expected to DEMONSTRATE the following cognitive abilities (thinking skill) and psychomotor skills.

F. *Remembers and states in a systematic way (Knowledge)*

1. Understand the role of a database management system in an organization.
2. Understand basic database concepts, including the structure and operation of the relational data model.
3. Understand and successfully apply logical database design principles, including E-R diagrams and database normalization
4. Understand Functional Dependency and Functional Decomposition

G. *Explains (Understanding)*

5. To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.
6. Perform PL/SQL programming using concept of Cursor Management, Error Handling, Packages

H. *Critically examines, using data and figures (Analysis and Evaluation)*

7. Apply various Normalization techniques
8. Model an application's data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model

D. Working in 'Outside Syllabus *Area' under a Co-curricular Activity*(Creativity)
Design and implement a small database project

E. Construct simple and moderately advanced database queries using Structured Query Language (SQL)(Practical skills)

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SYLLABUS

Course 4F: Database Management System

Unit	Details
I	**Overview of Database Management System** Introduction, Data and Information, Database, Database Management System, Objectives of DBMS, Evolution of Database Management System, Classification of Database Management System.
II	**File-Based System** File Based System. Drawbacks of File-Based System, DBMS Approach, Advantage of DBMS, Data Models, Components of Database System, Database Architecture, DBMS Vendors and their products.
III	**Entity-Relationship Model:** Introduction, The Building Blocks of an Entity-Relationship, Classification of Entity Set, Attribute Classification, Relationship Degree, Relationship Classification, Generalization and Specialization, Aggregation and Composition, CODD's Rules, Relational Data Model, Concept of Relational Integrity.
IV	**Structured Query Language** Introduction, History of SQL Standards, Commands in SQL, Data types in SQL, Data Definition Language (DDL),Selection Operation Projection Operation, Aggregate Functions, Data Manipulation Language, Table Modification, Table Truncation, Imposition of Constraints, Set Operations.
V	**PL/SQL:** Introduction, Structure of PL/SQL,PL/SQL Language Elements, Data Types, Control Structure, Steps to Create a PL/SQL Program, Iterative Control Cursors, Steps to Create a Cursor, Procedure, Functions, Packages, Exceptions Handling, Database Triggers, Types of triggers.

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Learning Resources (Course 4F: Database Management System)

References:

1. Paneerselvam:Database Management system,PHI.
2. David Kuklinski, Osborne, Data management system McGraw Hill Publication.
3. Shgirley Neal And Kenneth LC Trunik Database management system in Business-PHI.
4. Godeon C. EVEREST, Database Management-McGraw Hill Book Company.
5. MARTIN,Database Management-Prentice Hall of India, New Delhi.
6. BipinC.Desai ,`An Introduction to Database System`,Galgotia Publications
7. Korth, Database Management System.
8. Navathe, Database Management System.
9. S. Sumathi, S. Esakkirajan,Fundamentals of Relational Database Management System

Online resources:

http:// www.onlinegdb.com/

http:// www.tutorialspoint.com/

http://learnsql.com

https://www.codecademy.com/learn/learn-sql/

https://www.w3schools.com/sql/default.asp

Practical Component: @ 2 hours/week/batch

1. Create tables department and employee with required constraints.
2. Initially only the few columns (essential) are to be added. Add the remaining columns separately by using appropriate SQL command.
3. Basic column should not be null
4. Add constraint that basic should not be less than 5000.
5. Calculate hra, da, gross and net by using PL/SQL program.
6. The percentage of hra and da are to be stored separately.
7. When the da becomes more than 100%, a message has to be generated and with user permission da has to be merged with basic.
8. Empno should be unique and has to be generated automatically.

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RECOMMENDED CO-CURRICULAR ACTIVITIES:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity)
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams)
4. Field studies (individual observations and recordings as per syllabus content and related areas (Individual or team activity)
5. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity)

General

3. Group Discussion
4. Visit to Software Technology parks / industries

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted:

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Coding exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports,
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work

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PROGRAMME: FOUR-YEAR B Com(Computer Applications) (Hons)

Domain Subject: Computer Applications

Semester-wise Syllabus under CBCS

(w.e.f. 2020-21 Admitted Batch)

II Year B Com (CA)– Semester – IV

Course 4E: Object Oriented Programming with Java

Learning Outcomes:

At the end of the course, the student will able to;

- Understanding the meaning and necessity of audit in modern era
- Comprehend the role of auditor in avoiding the corporate frauds
- Identify the steps involved in performing audit process
- Determine the appropriate audit report for a given audit situation
- Apply auditing practices to different types of business entities
- Plan an audit by considering concepts of evidence, risk and materiality

SYLLABUS:

Unit I: Introduction to OOPs: Problems in Procedure Oriented Approach, Features of Object Oriented Programming

Introduction to Java: Features of Java, The Java Virtual Machine (JVM), Parts of Java program, Naming Conventions in Java, Data Types in Java, Operators in Java, Reading Input using scanner Class, Displaying Output using System. out.println (), Command Line Arguments.

Unit II: Control Statements in Java: if... else, do... while Loop, while Loop, For loop, Switch Statement, break Statement, continue Statement

Arrays: Types of Arrays, array name, length,

Strings: Creating Strings, String Class Methods, String Comparison, Immutability of Strings.

Unit III: Classes and Objects: Object Creation, Initializing the Instance Variables, Access Specifiers, Constructors

Inheritance: Inheritance, Types of Inheritance

Polymorphism: Method overloading, Operator overloading

Abstract Classes: Abstract Method and Abstract Class

Unit IV: Packages: Package, Different Types of Packages, Creating Package and Accessing a Package

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Streams: Stream classes, Creating a File using File Output Stream, Reading Data from a File using File Input Stream, Creating a File using File Writer, Reading a File using File Reader

Unit V: Exception Handling: Errors in Java Program, Exceptions, throws Clause, throw Clause, Types of Exceptions
Threads: Single Tasking, Multi-Tasking, Uses of Threads, Creating a Thread and Running it, Terminating the Thread, Thread Class Methods.

References:

1. The Complete Reference JAVA Seventh Edition Herbert Schildt. Tata McGraw Hill Edition.
2. Core Java: An Integrated Approach, Dr. R. Nageswara Rao &Kogent Learning Solutions Inc.
3. E. Balaguruswamy, Programming with JAVA, A primer, 3e, TATA McGrawHill Company

Online Resources:

https://stackify.com/java-tutorials/
https://www.w3schools.com/java/
https://www.javatpoint.com/java-tutorial
https://www.tutorialspoint.com/java/index.html

Practical Component:@ 2 hours/week/batch

1. Write a program to implement command line arguments.
2. Write a program to read Student Name, Reg.No, Marks and calculate Total, Percentage,and Result. Display all the details of students .
3. Write a program to perform String Operations.
4. Java program to implement Addition of two N X N matrices.
5. Java program to implement bubble sort.
6. Java program to demonstrate the use of Constructor.
7. Calculate area of the following shapes using method overloading.
   a.Rectangle b. Circle c. Square
8. Implement multilevel inheritance
9. Java program for to display Serial Number from 1 to 5 by creating two Threads
10. Java program to demonstrate the following exception handlings
    a. Divided by Zero b. Array Index Out of Bound c. Arithmetic Exception

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A.P. STATE COUNCIL OF HIGHER EDUCATION

GUIDELINES FOR THE REVISED CHOICE BASED CREDIT SYSTEM CBCS (W.E.F 2020-21)

I. Preamble:

Choice Based CreditSystem (CBCS) was introduced, under the aegis of Andhra Pradesh State Council of Higher Education (APSCHE), at the insistence of the University Grants Commission, for the general undergraduate programmes, i.e., BA, BCom, BSc, BCA, BBA, UG Honours etc., by the affiliating universities in all government, aided and private degree colleges in the state of Andhra Pradesh in 2015 - 2016.

The system of CBCS has been in vogue for the undergraduate programmes in all the advanced countries for several decades and proved to be advantageous to the students of higher education because of its features like courses in place of papers, availability of diverse courses, scope for choice, weightages with credits, space for multiple kinds of teaching, learning and assessing methods which can effectively cater to the diverse needs of students.

As the existing CBCS would be completing five years by 2019-20, the APSCHE decided to revise and strengthen the scheme while addressing the following issues.

a. Overcoming the shortages in the existing system.
b. Consolidating the system in its true spirit by providing multiple choices in domain as well as general courses.
c. Revising the curricular framework wherever needed.
d. Orienting syllabus to the course outcomes as advised by UGC
e. Updating of syllabus to match to the present needs
f. Replacing papers with courses
g. Introducing better skill-oriented courses to align with the emerging and employment areas.

For carrying out the above task, the APSCHE constituted a Committee for recommending revised curricular framework and updated syllabus of UG Programmes,

i.e., B.A., B.Com., B.Sc., BCA, BBA, UG Honouss etc., under CBCS pattern from the year 2020-21.

Based on the recommendations of the Committee, the following Guidelines are formulated. These Guidelines of Curricular Framework with revised Choice Based Credit System comes into effect from the academic year 2020 – 2021, to be strictly adhered for all Undergraduate Programmes offered in Affiliated Colleges and Autonomous Colleges.

1. The Curricular Framework for UG – Arts; UG – Science and UG – Commerce are appended as Annexures – I, II & III respectively.
2. **Life Skill Courses:** There will be 4 Life Skill Courses in place of earlier 10 foundation courses with the same hours, credits and maximum marks. The objective is to inculcate the required simple life-long skills. While the course in 'Environmental Education' continued to be mandatory, in case of others, students can opt one out of three courses, unlike in the existing system, where no choice is being given to students.
3. **Skill Development Courses:** A new set of 4 Skill Development Courses will be offered with 2 hours of teaching per week, two credits, 50 maximum marks and only external assessment. These courses are intended to train students in broad-based multiple career oriented general skills, in Arts, Commerce and Science streams but open to all students. A wider choice is given to students as they can choose one course from a total of six courses (two from each stream).
4. The preferred departments for teaching LSCs and SDCs are appended.
5. To ensure accountability among the teachers teaching LSCs and SDCs courses, the workload of these is to be reckoned for the calculation of workload of teachers.
6. **Core Courses:** Three core courses of Domain subjects will be in the first three semesters, and the fourth and fifth courses will be in the fourth semester. Two domain SECs will be in the fifth semester. There will be uniformly five Core Courses in each Domain Subject in BA and BSc, and 15 in BCom.

7. **Skill Enhancement Courses:** Two Skill Enhancement Courses will be offered for each domain subject, in Semester V. The two Skill Enhancement Courses of each domain subject will be linked for a wider basic and practical experience to students.
8. Programmes like BCA, BBA, UG Honours etc. will broadly have a similar framework as prescribed for B.Com considering them as single major subject programme.
9. Table-1: Main Features of the Courses in the Revised Curricular Framework.

Subject/Course	Hours / Week Theory	Hours / Week Practicals	Total Hours	Credits	Max Marks Internal Assessment	Max Marks University Exam	Total
Life Skills Course	02	-	02	02	-0-	50	50
Skill Development Course	02	-	02	02	-0-	50	50
Language Subject	04	-	04	03	25	75	100
Domain Arts/Commerce Subject	05	-	05	04	25	75	100
Domain Science Subject	04	02	05	05 (4+1)	25	75	100
Mathematics	06	-	06	05	25	75	100

10. The four courses of LSCs, SDCs and three courses of Languages (as they exist now) will be offered in the first three semesters as shown in the table below. The detailed structure is shown in Tabel-2 below.

Courses of	***Sem-I***	***Sem-II***	***Sem-III***	***Sem-IV***	***Sem-V***
Life Skills	1 (02)	1 (02)	2 (04)		
Skill Development	1 (02)	2 (04)	1 (02)		
Language – 1	C-1 (04)	C-2 (04)	C-3 (04)		
Language – 2	C-1 (04)	C-2 (04)	C-3 (04)		
Domain Sub -1	C-1 (06)	C-2 (06)	C-3 (06)	C-4 (06)	SEC-1(06)

				C-5 (06)	SEC-2 (06)
Domain Sub -2	C-1 (06)	C-2 (06)	C-3 (06)	C-4 (06) C-5 (06)	SEC-1(06) SEC-2 (06)
Domain Sub -3	C-1 (06)	C-2 (06)	C-3 (06)	C-4 (06) C-5 (06)	SEC-1(06) SEC-2 (06)
Total Hours/Week	30	32	32	36	36

* Figures in parenthesis are hours per week of Core Courses of Science. In respect of Arts and Commerce Courses, the hours per week for Core Courses will be 5.
** SEC1 and SEC-2 in Sem-V are C-6 and C-7 respectively.

11. Teaching of two appropriate LSCs/SDCs are to be assigned to the language departments to mitigate the workload shortage for the language subjects, as being done in respect of Foundation Courses in the previous system. The workload for teaching LSCs and SDCs by the respective language department shall be reckoned while calculating their workload.
12. The syllabus was revised and updated keeping the Leaning Outcomes in view for ensuring higher order learning and skills, a requirement in higher education. The Universities and colleges shall make certain that teaching, learning and assessment are outcome oriented.
13. In the affiliation system which imposes limitations in assessing students, the internal assessment is crucial in ensuring the right learning. Universities and colleges may strengthen the internal assessment without disturbing its flexibility.
14. Co-curricular activities play an important role in promoting experiential self-learning and field-based learning in students, especially in learning higher order skills. The measurable pedagogical activities can be a small part of internal assessment.
15. The respective Boards of Studies of the affiliating universities/autonomous colleges may modify the syllabus prepared by the subject committees as mentioned above to a limited extent, without disturbing the Frame work recommended above.
16. In view of the advantages of using ICT in teaching and learning, the universities and colleges may offer ‘online courses’ on extra credits. They may take into consideration the standardized online courses offered by various government/public agencies and also may design their own new online courses following due procedures.

17. Similarly, online programmes such as Webinars, with greater participation of students, may be encouraged in colleges.
18. The system of credit transfer facilitates students getting better training at appropriate places. The universities may discuss and develop a uniform system and guidelines in this regard across the state. The number of credits earned under credit transfer shall, however, be limited to a small number. APSCHE will issue separate guidelines.
19. To ensure inculcating social responsibility and compassionate commitment among the students, the summer vacation in the intervening 1st and 2nd years of study shall be for Community Service. Detailed guidelines on the Community Service will be circulated shortly.
20. To make the students employable, an Apprenticeship / Internship / On the job training shall be undertaken by the students in the intervening summer vacation between the 2nd and 3rd years.
21. During the entire 6th Semester, the student shall undergo Apprenticeship / Internship / On the Job Training. This is to ensure that the students develop hands on technical skills which will be of great help in facing the world of work.
22. APSCHE shall issue guidelines for the implementation and assessment of the Apprenticeship / Internship / On the job Training.

LIST OF LIFE SKILL COURSES

Semester	No. of Courses	Choices	Preferred Teaching Dept.
I	**01**	Computer Applications	Computers
		Human Values and Professional Ethics	English/Telugu/Any Dept
		Entrepreneurship	Commerce
II	**01**	Information and Communication Technology	Computers
		Indian Culture and Science	History/Telugu
		Elementary Statistics	Statistics/Maths/Economics/ Commerce
III	**02**	Health and Hygiene	Zoology/Botany
		Personality Development and Leadership	English/ Any Dept
		Analytical Skills	Maths/Statistics
		Environmental Education	Botany/Zoology/Environmental Sciences/Any Dept.

List of Skill Development Courses along with their Semester-wise allotment with choices. Preferred Teaching Departments are given in the parenthesis.

Sem	No. of Courses	**Stream – A (Arts)**	**Stream – B (Commerce)**	**Stream – C (Science)**
I	**01**	Tourism Guidance (History) Public Relations (Pol Sci /English)	Secretaryship Insurance Promotion	Electrical Appliances (Physics) Plant Nursery (Botany)
II	**02**	Journalistic Reporting (English) Survey & Reporting (Economics/History) Social Work Methods (Pol Sci) Performing Arts (Telugu)	Agricultural Marketing Business Communication (English) Advertising Logistics & Supply Chain	Solar Energy (Physics) Fruit & Vegetable Preservation (Botany) Dairy Techniques (Zoology) Food Adulteration (Chemistry)
III	**01**	Financial Markets (Economics) Disaster Management (English /Telugu)	Online Business Retailing	Environment Audit (Chemistry) Poultry Farming (Zoology)

ANNEXURE - I CBCS CURRICULAR FRAMEWORK (2020 - 21 ONWARDS) - BACHELOR OF ARTS

Subjects		SEM I		SEM II		SEM III		SEM IV		SEM V		SEM VI			
		Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits		
Languages															
English		4	3	4	3	4	3								
Language (H/T/S)		4	3	4	3	4	3								
Life Skill Courses		2	2	2	2	2+2	2+2								
Skill Development Courses		2	2	2+2	2+2	2	2								
Core Papers															
Major 1	Core 1,2,3,& 4	5	4	5	4	5	4	5	4			THIRD PHASE of APPRENTICESHIP Entire 5th / 6th Semester		FIRST and SECOND PHASES (2 spells) of APPRENTICESHIP between 1st and 2nd year and between 2nd and 3rd year (two summer vacations).	
Major 2	Core 1,2,3,& 4	5	4	5	4	5	4	5	4						
Major 3	Core 1,2,3,& 4	5	4	5	4	5	4	5	4						
Major 1	Core -5							5	4						
Major 2	Core -5							5	4						
Major 1	Skill Enhancement Core Courses 6 & 7									5	4				
										5	4				
Major 2	Skill Enhancement Core Courses 6 & 7									5	4				
										5	4				
Major 2	Skill Enhancement Core Courses 6 & 7									5	4				
										5	4				
Hrs/W (Academic Credits)		27	22	29	24	29	24	30	24	30	24	0	12	4	4
Project Work															
Extension Activities (Non Academic Credits)															
NCC/NSS/Sports/Extra Curricular									2						
Yoga							1		1						
Extra Credits															
Hrs/W (Total Credits)		27	22	29	24	29	25	30	27	30	24	0	12	4	4

ANNEXURE - II CBCS CURRICULAR FRAMEWORK (2020 - 21 ONWARDS) - BACHELOR OF SCIENCES

Subjects		SEM I		SEM II		SEM III		SEM IV		SEM V		SEM VI			
		Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits		
Languages															
English		4	3	4	3	4	3								
Language (H/T/S)		4	3	4	3	4	3								
Life Skill Courses		2	2	2	2	2+2	2+2								
Skill Development Courses		2	2	2+2	2+2	2	2								
Major 1	Core 1,2,3,& 4	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1						
Major 2	Core 1,2,3,& 4	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1						
Major 3	Core 1,2,3,& 4	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1	4+2	4 + 1						
Major 1	Core -5							4+2	4 + 1						
Major 2	Core -5							4+2	4 + 1						
Major 3	Core -5							4+2	4 + 1						
Major 1	Skill Enhancement Courses (6 & 7)									4+2	4 + 1				
										4+2	4 + 1				
Major 2	Skill Enhancement Courses (6 & 7)									4+2	4 + 1				
										4+2	4 + 1				
Major 3	Skill Enhancement Courses (6 & 7)									4+2	4 + 1				
										4+2	4 + 1				
Hrs/W (Academic Credits)		30	25	32	27	32	27	36	30	36	30		12	4	4
Project Work															
Extension Activities	(Non														
NCC/NSS/Sports/Extra Curricular									2						
Yoga							1		1						
Extra Credits															
Hrs/W (Total Credits)		30	25	32	27	32	28	36	33	36	30		12	4	4

THIRD PHASE of APPRENTICESHIP Entire 5th / 6th Semester

FIRST and SECOND PHASES (2 spells) of APPRENTICESHIP between 1st and 2nd year and between 2nd and 3rd year (two summer vacations).

ANNEXURE - III CBCS CURRICULAR FRAMEWORK (2020 - 21 ONWARDS) - B.Com., BBA, BCA etc.

Subjects	SEM I		SEM II		SEM III		SEM IV		SEM V		SEM VI			
	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits	Hrs/W	Credits		
Languages														
English	4	3	4	3	4	3								
Language (H/T/S)	4	3	4	3	4	3								
Life Skill Courses	2	2	2	2	2+2	2+2								
Skill Development Courses	2	2	2+2	2+2	2	2								
Core Courses* **														
Core	5	4	5	4	5	4	5	4			THIRD PHASE of APPRENTICESHIP Entire 5th / 6th Semester		FIRST and SECOND PHASES (2 spells) of APPRENTICESHIP between 1st and 2nd year and between 2nd and 3rd year (two summer vacations).	
Core	5	4	5	4	5	4	5	4						
Core	5	4	5	4	5	4	5	4						
Core							5	4						
Core							5	4						
Core							5	4						
(Domain Related) Skill Enhancement Courses** (SECs)**									5	4				
									5	4				
									5	4				
									5	4				
									5	4				
									5	4				
Hrs/W (Academic Credits)	27	22	29	24	29	24	30	24	30	24	0	12	4	4
Project Work														
Extension Activities														
NCC/NSS/Sports/Extra Curricular								2						
Yoga						1		1						
Extra Credits														
Hrs/W (Total Credits)	27	22	29	24	29	25	30	27	30	24	0	12	4	4

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

3rd, 4th and 5thfloors, NeeladriTowers, Sri Ram Nagar, 6th Battalion Road,
Atmakur(V), Mangalagiri(M), Guntur-522 503, Andhra Pradesh
Web: www.apsche.org **Email**: acapsche@gmail.com

REVISED SYLLABUS OF HISTORY UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR BA

(History, Economics and Pol Sc., Disciplines)

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Fifteen Courses of 1, 2, 3 & 4 Semesters)

(To be Implemented from 2020-21 Academic Year)

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

CBCS – UG SYLLABUS SUBJECT REVIEW COMMITTEE

(To Be Implemented From 2020-21 Academic Year)

PROGRAMME: THREE-YEAR B.A (With History, Economics and PolSc., Disciplines)

Domain Subject: History

(Syllabus with Outcomes, Co-curricular Activities, References& Model Q.P for Five Courses of 1, 2, 3 & 4 Semesters)

Structure of HISTORY Syllabus under CBCS for 3-year B.A. Programme (with domain subject covered during the first 4 Semesters with 5 Courses)

Sl. No	Code	Sem	Courses 1, II, III, IV &V	Name of Course (Each Course consists 5 Units with each Unit having 12 hours of class-work)	Hours/ Week	Credits	Marks	
							Mid Sem	Sem End
1		I	I	Ancient Indian History & Culture (From Indus Valley Civil. to 13 Century A.D)	**5**	**4**	**25**	**75**
2		II	II	Medieval Indian History & Culture (1206 A.D To 1764 A.D)	**5**	**4**	**25**	**75**
3		III	III	Modern Indian History & Culture (1764-1947 A. D)	**5**	**4**	**25**	**75**
4		IV	IV	History & Culture of Andhra (from 1512 to 1956 AD)	**5**	**4**	**25**	**75**
5		IV	V	History Of Modern World (From 15th Cent. AD to 1945 AD)	**5**	**4**	**25**	**75**
					Total	**20**	**125**	**375**

PROGRAMME: THREE-YEAR B.A.

(With History, Economics and Political Science Disciplines)

Course Code:

Domain Subject: History

Semester-wise Syllabus under CBCS

I Year B. A. –Semester – I

Course1: ANCIENT INDIAN HISTORY & CULTURE (from Indus Valley Civilization to 13th Cen A.D)

Learning Outcomes:

After successful completion of this course, the student will be able to:

- Identify and define various kindsof sources and understand how history books are shaped
- Compare and contrast various stages of progress from IVC to Vedic age and analyze the Jain, Buddhist and Vedic faiths
- Increase the awareness and appreciation of Transition from Territorial States to Emergence of Empires
- Analyze the emergence of the Mauryan and Gupta empires during the "classical age" in India
- Evaluate the key facets of ancient society, polity and culture in South India—the feudalism, and the rise of technology and commerce.
- Critically examine the nature of monarchic rule and develop an comprehensive understanding of cultural evolution during ancient period
- Visualize where places are in relation to one another through map pointing

Syllabus:

Unit - 1 Ancient Indian Civilization (from Circa 3000 BC to 6th BC): Indus Valley Civilization - Salient Features;Vedic Age - Society, Polity, Economy, Culture during early and later Vedic period

Unit - II Ancient Indian History & Culture (6th Century BC to 2rd Century AD): Doctrines and Impact of Jainism and Buddhism; Mauryan Administration, Society,

	Economy & Culture - Ashoka's Dhamma; Kanishka's Contribution to Indian Culture
Unit - III	History & Culture of South India (2nd Century BC to 8th Century AD): Sangam Literature; Administration, Society, Economy and Culture under Satavahanas; Cultural contribution of Pallavas
Unit - IV	India from 3rd century AD to 8th century AD: Administration, Society, Economy, Religion, Art, Literature and Science & Technology under Guptas – Samudragupta; Cultural contribution of Harsha: Arab Conquest of Sind and its Impact
Unit - V	History and Culture of South India (9th century AD to 13th century AD): Local Self Government of Cholas; Administration, Society, Economy and Culture under Kakatiyas – Rudram Devi

References:

1 A.L. Basham, The Wonder That Was India

2 D.N.Jha, Ancient India

3 D.D.Kosambi, An Introduction to the Study of Indian History

4 D.P.Chattopadhyay, Science and Society in Ancient India

5 B.N.Mukherjee, The Rise and Fall of the Kushana Empire

6 K.A. NilakanthaShastri, A History of South India

7 R.C.Majumdar, K.K.Dutta&H.C.RoyChowdhuri (ed.), Advanced History of India

8 Kumkum Roy, The Emergence of Monarchy in North India: eighth to fourth centuries BC

9 RomilaThapar (et. al). India: Historical Beginnings and the Concept of the Aryan

10 M.L.K. Murthy, *Pre-and Protohistoric Andhra Pradesh upto 500 B.C.,* New Delhi, 2003

11 K. Sathyanarayana, A Study of the History and Culture of Andhras

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Mandatory Co-Curricular Activity:

Map pointing should be a compulsory activity as it helps student to understand vividly and clearly than the text and **should be made part of Internal Examination by allotting 10 marks out of 25 marks for this skill-based activity.**

Suggested Co-Curricular Activities

- # Cultural Clubs
- # Assignments
- # Student seminars
- # Literature surveys and book reviews
- # Map pointing
- # Individual / Group Field Studies
- # Co-operative learning
- # Students can be asked to create a calendar charting the dates of key events
- # Students should be asked to prepare an inventory of items preserved in the museum and their usage
- # Encourage the habit of Numismatics

- # Collection of news reports and maintaining a record of paper-cuttings relating to topics covered in syllabus
- # Group Discussions on problems relating to topics covered by syllabus
- # Examinations (Scheduled and surprise tests)
- # Any similar activities with imaginative thinking beyond the prescribed syllabus

PROGRAMME: THREE-YEAR B.A.

(With History, Economics and Political Science Disciplines)

Course Code:

Domain Subject: History

Semester-wise Syllabus under CBCS

I Year B. A. – Semester – II

Course 2:MEDIEVAL INDIAN HISTORY &CULTURE (1206 A.D to 1764 A.D)

Learning Outcomes:

After successful completion of this course, the student will be able to:

- Understand the socio, economic and cultural conditions of medieval India
- Describe the advent of Islam in India and study the traces of political and cultural expansion of Turks & Afghans
- Explain the Administration and art and architecture ofVijayanagar Rulers, Mughals and also analyse the rise of the Marathas and the contribution of Shivaji
- Evaluate the establishment of the British rule in India and understand the dangerous consequences disunity at all levels
- Analyze the emergence of composite culture in Indian
- Visualize where places are in relation to one another through map pointing

Syllabus:

Unit - 1	Impact of Turkish Invasions – Balban, AllauddhinKhilji, Md. Bin Tughlaq - Administration, Society, Economy, Religion and Cultural developments under Delhi Sultanate (from 1206 to 1526 AD)
Unit - II	Impact of Islam on Indian Society and Culture – Bhakti Movement; Administration, Society, Economy, Religion and Cultural developments under Vijayanagara Rulers
Unit - III	Emergence of Mughal Empire – Babur – Sur Interregnum - Expansion & Consolidation of Mughal Empire – Akbar, Jahangir,Shah Jahan, Aurangazeb

Unit - IV	Administration, Economy, Society and Cultural Developments under the Mughals – Disintegration of Mughal Empire - Rise of Marathas under Shivaji
Unit - V	India under Colonial Hegemony : Beginning of European Settlements - Anglo-French Struggle – Conquest of Bengal by EIC

References:

1 Chandra, S History of Medieval India (800 – 1700)

2 Chattopadyay, B.D The Making of Early Medieval India. (Delhi, 1994)

3 Habib, Irfan, Medieval India: The Study of a Civilization

4 Habibullah, A.B.M, The Foundation of Muslim Rule in India

5 Kumar Sunil, The Emergence of the Sultanate of Delhi

6 Nizami, K.A. Some Aspects of Religion and Politics in India in the 13th c

7 K.A. NilakantaSastri, A History of South India from Prehistoric Times to the Fall of Vijayanagara

8 K.A.NilkantaSastri, The Cholas

9 ShireenMoosvi, The Economy of the Mughal Empire

10 Stein, B Peasant, State & Society in Medieval South India

11 Yazdani, G. (ed) The Early History of the Deccan

12 R.C.Majumdar, The Age of Imperial Kanauj

15 R. Soma Reddy, *Late Medieval Andhra Pradesh, A.D. 1324-1724 A.D.*, New Delhi, 2014

16 HarbansMukhia, The Mughals of India

17 C.A.Bayly, Indian Society and the Making of the British Empire

Mandatory Co-Curricular Activity:

Map pointing should be a compulsory activity as it helps student to understand vividly and clearly than the text and should be made part of Internal Examination by allotting marks for this skill-based activity.

Suggested Co-Curricular Activities

- @ Book Reading
- @ Student seminars
- @ Viva voce interviews
- @ Quiz Programs
- @ Individual / Group Field Studies

- @ Co-operative learning
- @ Students should be encouraged to prepare a chart on sequence of events
- @ Collection of news reports and maintaining a record of paper-cuttings relating to topics covered in syllabus
- @ Group Discussions on problems relating to topics covered by syllabus
- @ Examinations (Scheduled and surprise tests)
- @ Students may be asked to prepare a project on influence of Islam and Hinduism in their respective localities

PROGRAMME: THREE-YEAR B.A.

(With History, Economics and Political Science Disciplines)

Course Code:

Domain Subject: History

Semester-wise Syllabus under CBCS

I Year B. A. – Semester – III

Course 3:MODERNINDIAN HISTORY & CULTURE (1764-1947 A. D)

Learning Outcomes:

After successful completion of this course, the student will be able to:

- Unearth the true nature of the British rule and its disastrous impact on Indian economy and society
- Gauge the disillusionment of people against the Company's rule even during the early 19th century
- Assess the causes and effects of Reformation movements and also inspire the public to overthrow inequalities of the present day society
- Rise above petty parochial issues after understanding the sacrificial saga of freedom struggle
- Evaluate the undercurrent of communal politics that led to India's partition and identify the enemies of India's integrity and sovereignty
- Visualize where places are in relation to one another through map pointing

Syllabus:

Unit - 1 Policies of Expansion –Warren Hastings, Cornwallis - Subsidiary Alliance & Doctrine of Lapse – Causes & Results of 1857 Revolt – Lytton, Rippon, Curzon

Unit - II Social, Religious & Self-Respect Movements – Raja Rammohan Roy, DayanandaSaraswathi, Swami Vivekananda, JyotibaPhule, Narayana Guru, Periyar, Dr. B. R. Ambedkar

Unit - .Causes for the growth of Nationalism - Freedom Struggle from 1885 to 1920:

III	Moderate Phase — Militant Phase: Vandemataram Movement - Home Rule Movement
Unit - IV	Freedom Struggle from 1920 to 1947: Gandhiji's Role in the National Movement – Revolutionary Movement – Subhas Chandra Bose
Unit - V	Muslim League & the Growth of Communalism – Partition of India – Advent of Freedom - Integration of Princely States into Indian Union – SardarVallabhai Patel

References:

1 Anil Seal, Emergence of Indian Nationalism

2 Banerjee, Sekhar, From Plassey to Partition

3 Bipan Chandra, Rise and Growth of Economic Nationalism in India

4 Chandra, Bipan, et. al., India's Struggle for Independence

5 Bipan Chandra, Modern India

6 Joshi, P.C., Rammohun and the Forces of Modernisation in India

7 R.P.Dutt, India Today

Mandatory Co-Curricular Activity:

Map pointing should be a compulsory activity as it helps student to understand vividly and clearly than the text and should be made part of Internal Examination by allotting marks for this skill-based activity.

Suggested Co-Curricular Activities

@ Debates

@ Student seminars

@ Viva voce interviews

@ Quiz Programmes

@ Photo Album

@ Recording local history

@ Role Play of freedom struggle events

@ Organizing photo exhibition on freedom fighters

@ Celebrations of important events / personalities

@ Conducting Philately

@ Examinations (Scheduled and surprise tests)

@ Students may be asked to prepare a project on the differences between Mughal and British administration

@ Encourage students to write their autobiography or biography of their inspiring personalities

PROGRAMME: THREE-YEAR B.A.

(With History, Economics and Political Science Disciplines)

Course Code:

Domain Subject: History

Semester-wise Syllabus under CBCS

II Year B. A. – Semester – IV

Course 4: HISTORY & CULTURE OF ANDHRA (FROM 1512 TO 1956 AD)

Learning Outcomes:

After successful completion of this course, the student will be able to:

- Interpret social and political and cultural transformation from medieval to modern Andhra
- Relate key historical developments during medieval period occurring in coastal Andhra and Telangana regions and analyze socio - political and economic changes under QutbShahi rulers
- Understand gradual change, or change in certain aspects of society in Andhra, rather than rapid or fundamental changes
- Explain how the English East India Company became the most dominant power and outline the impact of colonial policies on different aspects in Andhra
- Outline the issues related to caste, women, widow remarriage, child marriage, social reforms and the laws and policies of colonial administration towards these issues
- Take pride in the non-violence struggle for Indian Independence and relate the importance of peace in everyday life
- Apply the knowledge of the regional history to understand the regional, linguistic and other cultural aspirations of the present day society
- Visualize where places are in relation to one another through map pointing

Syllabus:

Unit - 1 Andhra through 16th& 19th Centuries AD: Evolution of Composite Culture - The QutbShahis of Golkonda –Administration, Society

	&Economy – Literature & Architecture; Advent of European and settlements in Andhra - Occupation of Northern Circars and Ceeded Districts – Early revolts against the British
Unit - II	Andhra under British rule: Administration – Land Revenue Settlements – Society – Education - Religion – Impact of Industrial Revolution on Economy – Peasantry & Famines – Contribution of Sir Thomas Munroe & C. P. Brown – Impact of 1857 Revolt in Andhra
Unit - III	Social Reform & New Literary Movements: KandukuriVeeresalingam, RaghupathiVenkataRathnam Naidu, GuruzadaApparao, KomarrajuVenkataLaxmana Rao; New Literary Movements: RayaproluSubbarao, ViswanathaSathyanarayana, GurramJashua, BoyiBheemanna, Sri Sri
Unit - IV	Freedom Movement in Andhra (1885-1947): Vandemataram Movement– Home Rule Movement in Andhra - Non-Cooperation Movement - AlluriSeetarama Raju &Rampa Revolt (1922-24) - Civil Disobedience Movement – Quit India Movement
Unit - V	Movement for separate Andhra State (1953) and AP (1956): Causes – Andhra Maha Sabha –Conflict between Coastal Andhra &Rayalaseema – Sri Bagh Pact – work of various Committees – Martyrdom of PottiSriramulu – Formation of separate Andhra State (1953); Movement for formation of Andhra Pradesh (1956): VisalandhraMahasabha – Role of Communists – States Reorganization Committee – Gentlemen's Agreement – Formation of Andhra Pradesh

References:

1 H.K.Sherwani, History of the KutubShahi Dynasty

2 K. Sathyanarayana, A Study of the History and Culture of Andhras

3 B. Kesava Narayana, Political and Social Factors in Modern Andhra

4 K.V.Narayana Rao, The Emergence of Andhra Pradesh

5 M. VenkataRangaiah, The Freedom Struggle in Andhra Pradesh

6 P.R.Rao, History of Modern Andhra

7 SarojiniRegani, Highlights of Freedom Movement

8 SarojiniRegani, ఆంధ్రాలో స్వాతంత్ర్యోద్యమ చరిత్ర

9 V. Ramakrishna, Social Reform Movement in Andhra

10 B. Kesava Narayana, Modern Andhra & Hyderabad – 1858 – 1956 A.D., 2016

11 K. Koti Reddy, History of Modern Andhra, Telugu Academy, Hyderabad

Mandatory Co-Curricular Activity:

Map pointing should be a compulsory activity as it helps student to understand vividly and clearly than the text and should be made part of Internal Examination by allotting marks for this skill-based activity.

Suggested Co-Curricular Activities

@ Students may be asked to identify families/ institutions/ personalities related to freedom struggle and prepare articles

@ Assign students to write a note on the historical sites or buildings in their respective areas – thus taking teaching out of the classroom and in to the field, and creating opportunities for students to socialize with their own surroundings

@ Student seminars

@ Debates

@ Viva voce interviews

@ Quiz Programmes

@ Photo Album

@ Recording local history

@ Role Play of freedom struggle events

@ Organizing photo exhibition on freedom fighters

@ Celebrations of important events / personalities

@ Conducting Philately

@ Examinations (Scheduled and surprise tests)

@ Encourage students to write their autobiography or biography of their inspiring personalities

PROGRAMME: THREE-YEAR B.A.

(With History, Economics and Political Science Disciplines)

Course Code:

Domain Subject: History

Semester-wise Syllabus under CBCS

I/II Year B. A. – Semester 4

Course 5: HISTORY OF MODERN WORLD (From 15th Cent. AD to 1945 AD)

Learning Outcomes:

After successful completion of this course, the student will be able to:

- Demonstrate advanced factual knowledge of world histories, politics, and cultures
- Assess and appraise the developments in art, literature, and society during the Renaissance and utilize content knowledge of the Reformation and Counter Reformation to make predictions about the evolution of Christianity in Europe and abroad
- Evaluate the causes for the Glorious Revolution and American Revolution and identify the background for the evolution of human rights movement
- Understand the main events of the French Revolution and its significance in the shift in European culture from Enlightenment to Romanticism
- Think how Russia's traditional monarchy was replaced with the world's first Communist state.
- Know how the world wars affected people all over the world and the destruction they caused
- Develop the intellectual curiosity and habits of thought that will lead to life-long learning and continued engagement with European history, literature, culture, languages, and current affairs and acquire advanced international and intercultural competency through coursework in international studies
- Visualize where places are in relation to one another through map pointing

Syllabus:

Unit - 1	Transformation from Medieval to Modern Era – Chief Characteristics; Glorious Revolution (1688) – Origin of Parliament Bill of Rights – Results
Unit - II	American Revolution (1776); French Revolution (1789) – Causes, Course and Results - Napoleon Bonaparte
Unit - III	Unification of Italy; Unification of Germany
Unit - IV	Communist Revolution in Russia; World War I: Causes – Results of the War – Paris Peace Conference; League of Nations
Unit - V	World War II: Causes, Fascism & Nazism – Results; The United Nations Organization: Structure, Functions and Challenges

References:

1 Burke, Peter, The Renaissance
2 C.J.H. Hayes, Modern Europe up to 1870
3 C.D. Hazen, Modern Europe up to 1945
4 Christopher Hill, From Reformation to Industrial Revolution
5 Elton, G.R., Reformation Europe, 1517-1559
6 Ferguson, The Renaissance
7 Gilmore, M.P., The World of Humanism, 1453-1517
8 Hilton, Rodney, Transition from Feudalism to Capitalism
9 J.H.Parry, The Age of Renaissance
10 J.N.L. Baker, History of Geographical Discoveries and Explorations
11 The New Cambridge Economic History of Europe, Vol. I, VII

Mandatory Co-Curricular Activity:

Map pointing should be a compulsory activity as it helps student to understand vividly and clearly than the text and should be made part of Internal Examination by allotting marks for this skill-based activity.

Suggested Co-Curricular Activities

- @ Watch movies related to the topics in the e-class room
- @ Organize guest lectures
- @ Publication of college-level magazine by encouraging students to write articles on contemporary history of Europe
- @ Viva voce interviews
- @ Quiz Programmes
- @ Examinations (Scheduled and surprise tests)

##########

PROGRAM: B. A. HISTORY (CBCS) MODEL QUESTION PAPER & PATTERN

Max. Marks: 75 **Time: 3 hrs**

SECTION A (Total: 15 Marks)

Matching (5 Marks: 5 x 1)

A		B
1	( )	A
2	( )	B
3	( )	C
4	( )	D
5	( )	E

Multiple Choice (5 Marks: 5 x 1)

1.
2
3
4
5.

Map Pointing (5 Marks)

SECTION B(Total: 3x5=15 Marks)

(Answer any **three questions**. Each answer carries **5 marks**

(At least 1 question should be given from each Unit)

1.	
2.	
3.	
4.	

5.	
6.	

SECTION C (Total: 3x15 = 45 Marks)

(Answer any **three questions**. Each answer carries **15 marks**

(At least 1 question should be given from each Unit)

1.	
2.	
3.	
4.	
5.	
6.	

@@@@@

SUBJECT EXPERTS

Prof.Murali Mohan
Dept of History,
Acharya Nagarjuna University
Nagarjuna Nagar

Dr.Krishna Prasad
Jawahar Bharati Degree College,
Kavali

SYLLABUS VETTED BY

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ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION
(A Statutory body of the Government of Andhra Pradesh)
REVISED UG SYLLABUS UNDER CBCS
(To Be Implemented from Academic Year, 2020-21)
PROGRAMME: FOUR YEAR B.A. (Hons)

Domain Subject: **HISTORY**

Skill Enhancement Courses for Semester V
(Syllabus with Learning Outcomes, References, Co-curricular Activities & Model Q.P. Pattern)

Structure of SECs for 5th Semester
(To Choose any One Pair from the Four Alternative Pairs of SECs)

Uni code	Course No 6 & 7	Name of Course	Hours/ Week	Credits	Marks	
					Internal Assmt:20 Fieldwork/Project work: 5	Sem End
	6A	Archival Sources and Techniques	5	4	25	75
	7A	Techniques of History Writing	5	4	25	75
OR						
	6B	Tourism and Hospitality Services	5	4	25	75
	7B	Tourism Guidance and Operating Skills	5	4	25	75
OR						
	6C	Journalistic Reporting and Editing Techniques	5	4	25	75
	7C	Evolution of Telugu Cinema and Script Writing	5	4	25	75
OR						
	6D	Modern Principles and Techniques of Archaeology	5	4	25	75
	7D	Museum Management	5	4	25	75

Note-1: For Semester–V, for the Domain Subject History, any one of the Four Pairs of SECs shall be chosen as Courses 6 and 7, i.e., 6A & 7A or 6B & 7B or 6C & 7C or 6D & 7D. The Pair shall not be broken (ABCD allotment is random, not on any priority basis).

Note-2: One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate skills related to the domain subject in students. The syllabus of SEC will be partially skill oriented. Hence, teachers shall also impart practical training to students on the skills embedded in syllabus citing related real field situations.

A.P. State Council of Higher Education
Semester-Wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-Year B.A. (Hons)
Domain Subject: **HISTORY**
IV Year B. A.(Hons) – Semester – V

Max Marks: 100

Course 6A: **Archival Sources and Techniques**
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand the archival sources and techniques as professional tools.
2. Identify the intellectual and physical content in historical sites and records.
3. Develop the ability to preserve and create access for a historic record.
4. Recognize the importance of archives in history writing.
5. Manage, budget and implement projects.

I. **Syllabus:** (Hours: Teaching: 60, Skills Training: 10, others including unit tests: 05. Total:75)

Unit: 1

Definition of Archives - History of Archives - Types of Archives: College Archives - University Archives - Regional Archives - Corporate Archives –A. P. State Archives and Regional Centers - National Archives.

Unit: 2

Archival Sources: Public Records, Oriental Records, Manuscripts, Private Papers, News Papers etc. - Identifying Historical Records from fiction – Differentiating Primary and Secondary Sources.

Unit: 3

Physical forms of Archival Materials: Clay tablets, Stone inscription, Metal Plates, Palm leaves and Paper records, Photographs, Cartographic Records, Film, Video tapes and other Electronic Records.

Unit: 4

Archival Administration: Authenticity of Documents, Preserving Historical Documents –Office Organization and Record Management.

Unit: 5

Archival Ethics: National Security, Privacy, Intellectual Property Rights -Information Technology and Computer Application in Archives.

III. References:

1. Annstoler, Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense, 2009
2. Bernand Cohn, An Anthropologist among Historians and other Essays, Oxford Press, 2010
3. Saloni Mathur: India by Design: Colonial History and Cultural Display, University of California, 2007
4. Sengupta, S.: Experiencing History Through Archives, Delhi: Munshiram Manoharlal, 2004

5. Guha, Thakurta, Tapati : Monuments, Objects, Histories : Institution of Art in Colonial India, New York, 2004
6. Kathpalia, Y.P.: Conservation and Restoration of Archive Materials, UNESCO, 1973
7. Basu, Purnendu; Records and Archives, What are they, National Archieve of India, 1960, Vol II, No. 29
8. The Indian Archives, Journal
9. Web sources suggested by the teacher concerned and college librarian including for reading material.

IV. Co-Curricular Activities:

a) Mandatory: (Training of students in the related skills by the Lecturer, Total 10 Hours)

1) **For Teacher**: Training of students by the teacher in the classroom or in the field for a total of not less than10 hours on identifying, extracting, classifying and preserving archival sources and documentation techniques. The training may pertain to the historical records of a local educational institution, organization, age-old institution, business establishment, government institution, hospital, historical society; monument or a cultural event.

2) For Student: Students shall visit a college library, local library, an organization's office, archival cell or museum and observe the collection, preservation and cataloguing techniques. They shall write their individual observations in the given format, not exceeding 10 pages, and submit to the teacher, as the Fieldwork/Project work Report.

3) **Suggested Fieldwork/Project work Format** (Report shall not exceed 10 pages):

Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings, Conclusion & References.

4) Max Marks for Fieldwork/Project work Report: 05

5) Unit Tests/Internal Examinations.

b) Suggested Co-Curricular Activities

1) Invited Lectures
2) Hands on experience by field experts.
3) Debates on interesting topics
4) Seminars, Group discussions, Quiz, etc.
5) Assignments

A.P. State Council of Higher Education
Semester-Wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-Year B.A. (Hons)
Domain Subject: **HISTORY**
IV Year B. A.(Hons) – Semester – V

Max Marks: 100

Course 7A: **Techniques of History Writing**
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand the meaning of history, scope and various concepts in historical writings
2. Identify various historical sources for writing history of a person / event / place/organization/ monument/ etc.
3. Understand the different ways to organize sources and interpretation
4. Summarize the changing ideas and approaches to a particular topic of history
5. Learn skills related to choosing and writing of a comprehensive history of a small unit

II. **Syllabus:** (Hours: Teaching: 60, Skills Training: 10, others including unit tests: 05. Total:75)

Unit: 1

What is History-Meanings and Scope of History – Generalizations in History – Judgement in History – Hypothesis?

Unit: 2

Understanding Sources of History - Survey of Sources: Archeological and Literary Sources-Foreign Travelers Accounts- Oral History- Sources of Contemporary History-Data mining from information Science (Internet/Web Sources)

Unit: 3

History Writing. Importance and Types of History Writing: Research Papers/Essays/General History/ Book Reviews/Biographies/ Reports/ Analysis of original works etc.

Unit: 4

Writing Biographical History. individual, family, organization history - (Ex: Makers of Modern India/ Freedom Fighters /Politicians/Sports Personalities/ Industrialists/Business Personalities, a reputed family and noted business firm)

Unit: 5

General and Local History Writing: Street/Village/Urban/Institute/ Incident/ Place/Monument History etc.- Structure of a History Document-Bibliography

III. References:

1. E.H.Carr, What is History, Penguin Classic, Reprint in 2018.
2. E.H.Carr, What is History (T.M), Hyderabad Book Trust, 2016.
3. E.Sreedharan, A Text Book of Historiography, Orient Longman, First Published in 2000, Reprint in 2006.
4. Sumit Sarkar, Writing Social History, Oxford University Press, 1998.

5. B.Sheikh Ali, History-Its Theory and Method, Laxmi Publications, 2019
6. Steven Roger Fischer, History of Writing, Reaktion Books, 2021.
7. Amarthya Sen, Argumentative Indian, Writings on Indian History, Culture and identity, Penguin, 2006.
8. R.G. Colling Wood, The Idea of History, Oxford University Press, 1994.
9. K. Rajayyan, History in Theory and Method: A Study in Historiography, Raj Publishers, 1982.
10. G. P Singh, Ancient Indian Historiography Sources and Interpretations, D.K.Print World Ltd, 2003.
11. N.R.Ray, Sources for the History of India, New Delhi, 1978.
12. R.C.Majumdar, Historiography in Modern India: 18th and 19th Centuries, Asia Publishing House, 1970.
13. Ramasundari Mantena, The Origins of Modern Historiography in India: Antiquarianism and Philology, 1780-1880, Palgrave and Macmillan, 2012.
14. Web sources suggested by teacher/librarian

IV. Co-Curricular Activities:

a) Mandatory: (Training of students in the related skills by the Lecturer, Total 10 Hours)

1) For Teacher: Training of students by the teacher in the classroom or in the field for a total of not less than10 hours on techniques of writing history. The teacher shall train the students to identify the sources, authenticate, compile, arrange and judge in a proper order.

2) For Student: Students shall individually visit a place like a Street/Village/Cultural Centre / Religious place / Monument/Organization/Institution or a Historical place and study its history and make observations. **(or)** Study the Biography/achievements of an Inspiring Personality and make observations.

These individual observations shall be written not exceeding 10 pages and submitted to the teacher as Fieldwork/Project work Report in the given format.

3) Suggested Fieldwork/Project work Format:

Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings & References.

4) Max Marks for Fieldwork/Project work Report: 05

5) Unit Tests/Internal Examinations

b) Suggested Co-Curricular Activities

1. Training of Students on Writing History
2. Assignments
3. Invited Lectures Presentations on Related Topics by Field Experts.
4. Debates on Interesting Topics
5. Seminars, Group Discussions, Quiz, etc.
6. Preparation of Videos on Historical Sites.
7. Collection of Material/Figures/Photos/Books related to History of a Place and History writing and organizing them in a Systematic way in a file.
8. Visits to Historical Sites, Museums, Monuments etc

A.P. State Council of Higher Education
Semester-Wise Revised Syllabus under CBCS, 2020-21
Course Code:
Four-Year B.A. (Hons)
Domain Subject: **HISTORY**
IV Year B. A.(Hons) –Semester-V

Max Marks: 100

Course 6B: **Tourism and Hospitality Services**
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand hospitality as a career
2. Inculcate interpersonal skills
3. Develop the ability for multitasking and crisis management
4. Understands the spirit of teamwork
5. Acknowledge the importance of guest service and satisfaction

II. Syllabus: (Hours: Teaching: 60, Skills Training: 10, others including unit tests: 05. Total: 75)

Unit: 1

Tourism – Definition – Nature and Scope – History of Tourism–Types of Tourism – Domestic and International Tourism – Causes of rapid growth of tourism – National Institute of Tourism and Hospitality Management

Unit: 2

Relationship between history and tourism - Major tourist spots in AP – Gandikota, Nagarjunakonda, Salihundam, Konaseema

Unit: 3

Characteristics of Hospitality Industry - Inflexibility, Intangibility, Perish ability- Types of Hospitality jobs – Hotel Manager, Hotel Receptionist, Restaurant Manager, Catering Assistant, Executive Chef etc - Concepts of Atithi Devo Bhavah - Types of hotels in India

Unit: 4

Duties, responsibilities & skills of front office staff – duties, responsibilities and skills of housekeeping staff - guest stay process in a hotel - major processes and stages associated with it

Unit: 5

Different types of services offered in selected Hotels/Motels/Restaurants - Room Service, Catering Services -Different types of managerial issues - Service etiquettes

III. **References:**

1. Marketing for Tourism and Hospitality, Philip Kotler, Bowens and James Makens, Pearson Pub, New Delhi, 2010
2. Soft Sills for Hospitality, Amitabh Devendra, Oxford Higher Edn, 2015
3. The Indian Hospitality Industry: Dynamics and Future Trends, Ed: Sandeep Munjal, Sudhanshu Bhushan, CRC Press, 2017

4. Hotel Front Office: Operation and Management, Jatashankar Tewari, Oxford Higher Edn, 2016
5. www.ilo.org
6. https://riginstitute.com
7. nitahm.ac.in
8. web sources as suggested by teacher/librarian

IV. Co-Curricular Activities:

a) Mandatory: (Training of student in skills by Teacher: Total 10 Hours)

1) For Teacher: Training of students by the teacher in the classroom and in the field for a total of not less than10 hours on various practical aspects related to tourism and hospitality industry. The teacher shall also train students with the help of experts in skills such as flower arrangements, cooking and catering supervision, speaking to guests etc. related to hospitality services.

2) For Student: Students shall visit any one of the local tourism offices, tourism sites, hotels, restaurants, catering offices to make personal observations and to gain hands-on experience. These individual observations shall be written as a Fieldwork/Project work Report not exceeding 10 pages and submit to teacher in the given format.

3) Suggested Fieldwork/Project work Format:

Title Page, Student Details, Acknowledgments, Index of Contents: Objectives, Step-wise process, Findings & References

4) Max Marks for Fieldwork/Project work Report: 05

5) Unit Tests/Internal Examinations

b) Suggested Co-Curricular Activities

1) Invited Lectures
2) Hands on Experience with the help of Field Experts.
3) Debates on Interesting Topics
4) Seminars, Group Discussions, Quiz, etc.
5) Assignments
6) Alumni Interactions
7) Periodical Interactions with HR Managers

A.P. State Council of Higher Education
Semester-Wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-Year B.A. (Hons)
Domain Subject: **HISTORY**
IV Year B. A.(Hons) - Semester – V

Max Marks: 100

Course 7B: **Tourism Guidance and Operating Skills**
(Skill Enhancement Course (Elective), 4 Credits)

II. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Acquire tour guiding, operating and soft skills
2. Understand different situations under which one has to work
3. Cultivate cultural awareness and flexibility
4. Understand and apply team spirit
5. Plan and organize tour operations efficiently

II. Syllabus: (Hours: Teaching: 60, Skills Training: 10, others including unit tests: 05 Total: 75)

Unit: 1

Meaning of tour guide - types of tour guide: heritage guide, nature guide, adventure guide, business guide, special interest guide etc – duties and responsibilities of guides -various roles of tour guide.

Unit: 2

Guiding techniques: leadership skills, social skills, presentation skills, communication skills - Guide's personality skills: passion, empathy, enthusiasm, punctuality, humour etc - Personal hygiene and grooming – code of conduct.

Unit: 3

Guest Relationship Management- Handling emergency situations- Medical, Personal, Official, VISA/Passport, Death, Handling Guest with special needs/Different Abilities/ Different age groups.

Unit: 4

Conducting Tours: Pre-Tour Planning, Route Chart, Modes of Transportation, Security Measures, and Check list etc. - Conducting various types of tours- Relationship with Fellow Guides - Coordination with hospitality institutions.

Unit: 5

Travel Agency and Tour operations – Difference between Travel Agent and Tour operator – Functions of Tour Operator – Types of Tour Operations and of Tour Operators - A brief study of tour operating agencies like APTDC, Southern Travels etc.

III. References:

1. Jagmohan Negi, Travel Agency and Tour Operations, Kanishka Publishers,

New Delhi, 2006
2. Mohinder Chand, Travel Agency and Tour Operations: An Introductory Text, Anmol Publications Pvt. Limited, New Delhi, 2009
3. Dennis L Foster – Introduction to Travel Agency Management
4. Pat Yale (1995); Business of Tour Operations, Longman Scientific & Technical, New Delhi
5. Pond K L, The Professional Guide: Dynamics of Tour Guiding, 1993
6. www.tourism.gov.in
7. www.qtic.com
9. www.cedeop.europe
10. web sources as suggested by teacher/librarian

IV. Co-Curricular Activities:

a) Mandatory: (Training of students in the related skills by the Lecturer, Total 10 Hours)

1) For Teacher: Training of students by the teacher in the classroom and in the field for a total of not less than10 hours on various practical skills related to guidance and operating tours in tourism sector, with the help of local experts. The teacher shall lead students to local tourist sites and guide them to work with local tourist guides or local tourist operators.

2) **For Student**: Students shall individually choose and visit a local tourist place/monument such as a historical site, temple etc., and talk to local guides personally. Observe their functioning to gain experience, including suggestions for the improving the guidance. These individual observations shall be written in the given format not exceeding 10 pages and submit to the teacher as Fieldwork/Project work Report.

3) Suggested Fieldwork/Project work Format:

Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings & References

4) Max Marks for Fieldwork/Project work Report: 05

5) Unit Tests/Internal Examinations

a) **Suggested Co-Curricular Activities**

1) Invited Lectures
2) Hands on experience with the help of field experts.
3) Debates on interesting topics
4) Seminars, Group Discussions, Quiz, etc.
5) Assignments
6) Alumni Interactions
7) Periodical interactions with Tour Managers

A. P. State Council of Higher Education
Semester-Wise Revised Syllabus under CBCS, 2020-21
Course Code:
Four-Year B.A. (Hons)
Domain Subject: **HISTORY**
IV Year B. A.(Hons)-Semester-V

Max Marks: 100

Course 6C: **Journalistic Reporting and Editing Techniques**
(Skill Enhancement Course (Elective), 4.Credits)

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Gauge the significance of Report Writing
2. Understand the principles and techniques of Reporting
3. Know the types of news sources and qualities of a Reporter
4. Identity the role of Sub Editor and Editor
5. Critically analyze the challenges in reporting and editing techniques

II. Syllabus: (Hours: Teaching: 60, Skills Training: 10, others including unit tests: 05. Total:75)

Unit-I

Definitions of Journalism, Reporting and Editing-History of Indian Press and News Papers-Printing Revolution-Importance of print and electronic media

Unit-2

Sources of News -Types of News and News Writing- Principles of Reporting - Reporting Techniques - Problems in Reporting - Qualities of Reporter

Unit-3

Types of Reporting - Importance of Language -International and Indian News Agencies - Importance of Photography

Unit-4

Principles of Editing - Role of Sub Editors and Chief Editors - Techniques of Editorial Page - Headline Techniques- Tips for Captions

Unit-5

Characteristics of effective report - Report writing for all media: Radio, Television, News Paper, Magazine and Web- Writing of model reports of different types like politics, crime, entertainment, press conference, places of importance etc. - Career opportunities in Journalism

III. References:

1. J.Natarajan, History of Indian Journalism, Ministry of Information and Broadcasting, 2010.
2. G.N.S.Raghavan, Press in India: New History, Gyan Publishing House, 1995.
3. K.M.Shrivastava, News Reporting and Editing, Sterling Publishers Pvt. Ltd, 2003.
4. S.Kundra, Reporting Methods, Anmol Publications Pvt.Ltd, 2005.
5. M.K.Joseph, Outline of Reporting, Anmol Publications, 2007.

6. J.R.Hakemulder, News Reporting and Editing, Anmol Publications, 2002.
7. Franklin, Key Concepts in Journalism Studies, Vistaar Publications, 2003.
8. M.V.Kamath, Professional Journalism, Vikas Publishing House, 1980.
9. Bruce D.Itule and Douglas A.Anderson, News Writing and Reporting for Today's Media, McGraw Hill, 2003.
10. Web sources as suggested by teacher/librarian

IV. Co-Curricular Activities:

a) Mandatory: (Training of students in the related skills by the Lecturer, Total 10 Hours)
1. For Teacher: Training of students by the teacher in classroom and field on Techniques of Report Writing and Editing. The teacher shall train the students to identify sources, compilation, of information/News, conduction of mock interviews, investigations, judging the authenticity, Reporting and other related activities. Teacher shall train students in recording videos on different news items.
2. For Student: Students shall go to the field for collection of news from sources. They shall describe in detail how the sources were identified, challenges faced while collecting news, placing the news in order, preparing and editing the report. They may interact with the local working journalists and editors and observe their methods. These individual observations shall be written in the given format not exceeding 10 pages and submit to the teacher as Fieldwork/Project work Report.
3. Suggested Fieldwork/Project work Format:
Title Page, Student Details, Acknowledgments, Index, Objectives, Step-wise process, Findings & References.
4. Max Marks for Fieldwork/Project work Report: 05
5. Unit Tests/Internal Examinations

b) Suggested Co-Curricular Activities
1. Prepare a Front Page of a Newspaper with News and Photographs.
2. Training of Students on Reporting and Editing Techniques.
3. Assignments on Current and Trending News
4. Invited Lectures Presentations on Report writing and Editing Techniques by Local Reporters and Editors
5. Debates Seminars, Group Discussions, Quiz, etc.
6. Preparation of Videos on News Items
7. Collection of News and organizing them in a systematic way in a file.
8. Visits to Local News Paper offices/ Press/ Press Conferences etc.
9. Interaction with Local News Reporters and Editors

A. P. State Council of Higher Education
Semester-Wise Revised Syllabus under CBCS, 2020-21
Course Code:
Four-Year B.A. (Hons)
Domain Subject: **HISTORY**
IV Year B. A.(Hons)-Semester-V

Max Marks: 100

Course 7C: **Evolution of Telugu Cinema and Script Writing**
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Understand the evolution of Telugu cinema and major changes from past to present
2. Assess the role of Telugu cinema makers and their contribution
3. Identify various cinema studios and film institutions
4. Learn skills and techniques of cinema script writing

II. Syllabus: (Hours: Teaching: 60, Skills Training: 10, others incl unit tests: 05. Total: 75)

Unit: I

What is Cinema- Origin - Definitions-Scope of Cinema- History of Indian cinema- Cinema and its importance – Some prominent Indian film makers in other languages: Satyajit Ray, Santa Ram, K. Subramanyam, B.R. Pantulu and Adoor Gopalakrishnan.

Unit: 2

Evolution of Telugu cinema: Cinema under British rule- Mookie to Talkie Films-Classical Age-Black and White to Colour Films - Pioneers of Telugu cinema: Raghupati Venkaiah, B. N. Reddy, Gudavalli Ramabrahmam, L. V. Prasad and K. V. Reddy

Unit: 3

Major Developments in Telugu Film Industry in the first 50 years (1912 to 1962) - Cinema Studios and Film Institutes (Chennai-Hyderabad) - Film Censorship - National & State Awards-Film Festivals-Telugu Cinema at World Market- Cinema and its Impact on Society

Unit: 4

Evolution of Telugu film story/scripts and themes in the first 50 years (1912 to 1962): mythological, historical, folk, social reform and freedom movement, family, hero-cult. Rural and urban background

Unit: 5

Adaptation of historical events for historical films: Comparative study original (reorded) history and the film's story – study of one of the following films Mahamantri Timmarasu, Bobbili Yuddham, Alluri Sitaramaraju; Prominent Telugu film script writers: Pingali Nagendra Rao, Chakrapani, Modukuri Jhonson, D.V.Narasaraju.

III. References:

1. Renu Saran., History of Indian Cinema, Diamond Pocket Books Pvt Ltd, 2012.
2. Ashish Rajadhyaksha, Indian Cinema: A Very Short introduction, 2016.
3. Dr.D.L.Narasimha Rao, Evolution of Telugu Films: A Historical Prospective, Research India Press, 2013.
4. K.Dharma Rao, A Book on 86 Years of Telugu Cinema (Telugu).

5. Telaka Palli Ravi, Mana Cinemalu: Anubavalu Charitra- Parinamam (Telugu), Praja Sakthi Book House, 2019.
6. Satyajith Ray, Cinimalu Manavi- Vallavi (Telugu), Anvikshiki Books, 2011.
7. Venkat Sidda Reddy, Cinema-Cinema-Cinema: Sameekshalu, Vyasalu, Parichayalu, Anvikshiki Publishers, 2021.
8. S.Theodore Baskaran, History through the Lens: Prospective on the South Indian Cinema, 2009.
9. S.V.Srinivas, Politics as Performance: A Social History of Telugu Cinema, Orient Blackswan, 2018.
10. K.P.Ashok Kumar, Anaganaga Oka Cinema (Telugu)
11. https://www.youtube.com/c/PARUCHURIGOPALAKRISHNAOFFL
12. https://youtu.be/u5lE_zCV72c
13. https://youtube.com/kiranprabhatalkshows
14. Web sources as suggested by teacher/librarian

IV. Co-Curricular Activities:

a) Mandatory: (Training of students in the related skills by the Lecturer, Total 10 Hours)

1) **For Teacher:** Training of students by the teacher in the classroom and in the field for not less than 10 hours on identification of various historical stages of evolution of Telugu film industry in terms of themes, backgrounds, attire, language etc. and their significance. Recognizing the contribution of various film personalities. Identification of differences between historical facts and story of the film.

2) For Student: The student shall individually choose a category of films (ex. Mythological or folk or historical or social) and observe the evolution of such films over a period of 10 years **(or)** compare films of different themes over a period of five years, identify differences among various themes **(or)** compare films which won National awards **(or)** choose a film famous personality (ex. Dadasaheb Flake Awardee) and make observations on his/her films. These individual observations shall be written in the given format not exceeding 10 pages and submit to the teacher as Fieldwork/Project work Report.

3. Suggested Fieldwork/Project work Format:
Title Page, Student Details, Acknowledgments, Index page: Objectives, Step-wise process, Findings & References
4. Max Marks for Fieldwork/Project work Report: 05
5. Unit Tests/Internal Examinations

b) Suggested Co-Curricular Activities

1. Training of Students on Script Writing
2. Interview with Cinema Makers
3. Assignments on Collection of old Historical films, Short Stories etc.
4. Invited Lectures on Cinema Artists/ Script Writers
5. Debates on History of Telugu Cinema
6. Seminars, Group discussions, Quiz etc.
7. Preparation of Different Scripts.
8. Collection of Cinema old Scripts
9. Visits to nearby Film Institutions/ Studios
10. Interaction with Artists on Cinema Filed.

A.P. State Council of Higher Education
Semester-Wise Revised Syllabus under CBÇS, 2020-21

Course Code:

Four-Year B.A. (Hons)
Domain Subject: **HISTORY**
IV Year B. A.(Hons) – Semester – V

Max Marks: 100

Course 6D: **Modern Principles and Techniques of Archaeology**
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the relationship between archaeology and other disciplines
2. Understand the data retrieval techniques in Archaeology
3. Demonstrate post excavation analysis, recording and interpretation of data
4. Differentiate the dating methods in Archaeology
5. Analyze the conservation and preservation methods in Archaeology

II. **Syllabus:** (Hours: Teaching: 60, Skills Training: 10, others including unit tests: 05. Total:75)

Unit: 1

Definition, Nature and Scope of Archaeology - Relationship of Archaeology with Social and Natural Sciences - Application of Digital Technology in Archaeology: GIS and Satellite Imagery - Computers and the Internet.

Unit: 2

Retrieval of Archaeological Data: Techniques of Exploration, Excavation, - Study of Maps-Aerial Survey - Photography-Water Exploration – Tools of Archaeology

Unit: 3

Chronology-Relative Chronology-- Radio Carbon Dating - Principles of Conservation, Preservation and Documentation of Archaeological Antiquities

Unit: 4

Nature and Scope of Epigraphy- Decipherment and Dating -Origin of writing in India - Historical Importance of the Inscriptions -Paleographic Formula

Unit: 5

Numismatics as Source Material for the Reconstruction of History - Origin of Coinage in India Application of Numismatics and Numismatic Data to Archaeology

III. References:

1. Agrawal, D. P. and M. D. Yadava, Dating the Human Past. Pune: Indian Society for Prehistoric and Quaternary Studies, 1995
2. Agrawal, O. P., Preservation of Art Objects and Library Materials, New Delhi, National Book Trust India, 1993
3. Balme, Jane and Alistair Paterson, Archaeology in Practice (A Student Guide to Archaeological Analyses). West Sussex: John Wiley and Sons Inc, 2014

4. Grant, Jim, Sam Gorin and Neil Fleming, The Archaeology Course book: An Introduction to Study, Skills, Topics and Methods, London and New York, Routledge, 2002
5. Walker, Mike. Quaternary Dating Methods, West Sussex: John Wiley and Sons Limited, 2005
6. Gupta, P L, ed., Numismatics and Archaeology. Nasik: Indian Institute of Research in Numismatic Studies, 1986
7. Sharer, R and W. Ashmore, Archaeology: Discovering our Past. McGraw-Hill: New York, 2002.
8. Web sources as suggested by teacher/librarian

IV. Co-Curricular Activities:

a) Mandatory: (Training of students in the related skills by the Lecturer, Total 10 Hours)

1) For Teacher: Training of students by the teacher in classroom and field for a total of not less than10 hours on various practical skills and techniques of archaeological practices like the following; Identifying and collecting some common archaeological tools like shovels, trowels, spades, brushes, buckets etc., and how they are specifically used finding the historical dates using various simple methods. Collecting and organizing coin/stamp exhibitions and in deriving history from their chronology and evolution. Teacher may take local experts' help wherever needed.

2) For Student: Students shall visit museums/monuments/ançient temples/excavation sites etc to personally make observations (if possible, students can work at excavation sites or in museums) during off-hours to gain hands-on experience). **(or)** Students shall collect/identify artifacts like stone tools, pottery vessels, metal objects such as weapons and items of personal adornment such as buttons, jewellry, clothing etc. and observe their appearance, use and time period. These individual observations shall be written in the given format not exceeding 10 pages and submit to the teacher as Fieldwork/Project work Report.

3) Suggested Fieldwork/Project work Format:

Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings & References.

4) Max Marks for Fieldwork/Project work Report: 05

5) Unit Tests/Internal Examinations

b) Suggested Co-Curricular Activities

1) Invited Lectures
2) Hands on Experience with the help of Field Experts.
3) Debates, Seminars, Group Discussions, Quiz, etc.
4) Periodical Interactions with Museum / Archaeology Technical Experts

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A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-Year B.A. (Hons)
Domain Subject: **HISTORY**
IV Year B. A.(Hons) – Semester –V

Max Marks: 100

Course 7D: **Museum Management**
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Gain Awareness about the History, Context and Concepts of Museums
2. Understand Curatorial Responsibilities and Ethics of Collection
3. Document and Classify Museum Objects and Acquire Skills to Manage and Demonstrate them in Museum
4. Evaluate the Intricacies of Exhibition Design and Develop Skills related to various aspects of Museum Exhibitions
5. Analyze the Changing Dynamics between Museums and Culture and Job opportunities in this Field

II. **Syllabus:** (Hours: Teaching: 60, Skills Training: 10, others incl unit tests: 05. Total:75)

Unit: 1

Origin, Meaning, Definition and Purposes of Museums – Changing Role and Social Relevance of Museums – History and Development of Museums in India.

Unit: 2

Types of Museums – Classification of the Museum- Open Air Museums, Inclusive Museums, Community Centre, Galleries and Virtual Museums.

Unit: 3

Techniques of Collection, Conservation, Preservation of Museum Objects – Ethical Procedure. Collection and preservation of old documents and books.

Unit: 4

Items exhibited in general - Purpose of Exhibition - Types of Exhibitions – Museum Exhibition Skills – Exhibition Planning- Concept Development, Exhibition Brief, Exhibition Design – Evaluation of Exhibition.

Unit: 5

Museum Management as a Profession – Planning and Organization of Museum – Functions of Museum –Administration – Staff of the Museum and their Duties – Study of selected professional Museums – Regional, National – State/ASI and International Museums.

III. References:

1. Nigam M.L., Fundamentals of Museology. Navahind Prakashan, 1966
2. Timothy, Ambrose and Paine, Museum Basics, ICOM, Routledge, New York, 1993
3. Key Concepts of Museology, ICOM Publication (online)..

4. Seth, Manvi, Communication and Education in Indian Museums, Agam Kala Prakashan, New Delhi, 2012
5. Elizabeth Bogle, Museum Exhibition Planning and Design, Altimira Press, 2013
6. Grace Morely: Museum Today, University of Baroda, 1981
7. Sivaramamurti,C, Directory of Museum in India
8. Parker, A.C., A Manual for History Museum
9. UNESCO, Organisation of Museum
10. Web sources as suggested by teacher/librarian

IV. Co-Curricular Activities:

a) Mandatory: (Training of students in the related skills by the Lecturer, Total 10 Hours)

1) For Teacher: Training of students by the teacher in the classroom or in the field for a total of not less than10 hours on various practical aspects of related to museum management. Teacher should get into contact with nearby museums or archival cells and conduct a visit and ask students to evaluate the collection of items, preservation, display set-up, and functioning of the organization on any given parameters. The teacher shall also train students on how to set a small museum in the college with locally available materials.

2) For Student: Students shall visit Museums or Archival Cell personally observe and if possible, works (in museums if permitted) during off-hours to gain hands-on experience. Students should write a report on the curatorial practices or collection policies of any one of the museums they visit. These individual observations shall be written in the given format not exceeding 10 pages and submit to the teacher as Fieldwork/Project work Report.

3) Suggested Fieldwork/Project work Format:

Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings & References.

4) Max Marks for Fieldwork/Project work Report: 05

5) Unit Tests/Internal Examinations

b) Suggested Co-Curricular Activities

1) Invited Lectures
2) Hands on Experience with the help of Field Experts.
3) Debates, Seminars, Group Discussions, Quiz, etc.
4) Periodical Interactions with Museum Technical Experts

ODEL QUESTION PAPER PATTERN

Time: 3 Hours
Max. Marks: 75

Section A (Total 5 x 5 Marks = 25 Marks)
Answer any Five of the following. Each Answer Carries 5 Marks
(At least **One Question** should be given from each Unit)

1	
2	
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Section B (Total 5 x 10 Marks = 50 Marks)
Answer any Five of the following. Each Answer Carries 10 Marks
(At least **One Question** should be given from each Unit)

1	
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Prepared by: Prof. Murali Mohan, Acharya Nagarjuna University, Guntur
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ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

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REVISED SYLLABUS OF ECONOMICS UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR ECONOMICS

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Fifteen Courses of 1, 2, 3 & 4 Semesters)

(To be Implemented from 2020-21 Academic Year)

A.P. STATE COUNCIL OF HIGHER EDUCATION

REVISED UG CBCS SYLLABUS w.e.f. 2020-21

ECONOMICS (UG) SYLLABUS

For Semesters I to IV

Revised Course Structure

Sem	Course	Title of the Course	Hrs/wk	Credits	Marks
I	1	Microeconomic Analysis	5	4	100
II	2	Macroeconomic Analysis	5	4	100
III	3	Development Economics	5	4	100
IV	4	Economic Development in India and Andhra Pradesh	5	4	100
IV	5	Statistical Methods for Economics	5	4	100

SEMESTER – I :: COURSE - I

MICROECONOMIC ANALYSIS

NO. OF CREDITS: 4

LEARNING OUTCOMES FOR THE COURSE

At the end of the course, the student is expected to demonstrate the following cognitive abilities and psychomotor skills.

1. Remembers and states in a systematic way (Knowledge)

a. the differences between microeconomic analysis and macroeconomic analysis

b .various laws and principles of microeconomic theory under consumption,

2. Explains (understanding)

a. various terms and concepts relating to microeconomic analysis with the help of examples of real life

b. consumer's equilibrium and consumer's surplus using indifference curve analysis.

c. various laws and principles of consumption, production, and income distribution

d. determination of price and output discriminating different market conditions in short term and long term

3. Critically examines using data and figures (analysis and evaluation)

a. various laws and principles of microeconomic analysis and market conditions

b. application of the concept of demand elasticity and its relation with Average and Marginal Revenue

c. the relationship between average and marginal cost/revenue both in long term and

4. Draws critical diagrams and graphs to explain and examine the application of various laws and principles of microeconomic analysis

Module–1: Economic Analysis and Methodology

Economics – Definitions of Economics - Micro and Macro Analysis - Micro economic analysis – Scope and Importance -Principles of Microeconomics : Allocation of Resources - Optimization, Equilibrium and Marginal analysis -Rationality

Module -2: Theory of Consumption

Concept of Demand -Factors determining demand - Law of Demand - reasons and exceptions - Elasticity of Demand -Cardinal and Ordinal utility - Indifference Curve analysis : Properties of Indifference curves, Indifference Curve Map -Marginal Rate of Substitution - Budget Line - Consumer Equilibrium under Indifference Curve Analysis – PE-IE+SE.

Module -3: Theory of Production

Production Function : Cobb- Douglas Production Function -Law of Variable Proportions -Laws of Returns to Scale - Economies of large scale - Concepts of Cost - Total, Average and Marginal Costs - Law of Supply - Concept of Revenue : Total, Average and Marginal Revenues - Relation between Average and Marginal Revenues and elasticity of Demand.

Module-4: Theory of Exchange

Concepts of Market : Criteria for Classification of Markets - Perfect Competition– Conditions, Price and Output determination ; Monopoly : Conditions, Price and Output Determination - Price Discrimination; Monopolistic Competition - Assumptions - Price and output determination - Selling Costs ; Oligopoly - Kinky demand curve and Price rigidity

Module - 5: Theory of Distribution

Marginal Productivity Theory of Distribution - Concept of Rent - Ricardian Theory of Rent – Marshall's concepts of Economic Rent and Quasi Rent; Theories of Wage Determination: Subsistence Theory and Standard of Living Theory - Modern Theory of Wages; Classical Theory of Interest -Loanable Funds Theory of Interest -Liquidity Preference Theory of Interest; Theories of Profit: Risk and Uncertainty, Dynamic and Innovations Theories.

Reference Books:

1. A. Koutsoyiannis, ***Modern Microeconomics*** – Macmillan, London.
2 A. W. Stonierand D.C. Hague, ***A Text book of Economic Theory*** - ELBS & Long man Group, London.
3. H. L. Ahuja, ***Advanced Economic Theory***, S. Chand, 2004.
4. P. N. Chopra, ***Principles of Economics***, Kalyani Publishers, Ludhiana, 2018.
5. H.S. Agarwal: ***Principles of pEconomics***.
6. P.A Samuelson & W.D. Nordhaus - ***Macroeconomics***, Tata McGraw Hill, 18/e, 2005
7. M. L. Seth, ***Microeconomics,*** Lakshmi Narayan Agarwal, 2006.
8. D.M. Mithani&G.K. Murthy, ***Fundamentals of Business Economics***, Himalaya Publishing, 2007.
9. Telugu Academi Publications on Microeconomics.
10. ***Microeconomics***, Spectrum Publishing House, Hyderabad, 2017.

Recommended Co-curricular Activities:

1. Assignments and Student Seminars on themes of critical appreciation of microeconomic theory and relevant issues of current importance in Indian and AP economies
2. Quiz testing the understanding and application of various microeconomic concepts and theories
3. Group Study projects on the trends in the demand, supply and prices of goods and services in the local markets
4. Survey and analysis of data published in the Economic Survey of GOI and the Socio-economic survey of the State Government relevant to microeconomic aspects.

(Assignments preferably for all students in each semester. In respect of others, as far as possible, all students shall participate in each of the co-curricular activity by the end of fourth semester, @ roughly a fourth of total students in each semester)

SEMESTER – 2:: COURSE –2

MACROECONOMIC ANALYSIS

NO. OF CREDITS: 4

LEARNING OUTCOMES FOR THE COURSE

At the end of the course, the student is expected to demonstrate the following cognitive abilities and psychomotor skills.

1. Remembers and states in a systematic way (knowledge)

Various concepts, definitions,laws and principles of macroeconomic theory with referenceto income, employment, money, banking and finance

2. Explains (understanding)

a.the difference between various concepts and components of national income with illustrationsand methods of measuring national income

b. various terms, concepts, laws and principles, theories relating to income, employment, consumption, investment, money, price-level and phases of trade cycles

d. functions of commercial banks and central bank, creation and control of credit

3. Critically examines using data and figures (analysis and evaluation)

a. in order to understand the interrelationship between various components of national income

b. the theories of macroeconomics with reference to their assumptions, implications and applicability

c. Empirical evidences of Consumption and Investment Functions and factors influencing them

4. Draws critical formulae, diagrams and graphs.

a. consumption and investment functions; concepts of multiplier and accelerator

b. price indices, inflation and trade cycles

Module - 1: National Income

Macroeconomics - Definition, Scope and Importance - Circular Flow of Income -National Income: Definitions, Concepts, Measurement of National Income - Difficulties - Importance

Module -2: Theory of Employment

Classical Theory of Employment - Say's Law of Markets - Criticism -Keynesian Theory of Employment - Consumption Function - Keynes' Psychological Law of Consumption - Average and Marginal Propensity to Consume - Factors determining Consumption Function - Investment Function: Marginal Efficiency of Capital -Multiplier and Accelerator - Keynesian Theory of Employment and Applicability to Developing countries

Module – 3: Money and Banking

Definitions of Money - Concepts of Money, Money Illusion - Gresham's Law - RBI classification of Money - Theories of Money: Fisher and Cambridge (Marshall, Pigou, Robertson and Keynes equations) - Banking - Definition and types of Banking - Commercial Banks - Functions -Recent Trends in Banking - Mergers and Acquisitions - Central Bank - Functions - Control of Credit by Central Bank

Module – 4: Inflation and Trade Cycles

Inflation: Concepts of Inflation, deflation, reflation and stagflation - Phillip's Curve - Measurement of Inflation - CPI and WPI -Types of Inflation - Causes and Consequences of Inflation -Measures to Control Inflation. Trade Cycles: Phases of a Trade Cycle -Causes and Measures to control Trade Cycles

Module -5: Finance and Insurance

Financial Instruments - Financial Markets - Functions of Money Market - Functions of Capital Market - Stock Market - Exchanges – Indices:Sensex and Nifty - Concept of Insurance -Types and Importance of Insurance

Reference Books:

1. Dillard. D., ***The Economics of John Maynard Keynes***, Cross by Lockwood and sons, London
2. M. C. Vaish - ***Macroeconomic Theory,*** Vikas Publishing House, New Delhi.
3. S. B Guptha - ***Monetary Economics,*** S. Chand & Co, Delhi
4. P. N. Chopra, ***Macroeconomics***, Kalyani Publishers, Ludhiana, 2014
5. D. M. Mithani, ***Macro Economic Analysis and Policy***, Oxford and IBH, New Delhi
6. M N Mishra & S B Mishra, ***Insurance Principles &Practice,*** S Chand.
7. Lewis, M.K and P.DMizan - ***Monetary Economics***, Oxford University Press, New Delhi
8. Central Statistical Organization, ***National Accounts Statistics***.
9. M.L.Seth, Macroeconomics, Lakshmi Narayan Agarwal, 2006.
10. K. P. M. Sundaram, ***Money, Banking & International Trade***, Sultan Chand, 2006.
11. R. R. Paul, Monetary Economics, Kalyani Publishers, Ludhiana, 2018
12. ***Macroeconomics***, Spectrum Publishing House, Hyderabad, 2016

Recommended Co-curricular Activities:

1. Assignments on trends in national income, money supply and inflation
2. Student Seminars/webinars on macroeconomic themes of contemporary importance for Indian economy(Eg., Covid-19 impact on aggregate demand, supply chain disruption, policy response etc.,)
3. Quiz to test critical understanding of the concepts and theories of macroeconomics and their application in practice
4. Group discussions on monetary policy and its effectiveness with reference to recent developments.
5. Group project work to study the trends in national income, inflation, money supply etc.,
6. Chart/poster presentation on National Income Trends, inflation, aggregate demand etc.,
7. Web-based assignment on Banking/money

SEMESTER – 3:: COURSE – 3

DEVELOPMENT ECONOMICS

NO. OF CREDITS: 4

LEARNING OUTCOMES FOR THE COURSE

At the end of the course, the student is expected to demonstrate the following cognitive abilities and psychomotor skills.

1. Remembers and states in a systematic way (Knowledge)

    Various concepts and definitions and indicators relating to economic growth and Development including recent developments

2. Explains (understanding)

    a. Distinction between growth and development with examples

    c. Characteristics of developing and developing economies and distinction between the two

    d. factors contributing to development, Choice of Techniques and a few important models and strategies of growth

3. Critically examines using data and figures (analysis and evaluation)

    a. the theoretical aspects of a few models and strategies of economic growth

b. role and importance of various financial and other institutions in the context of India's economic development

4. Draws critical diagrams and graphs.

    a. to explain the models and strategies

b. to highlight empirical evidences to support the strategies

Module - 1: Economic Growth and Development

Economic Development as a Branch of Study of Economics – Scope and Importance - Distinction between Economic Growth and Economic Development -Measures of Economic Development and their limitations - three core values of economic development : Sustainability, Self-esteem and

Freedom – Economy and Environment : Concepts of sustainable development and inclusive growth

Module -2: Modern Economic Growth

Characteristics of Underdeveloped Countries - World Bank and IMF Classification of countries -Obstacles to economic development -Factors of economic growth: Economic and Non-economic - Capital Formation – Foreign and Domestic capital, Debt and Disinvestment.

Module-3: Theories of Development and Underdevelopment

Classical Theory: Adam Smith, Ricardo and Malthus -Marxian Theory - Rostow's Stages of Economic Growth -Harrod-Domar two sector model - Robinson's Golden Age

Module – 4: Strategies of Economic Development

Strategies of Economic Development – Big Push -Balanced Growth -Unbalanced Growth - Capital Intensive Technology vs Labour Intensive Technology -Role of Infrastructure in Economic Development

Module - 5: Institutions and Economic Development

Role of State in Economic Development -Public sector vs Private sector - Economic Federalism -Financial Institutions and Economic Development -Role of International Institutions-IBRD, ADB, IMF -Foreign Trade - FIIs and FDIs

Reference Books:

1. Dhingra, I.C., ***Indian Economy***, Sultan Chand, New Delhi, 2014.
2. Gaurav Datt and Ashwani Mahajan, ***Datt and Sundharam's Indian Economy***, S.Chand& Co., 2016.
3. G. M. Meier, ***Leading Issues in Economic Development***, Oxford University Press, New York, 3/e.
4. M. P. Todaro and Stephen C. Smith, ***Economic Development***, 10/e, Indian Edition Published by Dorling Kindersley India Pvt. Ltd. 2012.
5. M. L. Koncham, Economic development and planning, Himalaya publications
6. S.K.Misra&V,K,Puri, ***Indian Economy***, Himalaya Publishing House, 2015.
7. R.S.Rao, V.Hanumantha Rao &N.Venu Gopal (Ed.), ***Fifty Years of Andhra Pradesh (1956-2006),*** Centre for Documentation, Research and Communications, Hyderabad, 2007.
8. G. Omkarnath, ***Economics - A Primer for India*** - Orient Blackswan, 2012.
9. Economic development and growth, Spectrum Publishing House, Hyderabad, 2016

Recommended Co-curricular Activities:

1. Assignments on the models and the strategies of economic development adopted in Indian economy
2. Student Seminar on development oriented themes relating to Indian economy
3. Quiz to test critical understanding of the fundamental concepts pf growth and development and the growth models and strategies
4. Group discussion on the effectiveness of the roles played by various institutions in India's economic development
5. Group project work to examine specific aspects of growth like poverty, unemployment, human development, gender development as Indian experience in the context of economic development preferably at the state and local level
6. Poster presentation

SEMESTER – 4 :: COURSE – 4

ECONOMIC DEVELOPMENT- INDIA AND ANDHRA PRADESH

NO. OF CREDITS: 4

LEARNING OUTCOMES FOR THE COURSE

At the end of the course, the student is expected to demonstrate the following cognitive abilities and psychomotor skills.

1. Remembers and states in a systematic way (Knowledge)
    a. leading issues of Indian economic development with reference to potential for growth, obstacles and policy responses
    b. Objectives, outlays and achievements of economic plans and growth strategies
2. Explains (understanding)
    a. Available Resources, demographic issues, general problems of poverty and unemployment and relevant policies

b.Sector specific problems, remedial policies and their effectiveness relating to Agriculture and Industrial Sectors of Indian and AP economy and infrastructure issues of AP economy

    c. Indian Tax system, recent changes, issues of public expenditure and public debt, recent finance commissions and devolution of funds
    d. Major issues of economic development of Andhra Pradesh after bifurcation and Central assistance
3. Critically examines using data and figures (analysis and evaluation)
    a. Leading issues of current importance relating to India and AP economy, major policies and programmes
    b. Covid– 19 and its impact on Indian economy

4. Uses official statistical data and reports including tables and graphs
    a. To explain the achievements of Indian economy with reference to the objectives of planning and policy and make critical evaluation

Module – 1 Basic Features

Basic characteristics of Indian Economy as a developing economy – Economic development since independence - Objectives and achievements of planning – Planning Commission/NITIAyog and their approaches to economic development

Module 2 National Income and Demography

Trends in National income - Demographic trends and Occupational Structure - Poverty and Inequalities –Unemployment - Various Schemes of employment generation and eradication of poverty – Issues in Rural Development and Urban Development

M**odule – 3 Agricultural and Industrial Developments**

Indian Agriculture – Importance Agricultural Policy – Agrarian Crisis and land reforms – Agricultural credit – Minimum Support Prices -Malnutrition and Food Security - Indian Industry - Recent Industrial Policy – Make-in India – SEZs and Industrial Corridors - Economic Reforms and their impact - Atmanirbhar Bharat package.

Module –4Indian Public Finance

Indian Tax System and Recent changes – GST and its impact on Commerce and Industry – Centre, States financial relations- Recommendations of Recent Finance Commission – Public Expenditure and Public Debt - Fiscal Policy and Budgetary Trends since 2010

Module- 5Andhra Pradesh Economy

The basic characteristics of Andhra Pradesh economy after bifurcation in 2014 – Impact of bifurcation on the endowment of natural resources and state revenue – new challenges to industry and commerce - the new initiatives to develop infrastructure – Power and Transport - Information Technology and e-governance – Urbanization and smart cities – Skill development and employment –Social welfare programmes.

Reference Books:

1. Dhingra, I.C., ***Indian Economy***, Sultan Chand, New Delhi, 2014.
2. Gaurav Datt and Ashwani Mahajan, ***Datt and Sundharam's Indian Economy***, S.Chand& Co., 2016.
3. G. M. Meier, ***Leading Issues in Economic Development***, Oxford University Press, New York, 3/e.
4. M. P. Todaro and Stephen C. Smith, ***Economic Development***, 10/e, Indian Edition Published by Dorling Kindersley India Pvt. Ltd. 2012.
5. P. K. Dhar, ***Indian Economy: Its Growing Dimensions, Kalyani Publishers, Ludhiana, 2018.***
6. Reserve Bank of India, ***Handbook of Statistics on Indian Economy*** (Latest).
7. S.K.Misra&V,K,Puri, ***Indian Economy***, Himalaya Publishing House, 2015.
8. R.S.Rao, V.Hanumantha Rao &N.Venu Gopal (Ed.), ***Fifty Years of Andhra Pradesh (1956-2006),*** Centre for Documentation, Research and Communications, Hyderabad, 2007.
9. G. Omkarnath, ***Economics - A Primer for India*** - Orient Blackswan, 2012.
10. A.P Economy- Telugu Academy, 2018

Recommended Co-curricular Activities:

1. Assignments on specific issues of contemporary importance with reference to problems and remedial policies
2. Student Seminars on leading economic challenges, the effectiveness of relevant policies and programmes
3. Quiz to examine the knowledge and critical understanding of major policies, programmes achievements, failures relating to all sectors
4. Group discussions to promote critical understanding and evaluation capabilities of the students on major areas of Indian and AP economy
5. Group project work to study the implementation and effectiveness of major government schemes of development, poverty eradication and employment promotion etc.,
6. PPT presentation and participation in webinars to help the students acquire and adapt ITC skills in the process of learning
7. Field Visits to Agricultural farm/market/SSIs to understand the ground realities of economic situation of the country and the state

COURSE– 5 (Semester - IV)

STATISTICAL METHODSFOR ECONOMICS

NO. OF CREDITS: 4

LEARNING OUTCOMES FOR THE COURSE

At the end of the course, the student is expected to demonstrate the following cognitive abilities and psychomotor skills.

1. Remembers and states in a systematic way (Knowledge)
   a. the definitions, terms and their meaning relating to statistical methods
   b. various formulae used to measure central tendency, correlation regression and Indices

2. Explains (understanding)
   a. Importance of statistics and its applications
   b. The method of classification of primary data
   c. Uses of Correlation and Regression analysis, time series and index numbers in economic analysis

3. Analyses and solves usinggiven data and information (analysis and evaluation)
   a. different kinds of statistical problems using various principles and formulae relating to central tendency, correlation, regression, time series and indices
   b. to interpret data and suggest solutions to economic problems

4. Draws critical diagrams and graphs.
   a. Histogram, Frequency Polygon and Frequency Curve

b. More than cumulative and less than cumulative frequency curves (Ogive)
   c. Different types of Bar diagrams
   d. Pie Diagram and its uses in economic analysis

Module – 1: Nature and Definition of Statistics

Introduction to Statistics – Definition, scope, importance and limitations of Statistics – Primary and Secondary data- Census and Sampling techniques and their merits and demerits

Module – 2:Diagrammatic Analysis

Collection of data - Schedule and questionnaire – Frequency distribution – Tabulation – diagram and graphic presentation of data – Histogram, Frequency Polygon, Cumulative Frequency Curves - Bar Diagrams and Pie Diagram

Module – 3:Measures of Central Tendency and Dispersion

Measures of Central Tendency and Dispersion - Types of averages- Arithmetic Mean, Geometric Mean, Harmonic Mean – Median – Mode – Dispersion - Range, Quartile Deviation, Mean Deviation, Standard Deviation- Coefficient of Variation.

Module – 4:Correlation and Regression

Correlation and Regression - Meaning, Definition and uses of Correlation- Types of Correlation- Karl Pearson's Correlation coefficient - Spearman's Rank Correlation- Regression Equations - utility of regression analysis

Module – 5: Time Series and Index Numbers

Time Series and Index Numbers: Definition and components of Time Series – Measurement of Time Series – Moving Average and the Least Squares Method – Index Numbers - Concepts of Price and Quantity Relatives – Laspeyer's, Paasche's and Fisher's Ideal Index Numbers – Uses and Limitations of Index Numbers.

Reference Books:

1. B. R. Bhat, T. Srivenkataramana and K.S. MadhavaRao (1996): ***Statistics: A Beginner's Text***, Vol. I, New Age International (P) Ltd.
2. Goon A.M, Gupta M.K., Das Gupta B. (1991), ***Fundamentals of Statistics,*** Vol. I, World Press, Calcutta.
3. M. R. Spiegel (1989): ***Schaum's Outline of Theory and Problems in Statistics,***Schaum's Outline Series.
4. F. E. Croxton, D. J. Cowden and S. Kelin S (1973), ***Applied General Statistics,*** Prentice Hall of India. 2.
5. S.P. Gupta, ***Statistical Methods*** , S. Chand & Co, 1985
6. S. C. Guptha, ***Fundamentals of Statistics***, Himalaya Publishing House, Hyderabad.
7. Digambar Patri and D. N. Patri, ***Statistical Methods for Economics,*** Kalyani Publishers, Ludhiana, 2017.
8. Telugu Akademy Book, ParimanathmakaPaddathulu (For B.A.).

Recommended Co-curricular Activities:

1. Assignments of the application of various statistical methods
2. Student Seminar on themes requiring usage of tables, diagrams, statistical analysis and interpretation
3. Group project work for collection of data on locally relevant economic problems
4. Market survey on demand, supply, sales, prices of different kinds of projects like food items, FMCG, other consumable durables etc., etc., and Statistical Analysis- Mini Project and also income elasticity of demand for such products

Model Format for Question Paper

Recommendations to the paper setters

1. The paper setter may him/herself prepare a blue print assigning appropriate weightage to all learning outcomes as per Blooms Taxonomy and specified in the syllabus (if no design is prescribed)
2. All units may be fairly covered and even the learning outcomes may be fairly distributed.
3. Action verbs specific to the learning outcome to be tested may be used.
4. There may be no ambiguity in the question. The wording may be carefully framed.
5. Weightage to the difficulty level may also be determined in such a way that neither the paper is too difficult nor too easy. Even an average learner shall be able to pass the examination with minimum marks.

SECTION - A

Write Short Answer for any FIVE of the following

Each question carries 5 marks (5 x 5 = 25 Marks)

1	
2	
3	
4	
5	
6	
7	
8	

(Total 8 Questions in Section A)

SECTION – B

Answer the following questions

Each question carries 10 marks (5 x 10 = 50 Marks)

9	(a) Or (b)
10	(a) Or (b)
11	(a) Or (b)
12	(a) Or (b)
13	(a) Or (b)

(Total 10 Questions in Section–B. Internal choice for all questions from 9 to 13
(Two questions given under choice shall be from the same unit)

****

Annexure

Programme Outcomes and Programme Specific Outcomes

Programme Outcomes (POs)

After the completion of the B. A. (H.E.P.)Programme, the students will be able to achieve the following outcomes:

PO1. **Critical Thinking**:

Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational and personal) from different perspectives.

PO2. **Effective Communication**:

Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and by connecting people, ideas, books, media and technology across the World.

PO3. **Social Interaction**:

Elicit views of others, mediate disagreements and help reach conclusions in group settings.

PO4. **Effective Citizenship**:

Demonstrate empathetic social concern and equity-centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO5. **Ethics:**

Recognize different value systems including that of own, understand the moral dimensions of our decisions, and accept responsibility for them.

PO6. **Environment and Sustainability**:

Understand the issues in the contexts of environmental and sustainable development.

PO7. **Self-directed and Life-long Learning**:

Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes.

Programme (Economics) Specific Outcomes (PSO)

After completion of Economics programme, the students will be in a position to take informed decisions with regard to the following:

PSO1 - How the consumers and producers will take rational decisions in the context of unlimited needs and availability of scarce resources;

PSO2 – How the economy at the aggregate level works, what are the determinants of national income, prices, demand for and supply of money, poverty, and unemployment in an economy;

PS03 - He/she Gets understanding of the process of economic growth, economic development, sustainable growth in the context of existence of trade-off between rapid economic growth and environmental sustainability in the long-run;

PS04 - He/she will be able to apply the determinants of economic growth and development to the economies of India and Andhra Pradesh and appraise the fiscal, monetary and other socio-economic policies being pursued in India and Andhra Pradesh

PSO5 – He/she will get a basic understanding of Statistical Methods with a view to applying them to economics and real life situations

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SUBJECT EXPERTS

Prof.D.Krishna Murthy,
Dept of Economics,
SV University,
Tirupati

Dr.P.Venugopal,
Lecturer in Economics,
Hindu College,
Guntur

SYLLABUS VETTED BY

Prof.M.Prasada Rao,
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Andhra University,
Visakhapatnam

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

REVISED UG SYLLABUS UNDER CBCS

(To Be Implemented from Academic Year 2020-21)

PROGRAMME: FOURYEAR B.A. (Hons)

Domain Subject: **ECONOMICS**

Skill Enhancement Courses (SECs) for Semester V

(Syllabus with Learning Outcomes, References, Co-curricular Activities & Model Q.P. Pattern)

Structure of SECs for 5th Semester

(To Choose One pair from the Four (A, B, C, & D) alternative pairs of SECs)

Uni Code	Course Number 6 & 7	Name of Course	Hours/ Week	Credits	Marks	
					IA – 20 Fieldwork/Project work 5	Sem End
	6A	Rural Entrepreneurship	5	4	25	75
	7A	Farmer Producer Organizations	5	4	25	75
		OR				
	6B	Urban Entrepreneurship and MSMEs	5	4	25	75
	7B	Retail and Digital Marketing	5	4	25	75
		OR				
	6C	Insurance Services	5	4	25	75
	7C	Banking and Financial Services	5	4	25	75
		OR				
	6D	Inferential Statistics and Software Packages	5	4	25	75
	7D	Project Designing and Report Writing	5	4	25	75

Note1: For Semester–V, for the domain subject, Economics, any one of the four pairs of SECs shall be chosen as courses 6 and 7, i.e., 6A & 7A or 6B & 7B or 6C & 7C or 6D & 7D. The pair shall not be broken (ABCD allotment is random, not on any priority basis).

Note-2: One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate skills related to the domain subject among students. The syllabus of SEC will be partially skill oriented. Hence, teachers shall also impart practical training to students on the skills embedded in syllabus citing related real field situations

4/7/22

A.P. State Council of Higher Education

Semester-Wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-Year B.A. (Hons).

Domain Subject: **ECONOMICS**

IV Year B.A.(Hons)-Semester-V

Max Marks: 100

Course 6A: **Rural Entrepreneurship**
(Skill Enhancement Course (Elective) (4 Credits)

I. Learning Outcomes:

Students at the successful completion of the course shall be able to:

1. Explain the basic theories and essentials of entrepreneurship;
2. Identify and analyze the entrepreneurship opportunities available in local rural area;
3. Apply the theories of entrepreneurship to the conditions of local rural area and formulate appropriate business ideas;
4. Demonstrate practical skills that will enable them to start rural entrepreneurship.

II. Syllabus: (Hours: Teaching: 60, Training: 10, Others Including Unit Tests: 05)

Unit - 1: Entrepreneurship: Concept and Theories

Concept and Importance of Entrepreneurship - Theories of Entrepreneurship: Innovations, X-Efficiency, Risk Bearing - Qualities and Functions of an Entrepreneur –Women Entrepreneurship – Ecopreneurship.

Unit - 2: Rural Entrepreneurship, Business Planning and Agribusiness

Rural Entrepreneurial Ecosystem – Factors, Problems and Challenges of Rural Entrepreneurships - Process of Identification of new Entrepreneurship Opportunities in Rural Areas - Formulation of Business Planning for Rural Entrepreneurship - Agribusiness and Value Addition: Procuring, Processing, Storing, and Marketing.

Unit- 3: New Rural Entrepreneurship Opportunities

New Entrepreneurship Opportunities in Farm sector: Organic Farm Products, Nutri-Cereals, Horticultural Products, Forest Produce, Medicinal Plant Products - New Entrepreneurship Opportunities in Rural Non-farm sector: Poultry, Aquaculture, Sericulture, Honeybee, Mushrooms Cultivation, Handicrafts.

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Unit - 4: Financing and Marketing for Rural Entrepreneurship

Financing the Rural Entrepreneurship: Procedures to obtain formal loans from banks and other institutions - Preparation of Detailed Project Report for Loan - New avenues of Finance: Crowd Funding and Venture Capital - Marketing of Rural Products: Market Survey, Demand Forecasting, Marketing Strategies, Branding, Planning and Promotion, Digital and Social Media Marketing.

Unit - 5: Institutional Support and Case Studies of Rural Entrepreneurship

Institutional Support for Rural Entrepreneurship - Special Role of NABARD in promoting and supporting the Rural Entrepreneurship - Government Schemes for promotion of Rural Entrepreneurship– Rules and Procedures to start a Rural Entrepreneurship Firm – Discussion of two different types of Case Studies related to Rural Entrepreneurship with local relevance.

III. References:

1. Gordona, E and N. Natarajan: **Entrepreneurship Development**, Himalaya Publishing House Pvt Ltd, Mumbai, 2017.
2. Sudhir Sharma, Singh Balraj, Singhal Sandeep, **Entrepreneurship Development**, WisdomPublications, Delhi, 2005.
3. Drucker, P., **Innovation and Entrepreneurship: Practice and Principles**, Harper & Row, New York, 1985; revised edn., Butterworth-Heinemann, Oxford, 1999.
4. National Council of Rural Institute (NCRI): Curriculum for Rural Entrepreneurship, 2019. http://www.mgncre.org/pdf/Rural%20Entrepreneurship%20Material.pdf
5. NITI Aayog: **Report of Expert Committee on Innovation and Entrepreneurship**, New Delhi, 2015. https://niti.gov.in/writereaddata/files/new_initiatives/report-of-the-expert-committee.pdf
6. Vardhaman Mahavir Open Unversity, **Entrepreneurship Development & Small Scale Business,** Kota. http://assets.vmou.ac.in/BBA12.pdf
7. MANAGE: **Agri-Business and Entrepreneurship Development**, Course Material AEM-202, 2013. https://www.manage.gov.in/pgdaem/studymaterial/aem202.pdf
8. NABARD:**Model Bankable Farming on Hi-Tech Agriculture, Green Farming**, 2015. https://www.nabard.org/demo/auth/writereaddata/ModelBankProject/1612162301Precision_farming_for_vegetable_cultivation_in_Kerala_(E).pdf
9. Johanne Hanko:**A Handbook for Training of Disabled on Rural Enterprise Development**, Food and Agricultural Organisation (FAO), 2003. http://www.fao.org/3/ad453e/ad453e.pdf
10. IGNOU: **Marketing for Managers**, New Delhi. http://egyankosh.ac.in/handle/123456789/4271
11. www.nirdpr.org

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12. https://www.nabard.org/
13. http://sfacindia.com/
14. Other Relevant web resources suggested by the teacher and college librarian

IV. Co-Curricular Activities:

a) Mandatory (Training of students in the related skills by the teacher for a total 10 Hours)
1) **For Teacher**: Training of students by teacher in the classroom and in the field for a total of not less than10 hours on skills and hands on experience like identification business product, making business plan, preparing DPR for loan, application for bank loan, doing marketing survey, marketing a product etc pertaining to any type of rural entrepreneurship of local relevance and make a field visit to any one such unit. The expertise of practicing rural entrepreneurs can be utilized for this purposes.

2) **For Student:** Students shall visit and understand the functioning of rural entrepreneurship of their interest in the local area. They shall write their individual observations in the given format, not exceeding 10 pages, and submit to the teacher, as Fieldwork/Project work Report

3) **Suggested Fieldwork/Project work Format** (Report shall not exceed 10 pages):
Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings, Conclusion & References.
4) Max Marks for Fieldwork/Project work Report: 05
5) Unit Tests/Internal Examinations.

b) Suggested Co-Curricular Activities

1. Invited Lectures with academic experts, practicing entrepreneurs, concerned government officials
2. Hands on experience by field experts.
3. Assignments
4. Debates on related topics
5. Seminars, Group discussions, Quiz, etc.

Note: For the latest topics which have no formal material available, the teacher is expected to prepare own material by using multiple latest sources and practical knowledge.

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A.P. State Council of Higher Education

Semester-Wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-Year B.A. (Hons)

Domain Subject: **ECONOMICS**

IV Year B.A.(Hons)-Semester-V

Max Marks: 100

Course 7A: **Farmer Producer Organizations (FPOs)**
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

Students at the successful completion of the course shall be able to:

1. Explain the concept and organization of FPO and its economic activities.
2. Identify and analyse the opportunities related to FPO in local rural area.
3. Apply the concepts to the identified FPO related opportunities available in the local area and formulate business ideas.
4. Demonstrate practical skills that will enable them to start a FPO or earn wage employment in it

II. Syllabus: (Hours: Teaching: 60, Training: 10, Others Including Unit Tests: 05)

Unit 1: Concept of FPO and Importance

Concept and importance of FPO – Types of FPOs - Organizational structure and Functions of FPO - Ecosystem required for FPO - Role of FPOs in present Indian Agricultural Development – Factors, Problems and Challenges of FPOs in India.

Unit 2: Establishing FPO and Collaborations

Situation Analysis and Mobilizing Farmer Producers for FPO - Rules and Regulation related to FPOs - Procedures to start FPO –Infrastructure required for FPO - Collaboration with Other Organizations –Training and Capacity Building to Persons in FPO – Managing Financial Accounts of FPO.

Unit 3: Economic Activities and Business Planning of FPO

Economic Activities undertaken by FPO: Input Purchase, Custom Hiring Machines - Output Business: Procuring, Processing, Storage, Logistics, Marketing, Exporting etc. - Product Identification and Value Chain Analysis for FPO - Business Planning for FPO - Viable Business Models of FPO: Multi-product and Value Added.

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Unit 4: Financing and Marketing of FPO

Financial Planning in FPO - Mobilization of Capital from Members, Promoters, Banks and other Funding Agencies-Marketing of FPO Products: Market Survey, Demand Forecasting, Marketing Strategies, Branding, Planning and Promotion, Digital and Social Media Marketing.

Unit 5: Institutional Support and Case Studies of FPOs

Institutional Support and Resource Supporting Agencies for FPOs - Special Roles of NABARD and SFAC – Government Schemes for promotion of FPOs - Discussion of two important Case Studies related to FPOs with different product or process types of local relevance.

III. References:

1. NABARD: **Farmer Producer Organizations**, FAQs. Mumbai, 2015.https://www.nabard.org/demo/auth/writereaddata/File/FARMER%20PRODUCER%20ORGANISATIONS.pdf
2. NABARD: **Farmer Producer Organizations: Status, Issues and Suggested Policy Reforms,** Mumbai, 2019-20.https://www.nabard.org/auth/writereaddata/CareerNotices/2708183505Paper%20on%20FPOs%20-%20Status%20&%20%20Issues.pdf
3. NABARD: **FPO e-Learning Module**. https://www.nabard.org/FPO/story_html5.html
4. SFAC: **Formation and Promotion of 10, 000 Farmer Producer Organisations: Operational Guidelines**, New Delhi, 2020. http://sfacindia.com/UploadFile/Statistics/Formation%20&%20Promotion%20of%2010,000%20FPOs%20Scheme%20Operational%20Guidelines%20in%20English.pdf
5. FAO:**Course on Agribusiness *Management for Producers' A*ssociations**,2009. http://www.fao.org/3/i0499e/i0499e00.htm
6. Richa Govil, Annapurna Neti and Madhushree R. Rao: **Farmer Producer Organizations: Past, Present and Future**, Azim Premji University, Bengaluru, 2020 . http://publications.azimpremjifoundation.org/2268/
7. IGNOU: **Marketing for Managers**, New Delhi. http://egyankosh.ac.in/handle/123456789/4271
8. https://www.nabard.org/
9. http://sfacindia.com/FPOS.aspx
10. Other Relevant web resources suggested by the teacher and college librarian

IV. Co-Curricular Activities:

a) Mandatory (Training of students in the related skills by the teacher for a total 10 Hours)
1) **For Teacher**: Training of students by teacher in the classroom and in the field for a total of not less than10 hours on skills and hands on experience like preparing business model, value chain analysis of any product, application for the support of NABARD, SFAC and any similar supporting organization, financial planning, capacity building form staff and members

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etc. pertaining to FPO of local relevance and make a field visit to any one such unit. The expertise of practicing FPO persons can be utilized for this purposes.

2) **For Student:** Students shall visit and understand the functioning of FPO in their local area. They shall write their individual observations in the given format, not exceeding 10 pages, and submit to the teacher, as Fieldwork/Project work Report

3) **Suggested Fieldwork/Project work Format (**Report shall not exceed 10 pages):
Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings, Conclusion & References.
4) Max Marks for Fieldwork/Project work Report: 05
5) Unit Tests/Internal Examinations.

b) Suggested Co-Curricular Activities

1. Invited Lectures with academic experts, practicing FPO persons, concerned government officials
2. Hands on experience by field experts.
3. Assignments
4. Debates on related topics
5. Seminars, Group discussions, Quiz, etc.

Note: For the latest topics which have no formal material available, the teacher is expected to prepare own material by using multiple latest sources and practical knowledge.

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A.P. State Council of Higher Education

Semester-Wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-Year B.A. (Hons)

Domain Subject: **ECONOMICS**

IV Year B.A.(Hons)-Semester-V

Max Marks: 100

Course 6B: **Urban Entrepreneurship and MSMEs**
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

Students at the successful completion of the course shall be able to:

1. Explain the basic theories and essentials of entrepreneurship
2. Identify and analyze the entrepreneurship opportunities available in local urban area.
3. Apply the theories of entrepreneurship to the conditions of local urban area and formulate appropriate business ideas.
4. Demonstrate practical skills that will enable them to start urban entrepreneurship

II. Syllabus: (Hours: Teaching: 60, Training: 10, Others Including Unit Tests: 05)

Unit1: Entrepreneurship: Concept and Theories

Concept and Importance of Entrepreneurship - Theories of Entrepreneurship: Innovations, X-Efficiency, Risk Bearing - Qualities and Functions of an Entrepreneur – Women Entrepreneurship -Ecopreneurship.

Unit2: Urban Entrepreneurship and Business Planning

Urban Entrepreneurial Ecosystem – Factors, Problems and Challenges of Urban Entrepreneurships - Process of Identification of new Entrepreneurship Opportunities in Urban Areas - Formulation of Business Planning for Urban Entrepreneurship.

Unit 3: MSMEs and New Urban Entrepreneurship Opportunities

Features of Micro Small Medium Enterprises (MSMEs) – Cluster Development Approach and Leveraging Technology for MSMEs – Problems and Challenges of MSMEs - New Entrepreneurial Opportunities in Urban Area: Food and Beverages, Sanitary and Health Products, Solid Waste and Scrap Disposal, Tourism and Hospitality Services, Consultancy Services and Event Management, Logistic services.

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Unit 4: Financing and Marketing of Urban Entrepreneurship

Financing the Urban Entrepreneurship and MSMEs: Procedures to obtain formal loans from Banks and other Institutions, Preparing Detailed Project Report for Loan - New avenues of Finance: Crowd Funding and Venture Capital –Marketing of Urban Entrepreneurship and MSMEs products: Market Survey, Demand Forecasting, Marketing Strategies, Branding, Planning and Promotion, Digital and Social Media Marketing – Public Procurement Policy to purchase MSME Products.

Unit 5: Institutional Support and Case Studies of Urban Entrepreneurship

Institutional support for Urban Entrepreneurship and MSMEs - Government Schemes for promotion of Urban Entrepreneurship and MSMEs: Startup, Standup, PMKVY, PLI etc. – Rules and Procedures to start a Urban Entrepreneurship Firm and MSME –Discussion of two different types of Case Studies related to Urban Entrepreneurship with local relevance.

III. References:

1. Gordona, E and N. Natarajan: **Entrepreneurship Development**, Himalaya Publishing House Pvt Ltd, Mumbai, 2017.
2. Sharma Sudhir, Singh Balraj, Singhal Sandeep, **Entrepreneurship Development**, Wisdom Publications, Delhi, 2005.
3. Drucker, P., **Innovation and Entrepreneurship: Practice and Principles**, Harper & Row, New York, 1985; revised edn, Butterworth-Heinemann, Oxford, 1999.
4. NITI Aayog: **Report of Expert Committee on Innovation and Entrepreneurship**, New Delhi, 2015. https://niti.gov.in/writereaddata/files/new_initiatives/report-of-the-expert-committee.pdf
5. Vardhaman Mahavir Open University, **Entrepreneurship Development & Small Scale Business**, Kota. http://assets.vmou.ac.in/BBA12.pdf
6. Reserve Bank of India: **Report of Expert Committee on Marginal, Small, Medium Enterprises**, Mumbai, 2019.https://www.rbi.org.in/Scripts/PublicationReportDetails.aspx?UrlPage=&ID=924
7. IGNOU: Marketing for Managers, New Delhi. http://egyankosh.ac.in/handle/123456789/4271
8. https://nimsme.org
9. Other Relevant web resources suggested by the teacher and college librarian

IV. Co-Curricular Activities:

a) Mandatory (Training of students in the related skills by the teacher for a total 10 Hours)
1) **For Teacher**: Training of students by teacher in the classroom and in the field for a total of not less than10 hours on skills and hands on experience like identification business product, making business plan, preparing DPR for loan, application for bank loan, marketing

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survey, marketing a product etc pertaining to any type of urban entrepreneurship of local relevance and make a field visit to any one such unit. The expertise of practicing rural entrepreneurs can be utilized for this purposes.

2) **For Student:** Students shall visit and understand the functioning of urban entrepreneurship of their interest in the local area. They shall write their individual observations in the given format, not exceeding 10 pages, and submit to the teacher, as Fieldwork/Project work Report

3) **Suggested Fieldwork/Project work Format (**Report shall not exceed 10 pages):
Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings, Conclusion & References.
4) Max Marks for Fieldwork/Project work Report: 05
5) Unit Tests/Internal Examinations.

b) Suggested Co-Curricular Activities

1. Invited Lectures with academic experts, practicing entrepreneurs, concerned government officials
2. Hands on experience by field experts.
3. Assignments
4. Debates on related topics
5. Seminars, Group discussions, Quiz, etc.

Note: For the latest topics which have no formal material available, the teacher is expected to prepare own material by using multiple latest sources and practical knowledge.

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A.P. State Council of Higher Education

Semester-Wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-Year B.A. (Hons)

Domain Subject: **ECONOMICS**

IV Year B.A.(Hons)-Semester-V

Max Marks: 100

Course 7B: **Retail and Digital Marketing**
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

Students at the successful completion of the course shall be able to:

1. Explain the concepts and principles about the retail and digital marketing;
2. Identify and analyse the opportunities related to retail and digital marketing available in the local area;
3. Apply the concept to formulate the new strategies related to retail and digital marketing;
4. Demonstrate the practical skills required to get employment in retail and digital marketing or to start own digital marketing.

II. Syllabus: (Hours: Teaching: 60, Training: 10, Others Including Unit Tests: 05)

Unit 1: Concept of Marketing

Concept of Marketing - Type of Markets – Marketing Mix – Marketing Strategies – Marketing Segmentation – Marketing Organization - Marketing Research - Pricing Policies and Practices - Major Players in Retail and Digital Market in India.

Unit 2: Understanding Product and Consumer

Marketing Product Types – Product Decision and Strategies - Product Life Cycle - Consumer Behavior Model – Factors of Consumer Behavior -Understanding Indian Consumer - Strategies of persuading the Consumer – Sale Promotion: Advertisement, Branding and Packaging.

Unit 3: Retail Marketing

Concept of Retail Marketing – Types of Retailing – Big and Small Retail Markets - Retail Marketing Mix – Essentials of Successful Retail Marketing - Retail Marketing Strategies – Multichannel Retailing – Store Management – Shopping Market Dynamics.

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Unit 4: Digital Marketing

Digital Marketing: Concept and Types – Telemarketing –Online or e-tailing – Essentials of Digital Marketing –Difference between Physical Retail and Digital Marketing – Digital Marketing Channels - Customer Behavior in Digital Marketing – Major players in Digital Marketing and their Marketing Strategies - Tools and Apps of Digital Marketing.

Unit 5: Marketing Models and Case Studies

Marketing Models of Retail and Digital Market Companies/Shops: Global, National and Local levels- Discussion of two different types of Case Studies related to Retail and Digital Marketing.

III. References:

1. Venkatesh Ganapathy: **Modern Day Retail Marketing Management**, Bookboon Company, 2017.https://mmimert.edu.in/images/books/modern-day-retail-marketing-management.pdf
2. Prashant Chaudary: **Retail Marketing in the Modern Age**, Sage Publication, 2019
3. Jermy Kagan and Siddarth Shekar Singh: **Digital Marketing & Tactics**, Wiely Publishers, 2020.
4. Philip Kotler:**Marketing Management**, 11thEdition, Prentice-Hall of India Pvt. Ltd., New Delhi. , 2002
5. S.Neelamegham:**Marketing in India**, 3rdedition, Vikas Publications, New Delhi, 2000.
6. IGNOU: **Marketing for Managers**, New Delhi. http://egyankosh.ac.in/handle/123456789/4271
7. Digitalmarketer: The Ultimate Guide to Digital Marketing. https://www.digitalmarketer.com/digital-marketing/assets/pdf/ultimate-guide-to-digital-marketing.pdf
8. NITI Aayog: **Connected Commerce: Creating a Roadmap for Digitally Inclusive Bharat, 2021**. https://niti.gov.in/writereaddata/files/Connected-Commerce-Full-Report.pdf
9. IASRI Course in **Agribusiness Management and Trade Concepts in Marketing**http://ecoursesonline.iasri.res.in/mod/page/view.php?id=710
10. World Bank: **Digital Economy in South East Asia: Strengthening the Foundations for Future Growth,** 2019. https://documents1.worldbank.org/curated/en/328941558708267736/pdf/The-Digital-Economy-in-Southeast-Asia-Strengthening-the-Foundations-for-Future-Growth.pdf
11. Relevant web resources suggested by the teacher and college librarian

IV. Co-Curricular Activities:

a) Mandatory (Training of students in the related skills by the teacher for a total 10 Hours)
1) **For Teacher**: Training of students by teacher in the classroom and in the field for a total of not less than10 hours on skills and hands on experience like marking research, product life

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cycle analysis, preparing marketing model, behavior with customer, store management, use of important digital marketing websites and apps etc. pertaining to retail and digital marketing organization and make a field visit to any one such unit in local area. The expertise of practicing marketing persons can be utilized for this purposes.

2) **For Student:** Students shall visit and understand the functioning of retail and digital marketing organization in their local area. They shall write their individual observations in the given format, not exceeding 10 pages, and submit to the teacher, as Fieldwork/Project work Report

3) **Suggested Fieldwork/Project work Format** (Report shall not exceed 10 pages):
Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings, Conclusion & References.
4) Max Marks for Fieldwork/Project work Report: 05
5) Unit Tests/Internal Examinations.

b) Suggested Co-Curricular Activities

1. Invited Lectures with academic experts and practicing marketing persons
2. Hands on experience by field experts.
3. Assignments
4. Debates on related topics
5. Seminars, Group discussions, Quiz, etc.

Note: For the latest topics which have no formal material available, the teacher is expected to prepare own material by using multiple latest sources and practical knowledge.

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A.P. State Council of Higher Education

Semester-Wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-Year B.A. (Hons)

Domain Subject: **ECONOMICS**

IV Year B.A.(Hons)-Semester-V

Max Marks: 100

Course 6C: **Insurance Services**
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

Students at the successful completion of the course shall be able to

1. Explain the concept and principles of insurance service and functioning of insurance service agencies;
2. Identify and analyse the opportunities related insurance services in local rural area;
3. Apply the concepts and principles of insurance to build a career in Insurance services;
4. Demonstrate practical skills to enable them to start insurance service agency or earn wage employment in it.

II. Syllabus: (Hours: Teaching: 60, Training: 10, Others Including Unit Tests: 05)

Unit 1: Insurance Concept and Principles

Risk Management: Risk and Uncertainty, Risk Classification – Concept, Importance and Types of Insurance– Principles of Insurance – Insurance Regulations in India - Role of IRDA and Insurance Ombudsman –Scope for Insurance Business in India.

Unit 2: Life Insurance and Products

Life Insurance: Nature and Features - Major Life Insurance Companies in India - Important Life Insurance Products/policies and their Features: Conventional, Unit Linked, Annuities, Group Policies – Medical Examiner.

Unit 3: General and Health Insurances and Products

General Insurance: Nature, Features and Types - Major General Insurance Companies in India - Important General Insurance Products/Policies and their Features - Surveyor – Health Insurance: Nature and Features - Health Insurance Companies in India - Major Health Insurance Products/policies and their Features: Individual, Family, Group.

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Unit 4: Practicing as an Insurant Agent

Insurance Contract and Terms of Insurance Policy - Registration of Insurance Agency with the Company — Procedure to issue a Policy: Application and Acceptance – Policy Lapse and Revival – Premium Payment, Assignment, Nomination and Surrender of Policy – Policy Claim - Important Websites and Apps of Insurance in India.

Unit 5: Understanding the Customer and Case Studies

Insurance Customer and Categories – Understanding Customer Mindset and Satisfaction - Addressing the Grievances of the Customer – Ethical Behavior in Insurance – Moral Hazard –Discussion of two different Case Studies related to Life or General or Health Insurance Services.

III. References:

1. Insurance Institute of India: **Principles of Insurance (IC-01)**, Mumbai, 2011.
2. Insurance Institute of India: **Practice of Life Insurance (IC-02),** Mumbai, 2011.
3. Insurance Institute of India: **Practice of General Insurance (IC-11),** Mumbai, 2011
4. IGNOU: **Life Insurance** https://egyankosh.ac.in/bitstream/123456789/6472/1/Unit-20.pdf
5. IGNOU: **Non-Life Insurance** https://egyankosh.ac.in/bitstream/123456789/6470/1/Unit-21.pdf
6. P. Periyaswamy: **Principles and Practice of Insurance,** Himalaya Publishers, New Delhi (2nd Edition), 2019.
7. G. Dionne and S.E. Harrington (Eds.): **Foundations of Insurance Economics,** Kluwer Academic Publishers, Boston, 1997.
8. K. Jr. Black, and H.D. Skipper Jr.:**Life and Health Insurance,** Prentice Hall, Upper Saddle River, New Jersey, 2000.
9. https://www.irdai.gov.in
10. https://www.insuranceinstituteofindia.com
11. https://licindia.in/
12. Other Relevant web resources suggested by the teacher and college librarian

IV. Co-Curricular Activities:

a) Mandatory (Training of students in the related skills by the teacher for a total 10 Hours)
1) **For Teacher**: Training of students by teacher in the classroom and in the field for a total of not less than10 hours on skills and hands on experience like explaining the details of an insurance policy to a customer – life, health and general policy, filling up application for a policy, calculation of premium and claim, make use of important websites and apps etc. pertaining to insurance and make a field visit to any insurance organization in local area. The expertise of practicing insurance agent or trainer can be utilized for this purposes.

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2) **For Student:** Students shall visit and understand the functioning of insurance agency of their interest in the local area. They shall write their individual observations in the given format, not exceeding 10 pages, and submit to the teacher, as Fieldwork/Project work Report

3) **Suggested Fieldwork/Project work Format** (Report shall not exceed 10 pages):
Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings, Conclusion & References.
4) Max Marks for Fieldwork/Project work Report: 05
5) Unit Tests/Internal Examinations.

b) Suggested Co-Curricular Activities

1. Invited Lectures with academic experts, practicing insurance agents. Trainers, concerned officials.
2. Hands on experience by field experts.
3. Assignments
4. Debates on related.topics
5. Seminars, Group discussions, Quiz, etc.

Note: For the latest topics which have no formal material available, the teacher is expected to prepare own material by using multiple latest sources and practical knowledge.

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A.P. State Council of Higher Education

Semester-Wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-Year B.A. (Hons)

Domain Subject: **ECONOMICS**

IV Year B.A.(Hons)-Semester-V

Max Marks: 100

Course 7C: **Banking and Financial Services**
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

Students at the successful completion of the course shall be able to:

1. Explain the concept and essentials banking and financial services.
2. Identify and analyse the employment opportunities related to banks and other financial institutions.
3. Apply the concepts to banking and financial opportunities and formulate ideas related to them.
4. Demonstrate practical skills to enable them to get employment in Banks and other financial institutions as business correspondents or Common Service Centers or marketing agents.

II. Syllabus: (Hours: Teaching: 60, Training: 10, Others Including Unit Tests: 05)

Unit1: Principles of Banking and Indian Banking System

Meaning of Banking – Principles of Banking – Functions of Banking – Structure of Indian Banking System – Regulations of Banking in India – Role of RBI in Banking – Anti-money Laundering - Basics of Financial literacy - Problems and Challenges of Banking in India.

Unit 2: Deposits, Loans and Digital Banking

Bank Deposit Account Types – Account Opening and Closing – Banking Customer types – KYC Norms – Negotiable Instruments: Cheque, Bill of Exchange, Promissory Note, Endorsement - Principles of Lending – Different categories of Loans – Mortgaging -Priority Sector Lending – E-Banking facilities: Debit Card, Credit Card, Net Banking, Mobile Banking, Tele-banking, Micro ATMs, Digital Currency – Core Banking Solutions.

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Unit 3: Banking Correspondents and Common Service Centers

Banking Correspondent Model - Activities of Banking Correspondent: Deposit Mobilization. Identification of Borrowers, Collection and Recovery Loan, Other Banking Services – Common Services Centre (CSC) - Provision of Services by CSC – Requirement for Registering CSC and Telecentre - Case Study of Banking Correspondents with any Bank or CSC in Local Area.

Unit 4: Financial Services of NBFIs

Non-Banking Financial Institutions (NBFIs): Types and Major Players of NBFIs in India – Important Financial Services offered by NBFIs and their Features – Concept of EMI - Micro Finance: Concept and Operation - Chit Funds: Concept and Operations– Payment Banks - Regulations of NBFIs in India – Problems and Challenges of NBFIs in India.

Unit 5: Work with Finance Service Company (FSC)

Types of loans by Finance Service Company (FSC) – Customer of FSC: Types and Needs - Marketing of FSC's Loans – Procedures and Requirements in FSC's Loan Sanction - Collection and Recovery of FSC Loans - Case Study of a FSC's services in Local Area.

III. References:

1. Indian Institute of Banking and Finance: **Principles and Practices of Banking,** Macmillan India Limited, 2021. https://drive.google.com/file/d/1VU7aN4s5ikPQl7nX6mTBW-sVLQCNhfvK/view
2. Indian Institute of Banking and Finance: **Retail Baking,** Macmillan India Limited, 2015.
3. D.R.Patade Babasaheb Sangale and T.N.Salve : **Banking and Finance:** Fundamental *of* Banking, Success Publications, Pune, January 2013. https://app1.unipune.ac.in/external/course-material/Fundamental-of-Banking-English.pdf
4. N. Mukund Sharma: **Banking and Financial Services**, Himalaya Publishers, 2015.
5. Akhan Ali Jafor: **Non-Banking Financial Companies in India: Functioning and Practice,** New Century Publications, New Delhi, 2010.
6. RBI: "Non-Banking Financial Institutions" in **Report on Trend and Progress of Banking in India 2019-20.**
7. RBI: Discussion Paper on **Engaging Business Correspondents**. https://www.rbi.org.in/scripts/bs_viewcontent.aspx?Id=2234
8. Govt. of India: Ministry of Electronic and Information Technology: **Digital Seva-Operational Manual for Common Service Centres**. https://csc.gov.in/assets/cscmanual/digitalsevaoperationalmanual.pdf
9. http://www.cscentrepreneur.in/ for Telecentre Entrepreneurship Course
10. https://www.rbi.org.in/
11. http://www.iibf.org.in/

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12. Other Relevant web resources suggested by the teacher and college librarian

IV. Co-Curricular Activities:

a) Mandatory (Training of students in the related skills by the teacher for a total 10 Hours)
1) **For Teacher**: Training of students by teacher in the classroom and in the field for a total of not less than10 hours on skills and hands on experience like opening and closing bank account, explaining negotiable instruments, loan application process at banks, operation of digital banking, operating common service center, loan application and sanction in FSC, make use of important websites and apps etc. pertaining to banks and FSCs and make a field visit to any bank and FSC in local area. The expertise of practicing insurance agent or trainer can be utilized for this purposes.

2) **For Student:** Students shall visit and understand the functioning of bank and FSC of their interest in the local area. They shall write their individual observations in the given format, not exceeding 10 pages, and submit to the teacher, as Fieldwork/Project work Report

3) **Suggested Fieldwork/Project work Format** (Report shall not exceed 10 pages):
Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings, Conclusion & References.
4) Max Marks for Fieldwork/Project work Report: 05
5) Unit Tests/Internal Examinations.

b) Suggested Co-Curricular Activities

1. Invited Lectures with academic experts, practicing bankers, trainers and concerned officials.
2. Hands on experience by field experts.
3. Assignments
4. Debates on related topics
5. Seminars, Group discussions, Quiz, etc.

Note: For the latest topics which have no formal material available, the teacher is expected to prepare own material by using multiple latest sources and practical knowledge.

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A.P. State Council of Higher Education

Semester-Wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-Year B.A. (Hons)

Domain Subject: **ECONOMICS**

IV Year B.A.(Hons)-Semester-V

Max Marks: 100

Course 6D: **Inferential Statistics and Software Packages**
(Skill Enhancement Course (Elective), 4 Credits)

1. Learning Outcomes:

Students at the successful completion of the course shall be able to:

1. Demonstrate the knowledge related to the important concepts and techniques of inferential statistics
2. Calculate correlation, regression coefficients and interpret the results.
3. Use Excel sheets and SPSS package to analyse the data and derive the results.

II. Syllabus: (Hours: Teaching: 60, Training: 10, Others Including Unit Tests: 05)

Unit 1: Concept and Theories of Probability

Concept of Probability - Definitions of Probability: Classical or Mathematical and Empirical or Statistical – Axiomatic Approach to Probability – Theorems of Probability: Addition and Multiplication (without proofs).

Unit 2: Theoretical Probability Distributions

Binomial Distribution: Constants (without proof) and Properties – Poison Distribution: Constants (without proof) and Properties – Normal Distribution: Constants (without proof) and Properties – Standard Normal Distribution and Standard Normal Curve – Economic and Practical Applications of Binomial, Poison and Normal Distributions.

Unit 3: Test of Significance - Large and Small Sample Tests

Steps involved in Testing of Hypotheses – Large Sample or Z-Test – Testing the difference between Means and Proportions – Small Sample Tests – Difference between Large and Small Sample Tests – Applications of Student's t-test, χ^2 test, F-test – One way and Two way ANOVA.

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Unit 4: Linear and Non-linear Multiple Regression Models

Four Variable Linear Multiple Regression Model – Notation – Assumptions – Estimation of Partial Regression Coefficients – Interpretation of Regression coefficients - Testing the coefficients: t-test, p- value – Coefficient of Determination: R^2 and adjusted R^2 – Estimation of Non-linear Multiple Regression: Cobb-Douglas Production Function and Interpretation of Elasticity Coefficients.

Unit 5: Excel and Software Packages for Data Analysis

Worksheet – Entering data in Worksheets – Creating Graphs and Charts - Mathematical and Statistical Functions -Data Analysis Pack in Excel - Descriptive Statistics, Testing of Hypotheses, ANOVA, Correlation and Regression, Random Number Generation - Data Handling Using SPSS - Opening Excel files in SPSS - Analysis Tools - Descriptive Statistics - Selection of Variables in Multiple Linear Regression – Estimation of Regression Coefficients using SPSS and their interpretation.

III. References:

1. S. C. Gupta: **Fundamentals of Statistics,** Himalaya Publishing House, Bombay, 1982.
2. S. P. Gupta: **Statistical Methods,** S. Chand & Company, New Delhi, 2000.
3. K. V. S. Sharma : **Statistics Made Simple: Do it yourself on PC, (Second edn.)** Prentice Hall of India, New Delhi, 2010.
4. తెలుగు అకాడమీ ప్రచురణ "పరిమాణాత్మక పద్ధతులు"
5. B. N. Gupta: **Statistics Theory and Practice,** Sahitya Bhavan, Agra, 1992.
6. Goon A.M., M. K. Gupta and B. Dasgupta: **Fundamentals of Statistics,** Vol.1, The World Press, Ltd, Calcutta, 1975.
7. Nagar, A.L. and R. K. Das: **Basic Statistics,** Oxford University Press, New Delhi, 1996.
8. **D N Elhance,** Veena Elhance & B M Aggarwal **Foundation of Statistics,** Kitab Mahal, New Delhi, 2018.
9. Relevant web resources suggested by the teacher and college librarian

IV. Co-Curricular Activities:

a) Mandatory (Training of students in the related skills by the teacher for a total 10 Hours)
1) **For Teacher**: Training of students by teacher in the classroom and in the field for a total of not less than10 hours on skills and hands on experience like calculation and interpretation normal curve, Z-values, t-test, χ^2 test, F-test, ANOVA, regression results, t, p and R^2values using Excel and/or SPSS. The expertise of practicing persons can be utilized for this purposes.

2) **For Student:** Students shall take up a real time data of any economic organisation or firm and calculate the important statistical tests for the data and write the results with

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interpretations in the given format, not exceeding 10 pages, and submit to the teacher, as Fieldwork/Project work Report

3) **Suggested Fieldwork/Project work Format** (Report shall not exceed 10 pages):
Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings, Conclusion & References.
4) Max Marks for Fieldwork/Project work Report: 05
5) Unit Tests/Internal Examinations.

b) Suggested Co-Curricular Activities

1. Invited Lectures with academic experts, practicing persons.
2. Hands on experience by field experts.
3. Assignments
4. Debates on related topics
5. Seminars, Group discussions, Quiz, etc.

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A.P. State Council of Higher Education

Semester-Wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four-Year B.A. (Hons)

Domain Subject: **ECONOMICS**

IV Year B.A.(Hons)-Semester-V

Max Marks: 100

Course 7D: **Project Designing and Report Writing**
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

The Student at the successful completion of the course shall be able to:

1. Demonstrate the knowledge relating to research, its role in enhancement of knowledge in social sciences in general and economics in particular;
2. Formulate a good research design to undertake mini research projects with a view to studying the socio-economic problems of the society;
3. Undertake a field survey by himself/herself to collect relevant data and information relating to his/her project work;
4. Develop capacity to write a simple project report with all relevant components on the research project undertaken by him/her.

II. Syllabus: (Hours: Teaching: 60, Training: 10, Others Including Unit Tests: 05)

Unit 1: Foundations of Research

Meaning and Importance of Research - Scientific Research – Social Science Research – Methods of ensuring Objectivity in Social Science Research – Limitations of Research in Social Science – Ethics in Research.

Unit 2: Classification of Research

Pure and Applied Research – Exploratory and Descriptive Research – Diagnostic Research – Action Research – Analytical Research – Evaluation Research – Experimental Research Design – Concepts of Independent and Dependent Variables – Case Study method.

Unit 3: Planning of Research Project

Selection of a Research Problem – Criteria for Selecting a Research Problem – Review of Theoretical and Related Research Studies - Choice of Secondary and Primary Data for the Study - Choice of Census and Sample Data – Preparation of a Research Proposal – Components of a good Research Proposal.

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Unit 4: Implementation of a Project Design

Fieldwork/Project work and Collection of Data – Choice of Schedules and Questionnaire – Pilot Study – Role of Observation and Participation – Documentary Evidences - Projective Techniques: Functions and Types - Editing Data – Graphical and Statistical Analysis of Data using Appropriate Statistical Techniques.

Unit 5: Report Writing

Types of Research Report – Target Audience – Nature of Language to be used in Research Report - Outlines of a good Research Report – Prefatory Items – Body of the Report – Terminal Items: Differences between References and Bibliography – Appendices - Ethical values in Research Report - Plagiarism Test - Components of a good Research Paper.

III. References:

1. C. T. Kurien: **A Guide to Research in Economics,** Sangam Publishers for Madras Institute of Development Studies, Chennai, 1973.
2. O. R. Krishnaswami and M. Ranganatham: **Methodology of Research in Social Sciences,** Himalaya Publishing House, Mumbai, 2018.
3. C. R. Kothari: **Research Methodology: Methods and Techniques,** New Age International (Pvt.) Ltd. Publishers, New Delhi, 2004.
4. K. V. S. Sharma : **Statistics Made Simple: Do it yourself on PC,** (Second edn.) Prentice Hall of India, New Delhi, 2010.
5. John W. Creswell and J. David Creswell : **Research Design: Qualitative, Quantitative, and Mixed Methods Approaches,** Sage Publications, New Delhi, 2018.
6. Shanti Bhushan Mishra and Shashi Alok,**Handbook of Research Methodology,** Educreation, Bilaspur, 2017.
7. Wayne C. Booth, Gregory G. Colomb, and Joseph M. Williams: **The Craft of Research**, University of Chicago Press, Chicago, 2016.
8. Dr. Ranjit Kumar: **Research Methodology: A Step-by-Step Guide for Beginners**, Sage Publications, New Delhi, 2014.
9. Geoffrey Marczyk, David DeMatteo, and David Festinger: **Essentials of Research Design and Methodology**, John Wiley and Sons, New Jersey, 2005.
10. Sharan B. Merriam: **Qualitative Research: A Guide to Design and Implementation** Jossey Boss, San Francisco, 2009.
11. Mark Balnaves & Peter Caputi: **Introduction to Quantitative Research Methods: An Investigative Approach**, Sage Publications, New Delhi, 2001.
12. Relevant web resources suggested by the teacher and college librarian.

IV. Co-Curricular Activities:

a) Mandatory (Training of students in the related skills by the teacher for a total 10 Hours)
1) **For Teacher**: Training of students by teacher in the classroom and in the field for a total of not less than10 hours on skills and hands on experience like evaluation of program, selection of research problem, doing literature survey, preparation of research proposal, data editing, graphs and statistics, writing research report and paper etc. and make field visit to study a simple research issue. The expertise of practicing researcher can be utilized for this purposes.

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2) **For Student:** Students shall take up small research issue of their interest and visit a field area related to that problem. They shall write their individual observations in the given format, not exceeding 10 pages, and submit to the teacher, as Fieldwork/Project work Report

3) **Suggested Fieldwork/Project work Format** (Report shall not exceed 10 pages):
Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings, Conclusion & References.
4) Max Marks for Fieldwork/Project work Report: 05
5) Unit Tests/Internal Examinations.

b) Suggested Co-Curricular Activities

1. Invited Lectures with academic experts and researchers.
2. Hands on experience by field experts.
3. Assignments.
4. Debates on related topics.
5. Seminars, Group discussions, Quiz, etc.

###

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MODEL QUESTION PAPER PATTERN

Max. Marks: 75 Time: 3 Hours

Section A (Total 5 x 5 Marks = 25 Marks)

Write Short Answers for any **five** of the following Questions. Each Answer Carries 5 Marks

1	
2	
3	
4	
5	
6	
7	
8	

(At least one question should be given from every unit of all the five units. At least two questions should be related to testing skills)

4/7/22

Section B (Total 5 x 10 Marks = 50 Marks)

Write Answers for the following **five** Questions.
Each Answer Carries 10 Marks

9	(a) Or (b)
10	(a) Or (b)
11	(a) Or (b)
12	(a) Or (b)
13	(a) Or (b)

(Each set of question contains two internal choice sub-questions (a or b) which should be given from the same unit and one set form each unit of all the five units. At least two choice sub-questions should be related to testing skills)

Prepared by:

1. Prof. D. Krishnamoorthy, Department of Economics, Sri Venkateswara University, Tirupati.
2. Dr. Ch. Sankar Rao, Lecturer in Economics, T.R.R. Govt. Degree College, Kandukur, Prakasam District, A.P.

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Domain Subject: B.A. **ECONOMICS**
Semester-V
Skill Enhancement Course

MODEL QUESTION PAPER PATTERN

Max. Marks: 75 Time: 3 Hours

Section A (Total 5 x 5 Marks = 25 Marks)

Write Short Answers for any ***five*** of the following Questions. Each Answer Carries *5 Marks*

1	
2	
3	
4	
5	
6	
7	
8	

(At least one question should be given from every unit of all the five units. At least two questions should be related to testing skills)

Section B (Total 5 x 10 Marks = 50 Marks)

Write Answers for the following ***five*** Questions.
Each Answer Carries *10 Marks*

9	(a) Or (b)
10	(a) Or (b)
11	(a) Or (b)
12	(a) Or (b)
13	(a) Or (b)

(Each set of question contains two internal choice sub-questions (a or b) which should be given from the same unit and one set form each unit of all the five units. At least two choicesub-questions should be related to testing skills)

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MODEL QUESTION PAPER PATTERN

Max. Marks: 75 Time: 3 Hours

Section A (Total 5 x 5 Marks = 25 Marks)

Write Short Answers for any ***five*** of the following Questions. Each Answer Carries 5 *Marks*

1	
2	
3	
4	
5	
6	
7	
8	

(At least one question should be given from every unit of all the five units. At least twoquestions should be related to testing skills)

Section B (Total 5 x 10 Marks = 50 Marks)

Write Answers for the following ***five*** Questions.
Each Answer Carries *10 Marks*

9	(a) Or (b)
10	(a) Or (b)
11	(a) Or (b)
12	(a) Or (b)
13	(a) Or (b)

(Each set of question contains two internal choice sub-questions (a or b) which should be given from the same unit and one set form each unit of all the five units. At least two choicesub-questions should be related to testing skills)

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ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

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Atmakur (V), Mangalagiri (M), Guntur-522 503, Andhra Pradesh
Web: www.apsche.org **Email**: acapsche@gmail.com

REVISED SYLLABUS OF POLITICAL SCIENCE UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR B.A.

(Political Science)

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Fifteen Courses of 1, 2, 3 & 4 Semesters)

(To be Implemented from 2020-21 Academic Year)

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

CBCS – UG SYLLABUS SUBJECT REVIEW COMMITTEE

(To be implemented from 2020-21 Academic Year)

PROGRAMME: THREE-YEAR B.A

(With History, Economics and Political Science Disciplines)

Domain Subject: POLITICAL SCIENCE

(Syllabus with Outcomes, References, Co-curricular Activities &Question Paper pattern

For Five Courses of 1, 2, 3 & 4 Semesters)

Structure of POLITICAL SCIENCE Syllabus under CBCS for 3-year B.A. Programme

(with domain subject covered during the first 4 Semesters with 5 Courses)

Sl. No	Code	Courses 1, II, III, IV & V	Name of Course (Each Course consists 5 Units with each Unit having 12 hours of class-work)	Sem	Hours/ Week	Credits	Marks	
							Mid Sem	Sem End
1		1	Introduction to Political Science	I	**5**	**4**	**25**	**75**
2		2	Basic Organs of the Government	II	**5**	**4**	**25**	**75**
3		3	Indian Government and Politics	III	**5**	**4**	**25**	**75**
4		4	Indian Political Process	IV	**5**	**4**	**25**	**75**
5		5	Western Political Thought	IV	**5**	**4**	**25**	**75**
					Total	**20**	**125**	**375**

SYLLABUS

B.A. POLITICAL SCIENCE

FIRST YEAR

FIRST SEMESTER

(Under CBCS w.e.f. 2020-21)

Course-1: INTRODUCTION TO POLITICAL SCIENCE

Learning Outcomes:

On successful completion of the course the students will be able to;

- Recall the previous knowledge about Political Science and understand the nature and scope, traditional and modern approaches of Political Science.
- Understand concepts intrinsic to the study of Political Science.
- Have solid theoretical understanding of Rights and its theories along with the basic aspects of certain political ideologies.
- Apply the knowledge to observe the field level phenomena

UNIT-I :	INTRODUCTION
	1. Definition, Nature, Scope and Importance of Political Science – Relations with allied disciplines (History, Economics, Philosophy and Sociology)
	2. Approaches to the study of Political Science: Traditional Approaches-Philosophical, Historical. Modern Approaches-BehavioralandSystem Approach.

UNIT-II :	STATE
	1. Definition of the State, Elements of the State, Theories of Origin of the State-(Evolutionary and Social Contract).
	2. Concepts of Modern State and Welfare State.

UNIT-III :	CONCEPTS OF POLITICAL SCIENCE
	1. Law, Liberty, Equality.

UNIT-IV :	THEORIES OF RIGHTS
	1. Meaning, Nature and Classification of Rights
	2. Theories of Rights.

UNIT-V :	POLITICAL IDEOLOGIES
	1. Individualism
	2. Socialism
	3. Idealism

REFERENCE BOOKS:

➢ A.C. Kapur	:	*Principles of Political Science*
➢ R.C.Agarwal	:	*Political Theory*
➢ J.C.Johari	:	*Contemporary Political Theory*
➢ Amaj Ray & Bhattacharya	:	*Political Theory and Institutions*
➢ O.P.Gauba	:	*An Introduction to Political Theory*
➢ Abbas, Hoveyda&Ranjay Kumar	:	*Political Theory*
➢ Andrew Hakes	:	*Political Theory: Philosophy, Ideology, Science*
➢ J.C.Johari	:	*Principles of Modern Political Science*
➢ RajeevBhargava& Ashok Acharya(ed)	:	*Political Theory-An Introduction*
➢ Andrew Heywood	:	*Political Ideologies-An Introduction*
➢ Norman Barry	:	*An Introduction to Modern Political Theory*
➢ JadiMusalaiah, V.Vasundhara Devi &V.Bhogendracharyulu, Prof.V.RavindraSastry (ed)	:	*Political Science Concepts, Theories & Institutions*
➢ Laski, H.J.	:	*Grammar of Politics*
➢ A.Appadorai	:	*Substance of Politics*
➢ Eddy Ashirvadam&K.K.Misra	:	*Political Theory*
➢ SushilaRamaswamy	:	*Political Theory: Ideas & Concepts, Political Theory & Thought, Key Concepts in Political Theory*
➢ VidyaDhar Mahajan	:	*Political Theory (Principles of Political Science)*
➢ S.P.Varma	:	*Modern Political Theory*

ANNEXURE

CO-CURRICULAR ACTIVITIES RECOMMENDED

Measurable Co-curricular Activities (A uniform format may be designed and marks allotted)
• Simple, medium and critical Assignments on current topics
• Class Seminars
• Quiz Programme
• Study Projects on field related problems, individual and Group
• Preparation of Alternate Theoretical Models to the existing systems/functions
• Debates on current issues.
General Co-Curricular Activities
• Preparation of Photo Album. Students' Open Forums
• Collection of news reports from dailies and magazines and maintaining a record of paper clippings.
• Group Discussions on problems relating to the syllabus and outside
• Watching TV discussions, recording individual observations and preparing summary points
• Celebration of important events.
• Encouragement to students to use various digital online tools (Google forms, Google Class room, edmodo, testmoz, kahoot, edpuzzle, moodle etc.,), Open source software, Open educational resources
• Cooperative Learning and Peer Teaching
• Comparative study of the Rights that citizens are enjoying around the globe
• Creative and imaginative activities beyond the prescribed syllabus

B.A. POLITICAL SCIENCE

FIRST YEAR

SECOND SEMESTER

(Under CBCS w.e.f 2020-21)

Course-2:BASIC ORGANS OF THE GOVERNMENT

Learning Outcomes:

On successful completion of the course the students will be able to:

- Understand the Origin and Evolution of the concept of Constitutionalism and classification of Constitutions.
- Acquaint themselves with different theories of origin of State.
- Understand and analyses organs and forms of Governments along with a deep insight into the various agents involved in the political process.
- Apply the knowledge to analyse and evaluate the existing systems

UNIT-I :	CONSTITUTION
	1. Meaning, Definition, Origin and Evolution of Constitution.
	2. Classification of the Constitutions-Written and Unwritten; Rigid and Flexible.

UNIT-II :	ORGANS OF THE GOVERNMENT
	1. Theory of Separation of Powers-B.D.Montesquieu.
	2. Legislature-Unicameral and Bicameral-Power and Functions, Executive-Types,Powers and Functions. Judiciary-Powers and Functions.

UNIT-III :	FORMS OF GOVERNMENT
	1. Unitary and Federal forms of Governments-Merits and Demerits.
	2. Parliamentary and Presidential forms of Governments- Merits and Demerits.

UNIT-IV :	DEMOCRACY
	1. Meaning, Definition, Significance, Theories and Principles of Democracy.
	2. Types of Democracy: Direct and Indirect Democracy-Methods, Merits and Demerits-Essential Conditions for Success of Democracy.

UNIT-V :	POLITICAL PARTIES, PRESSURE GROUPS AND PUBLIC OPINION
	1. Meaning, Definition and Classification of Political Parties: National and Regional-Functions of Political Parties.

REFERENCE BOOKS:

➢ SukhbirBhatnagar	:	*Constitutional Law and the Governance*
➢ A.C.Kapur	:	*Select Constitutions*
➢ R.C.Agarwal	:	*Political Theory*
➢ VidyaDhar Mahajan	:	*Political Theory (Principles of Political Science)*
➢ M.R.Biju	:	*Democratic Political Process*
➢ PeterRonald de Souja&E.Sreedharan (ed)	:	*Indian Political Parties*
➢ JadiMusalaiah, V.Vasundhara Devi &V.Bhogendracharyulu, Prof.V.RavindraSastry (ed)	:	*Political Science Concepts, Theories & Institutions*
➢ Laski. H.J.	:	*Grammar of Politics*
➢ A.Appadorai	:	*Substance of Politics*
➢ Eddy Ashirvadam&K.K.Misra	:	*Political Theory*
➢ SushilaRamaswamy	:	*Political Theory: Ideas & Concepts*
➢ S.P.Varma	:	*Modern Political Theory*

ANNEXURE

CO-CURRICULAR ACTIVITIES

• All Co-curricular activities recommended at Course – I
• Study of the outline features of Constitutions of U.S.A, U.K., Australia, Canada, South Africa, China and Japan in comparison to the Constitution of India.
• Study projects on selected local real time problems.
• Field visits to government establishments.

B.A. POLITICAL SCIENCE

SECOND YEAR

THIRD SEMESTER

(Under CBCS w.e.f 2020-21)

Course-3: INDIAN GOVERNMENT AND POLITICS

Learning Outcomes:

On successful completion of the course the students will be able to:

- Acquire knowledge about the historical background of Constitutional development in India, appreciate philosophical foundations and salient features of the Indian Constitution.
- Analyze the relationship between State and individual interms of Fundamental Rights and Directive Principles of State Policy.
- Understand the composition of and functioning of Union Government as well as State Government and finally
- Acquaint themselves with the judicial system of the country and its emerging trends such as judicial reforms.

UNIT-I :	SOCIAL AND IDEOLOGICAL BASE OF THE INDIAN CONSTITUTION
	Constituent Assembly-Nature, Composition, Socio-Economic, Philosophical Dimensions and Salient Features of the Indian Constitution.

UNIT-II :	INDIVIDUAL AND STATE
	1. Fundamental Rights, Directive Principles of State Policy and Fundamental Duties-Differences between Fundamental Rights and Directive Principles of State Policy.

UNIT-III :	UNION EXECUTIVE
	1. President of India-Mode of Election, Powers and Functions.
	2. Parliament-Composition, Powers and Functions, Legislative Committees, Prime Minister and Council of Ministers-Powers and Functions, Role in Coalition Politics

UNIT-IV :	STATE EXECUTIVE
	1. Governor-Mode of Appointment, Powers and Functions.
	2. Legislature-Composition, Powers and Functions, Chief Minister and Council of Ministers-Powers and Functions

UNIT-V :	THE INDIAN JUDICIARY
	1. Supreme Court-Composition and Appointments, Powers and Functions or Jurisdiction of the Supreme Court, Judicial Review, Judicial Activism.
	2. High Court-Composition, Powers and Functions, Debates on the mode of appointment of Judges-National Judicial Appointments Commission and Judicial Reforms.

REFERENCE BOOKS:

➢ M.V.Pylee	:	*Indian Constitution,* *Constitutional Government in India* *Constitutional History of India*
➢ Durga Das Basu	:	*An Introduction to the Constitution of India*
➢ Rajni Kothari	:	*Politics in India*
➢ SanghMittra	:	*Indian Constitution Acts (East India Company to Independence)*
➢ Hoshiar Singh, P.C.Mathur&Pankaj Singh (ed)	:	*Coalition Governments & Good Governance*
➢ B.C.Fadia	:	*Indian Government and Politics*
➢ SubhashC.Kashyap	:	*Concise Encyclopedia of Indian Constitution*
➢ P.B.Rathod&VimlaRathod	:	*Indian Constitution, Government and Political System*
➢ Verinder Grover (ed)	:	*Federal System, State Autonomy and Centre-State Relations in India.*
➢ Prof.Lalaiah,P.Venkataramana, K.SaiBaba&K.Mallesam, Prof.V.RaveendraSastry (ed)	:	*Indian Government-Politics*
➢ M.Lakshmikant	:	*Indian Polity*
➢ R.C.Agarwal& Mahesh Bhatnagar	:	*Constitutional Development and National Movement of India*
➢ Singh &Saxena	:	*Indian Politics : Contemporary Issues and Concerns*
➢ Austin Granville	:	*The Indian Constitution : Cornerstone of a Nation, Working of a Democratic Constitution : The Indian Experience*
➢ W.H.Morris Jones	:	*Government and Politics of India*
➢ M.P.Jain	:	*Indian Constitutional Law*
➢ Subhash C. Kashyap.	:	*Our Constitution, Our Parliament, Our Political*

		System
➢ A.S.Narang	:	*Indian Political System, Process and Development*
➢ Rajeev Bhargav	:	*Politics and Ethics of the Indian Constitution*
➢ Bipin Chandra	:	*Nationalism & Colonialism in Modern India*
➢ Paul R.Brass	:	*The Politics in India since Independence*
➢ K.SubrataMitra	:	*Politics in India : Structure, Process and Policy*
➢ S.H.Patil	:	*The Constitution, Government and Politics in India*
➢ VishnooBhagwan&VidyaBhusan	:	*Indian Administration*

ANNEXURE

CO-CURRICULAR ACTIVITIES

• All Co-curricular activities recommended at Course – I
• Peers and self-assessment outputs from individual and collaborative work.
• Individual observations in field studies and recordings in the areas related to syllabus
• Conduct of a Mock Parliament on important current issues for awareness about the proceedings of the Parliament, intensity of debates and understanding the outcomes.
• A Field Visit to a Court to observe the structure and its exercise of powers.
• Discussion of Previous Question Papers relating to Services (Service Commissions and other Recruitment Agencies) for an understanding of different approaches
• Study projects on selected local real time problems.

B.A. POLITICAL SCIENCE

SECOND YEAR

FOURTH SEMESTER

(Under CBCS w.e.f 2020-21)

Course-4 : INDIAN POLITICAL PROCESS

Learning Outcomes:

On successful completion of the course the students will be able to :

- Know and understand the federal system of the country and some of the vital contemporary emerging issues.
- Evaluate the electoral system of the country and to identify the areas of electoral reforms.
- Know the constitutional base and functioning of local governments with special emphasis on 73rd& 74th Constitutional Amendment Acts.
- Understand the dynamics of Indian politics, challenges faced and gain a sensitive comprehension to the contributing factors.
- Apply the knowledge and critically comprehend the functioning of some of the regulatory and governance institutions.
- Propose theoretical outline alternate models

UNIT-I :	FEDERAL PROCESSES
	1. Features of Indian Federal System- Centre-State Relations-Legislative, Administrative and Financial
	2. Emerging Trends in Centre-State Relations-Restructuring Centre-State Relations-Recommendations of Sarkaria Commission, M.M.Punchi Commission

UNIT-II :	ELECTORAL PROCESSES
	1. The Election Commission of India, Powers and Functions.
	2. Issues of Electoral Reforms, Voting Behaviour-Determinants and

	Problems of Defections.

UNIT-III :	GROSSROOT DEMOCRACY-DECENTRALISATION
	1. Panchayat Raj system-Local and Urban Governments-Structure, Powers and Functions.
	2. Democratic Decentralization-Rural Development and Poverty alleviation with reference to 73rd and 74th Constitutional Amendment Acts, Challenges and Prospects.

UNIT-IV :	SOCIAL DYNAMICS AND EMERGING CHALLENGES TO INDIAN POLITICAL SYSTEM
	1. Role of Caste, Religion, Language and Regionalism in India.

UNIT-V :	REGULATORY AND GOVERNANCE INSTITUTIONS
	1. NITI Ayog, Finance Commission, Comptroller and Auditor General of India.
	2. Central Vigilance Commission, Central Information Commission, Lokpal and Lokayukta.

REFERENCE BOOKS:

➢ M.V.Pylee	:	*Indian Constitution* *Constitutional Government in India*
➢ D.D.Basu	:	*An Introduction to the Constitution of India*
➢ Rajni Kothari	:	*Politics in India, Caste in Indian Politics*
➢ PeuGhosh	:	*Indian Government and Politics*
➢ Prof.Lalaiah, P.Venkataramana, K.SaiBaba&K.Mallesam, Prof.V.RaveendraSastry (ed)	:	*Indian Government-Politics*
➢ M.R.Biju	:	*Democratic Political Process*
➢ J.K.Chopra (ed)	:	*Local Self-Government and Municipal Administration*
➢ Susan Bayly	:	*Caste, Society and Politics in India (From the Eighteenth Century to the Modern Age)*
➢ SubharataDutta	:	*Democratic Decentralisation and Grossroot Leadership in India*
➢ H.V.Hande	:	*Dr.B.R.Ambedkar& The Making of the Indian Constitution*
➢ S.K.Sharma&UshaSarma	:	*Politics and Administration in India- A Retrospective Survey*
➢ Hari Prasad Chhetri	:	*Panchayatraj System and Development Planning*
➢ B.C.Fadia	:	*Indian Government and Politics*
➢ UpendraBaxi&Biku Parekh	:	*Crisis and Change in Contemporary India*
➢ M.Lakshmikant	:	*Indian Polity,Governance in India*
➢ N.G.Jayal (ed)	:	*Democracy in India*
➢ Peter Ronald deSouza&E. Sridharan	:	*India's Political Parties*
➢ O.P.Tiwari	:	*Federalism and Centre-State Relations in India*
➢ AthulKohli (ed)	:	*The Success of India's Democracy*
➢ C.B.Raju	:	*Social Justice and the Constitution of India*
➢ V.K.Garg	:	*Caste and Reservation in India*

➢ U.Baxi	:	*The Indian Supreme Court and Politics* *Parliamentary Procedure, Law Privilege, Practice &Precedents*
➢ VishnooBhagwan&VidyaBhushan	:	*Indian Administration*
➢ S.H.Patil	:	*The Constitution, Government and Politics in India*

ANNEXURE

CO-CURRICULAR ACTIVITIES

• All Co-curricular activities recommended at Course – I & III
• A Field Visit to a Court / District Jail / Local Government Office to observe the structure and functioning
• Viva voce interviews.
• Computerised adaptive testing, literature surveys and evaluations.
• Encouragement to students to contribute articles to the magazines and seminars

B.A. POLITICAL SCIENCE

SECOND YEAR

FOURTH SEMESTER

(Under CBCS w.e.f 2020-21)

Course 5:WESTERN POLITICAL THOUGHT

Learning Outcomes:

On successful completion of the course the students will be able to:

- Understand the fundamental contours classical, western political philosophy, basic features of medieval political thought and shift from medieval to modern era.
- Understand the Social Contract Theory and appreciate its implications on the perception of State in terms of its purposes and role.
- Acquaint with the Liberal and Marxist philosophy and analyze some trends in Western Political Thought.
- Critically analyse the evolution of western political thought

UNIT-I :	**ANCIENT GREEK POLITICAL THOUGHT**
	1. Plato-Rule of Philosopher Kings-Theory of Justice-Ideal State and Education
	2. Aristotle-Theory of State-Classification of Governments-Citizenship, Slavery and Theory of Revolutions.

UNIT-II :	**MEDIEVAL AND MODERN POLITICAL THOUGHT**
	1. NiccoloMachiavelli-State and Statecraft.

UNIT-III :	**CONTRACTUAL POLITICAL THOUGHT**
	1. Thomas Hobbes- Social Contract and Absolute Sovereignty.
	2. John Locke- Human Nature, State of Nature, Social Contract, Natural Rights and Limited Government

	3. Jean Jacques Rousseau- Human Nature, State of Nature, Social Contract, General Will and Popular Sovereignty

UNIT-IV :	**UTILITARIAN POLITICAL THOUGHT**
	1. Jermy Bentham-Theory of Utility, Law and Reforms.
	2. J.S.Mill-Theory of Liberty and Representative Government.

UNIT-V :	**MARXIST POLITICAL THOUGHT**
	1. Karl Marx-Dialectical Materialism, Theory of Surplus Value and Class Struggle.

REFERENCE BOOKS:

➢ O.P.Gauba	:	*Western Political Thought*
➢ G.H.Sabine	:	*A History of Political Theory*
➢ E.Baker	:	*Greek Political Theory : Plato and His Predecessors*
➢ Subrata Mukherjee & Sushila Ramaswamy	:	*A History of Political Thought-Plato to Marx*
➢ ShefaliJha	:	*Western Political Thought -From Plato to Marx*
➢ B.N.Ray	:	*Western Political Thought*
➢ RadheyShamChaurasia	:	*History of Western Political Thought*
➢ P.B.Rathod	:	*Ancient and Medieval Political Thinkers-From Plato to Padua*
➢ Andrew Hakes	:	*Political Theory :Philosophy, Ideology and Science*
➢ HaratiDwarakanath, Prof.G.Lalaiah, K.Saibaba, K.Ramachandra Murthy &V.Bhogendracharyulu, Prof.V.RavindraSastry (ed)	:	*Political Thought*
➢ Anil Kumar Mukopadhyay	:	*An Introduction to Political Theory, Western Political Thought*
➢ William Ebenstien	:	*Great Political Thinkers-Plato to the Present Modern Political Thought, The Great Issues*
➢ J.P.Sudha	:	*History of Political Thought*
➢ H.J.Laski	:	*Political Thought from Bentham to Locke*
➢ C.L.Wayper	:	*Political Thought*

ANNEXURE

CO-CURRICULAR ACTIVITIES

➢ All Co-curricular activities recommended at Course – I & III
➢ Peers and self-assessment, out puts from individuals and collaborative work.
➢ Assignments that encourage the study of standard Reference Books available at library
➢ Assignments of the emerging trends after Marxian Philosophy in the era of globalisation

PROGRAM: B. A. POLITICAL SCIENCE (CBCS)

MODEL QUESTION PAPER & PATTERN

Max. Marks: 75 **Time: 3 hrs**

SECTION A (Total: 5x5=25 Marks)

(Answer any **five questions**. Each question carries **5 marks**

(2 questions should be given from each Unit)

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

SECTION B (Total: 5x10 = 50 Marks)

(Answer all **questions**. Each question carries **10 marks**

(Two questions should be given with internal choice from each Unit)

11. A	
	(Or)
B	
12 A.	
	(Or)
B.	
13A	
	(Or)
B	
14A	
	(Or)
B	
15A	
	(Or)
B	

****

SUBJECT EXPERTS

1. Prof. B.V.Raghavulu, M.A., M.Phil., Ph.D.,
Chairman, Board of Studies
Dept. of Political Science & Public Administration, Sri Krishnadevaraya University, Anantapur

2. Dr.T.S.ShyamPrasad,M.A., M.Phil., Ph.D.,

Lecturer in Political Science, Government College (Autonomous), Anantapur

SYLLABUS VETTED BY

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

REVISED UG SYLLABUS UNDER CBCS

(To Be Implemented from Academic Year - 2020-21)

PROGRAMME: FOUR YEAR B.A. (Hons)

Domain Subject: **POLITICAL SCIENCE**

Skill Enhancement Courses for Semester V

(Syllabus with Learning Outcomes, References, Co-curricular Activities& Model Q.P. Pattern)

Structure of SECs for 5th Semester

(To Choose One pair from the Four alternative pairs of SECs)

Uni Code	Course Number 6 & 7	Name of Course	Hours/ Week	Credits	Marks	
					IA – 20 Filed Work 5	Sem End
	6A	Political Reporting	5	4	25	75
	7A	Legal Literacy-Rights Awareness	5	4	25	75
		OR				
	6B	E-Governance	5	4	25	75
	7B	Local Administration	5	4	25	75
		OR				
	6C	Office Management	5	4	25	75
	7C	Personnel Administration	5	4	25	75
		OR				
	6D	Electoral Politics and Voting Behaviour	5	4	25	75
	7D	Legislative Procedures and Practices	5	4	25	75

Note-1: Note: For Semester–V, for the domain subject Political Science, any one of the four pairs of SECs shall be chosen as courses 6 and 7, i.e., 6A & 7A or 6B & 7B or 6C & 7C or 6D & 7D. The pair shall not be broken (ABCD allotment is random, not on any priority basis).

Note-2: One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate skills related to the domain subject in students. The syllabus of SEC will be partially skill oriented. Hence, teachers shall also impart practical training to students on the skills embedded in syllabus citing related real field situations.

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A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four - Year B.A. (Hons)
Domain Subject: **POLITICAL SCIENCE**
IV Year B. A.(Hons) – Semester – V

Max Marks: 100

Course 6A: **POLITICAL REPORTING**
(Skill Enhancement Course (Elective), 4 credits)

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1) Understand the need, scope and concepts in Political Reporting.
2) Identify various sources for Political Reporting.
3) Provide an overview of interpreting the political phenomena from the gross roots level to the Parliament.
4) Develop insights and enhance skills in a professional manner in the age of mass media.
5) Learn skills related to reporting, enlarge job opportunities and make it as a career.

II. Syllabus:(Hours: Teaching: 60, Training: 10, Others incl. unit tests: 05)

Unit: 1

Introduction to Political Reporting-Nature-The role of Mass Media in Political Reporting-Press, Radio and Television-State Meaning, Nature and role in Developments-Political Issues and Dynamics.

Unit: 2

Organs of the Government-Union, State and Local Governments and Judiciary-Reporting on their working and assessment- Ethics for political reporter-Role and responsibilities of Press-Freedom of press and its limitations.

Unit: 3

Political News-Meaning, Nature and Forms of Political News-Sources of Political News and its Limitations-Working of Lobbies and Pressure Groups in Political Reporting.

Unit: 4

Writing Reports-Background Information-Framing and crafting Political Stories-Watchdog of enforcement of States' Laws, Rules and Regulations-Political Reporting in deadline situations-Reporting on Political Campaigns.

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Unit: 5

Political Reporting Skills-Interviewing-Types and Forms of Interviewing and Techniques-Questionnaire –Opinion Polls-Writing Blogs-Role in citizen's civic engagement, political communication and political participation-Analyzing politician's media strategy.

III. References:

1. Raymond Kuhn, Political Journalism New Challenges, New York: New Practices, Rutledge, 2003
2. Gail Sedorkin and Judy Mc gregor, Interviewing – A Guide for Journalist and Writers, Crow's Nest, NSW: Allen and Unwin, 2002
3. R.T.Jangam, Political Analysis, New Delhi: Oxford and IBH Publication, 1997
4. J.C.Johari, Comparative Politics, New Delhi, Sterling Publishers, 2002
5. Robert A. Dahl, Modern Political Analysis, New Delhi : Prentice Hall of India, 2001
6. Davis Merrit, Public Journalism and Public Life, London, 2014
7. Erik Albaek, Arjen Van Dalen, Neel Jebril& Claes H. de.Vreese, Londan, Cambridge University Press, 2014
8. Alok Mehta, Power, Press and Politics, 2021
9. Claes H. de.Vreese, Frank Esser& David Nicolas Hopmann (editors), Comparing Political Journalism (Communication and Society)
10. Web resources suggested by the Teacher concerned and the College Librarian including reading material.

IV. **Co-Curricular Activities**(Training of students by the teacher :Total 10 hours):

a) Mandatory:

1. **FOR TEACHER**: Training of students by teacher in the classroom for a total of not less than10 hours on techniques on understanding political establishment, observing of procedures and practices, identifying sources of political reporting, framing and crafting of political stories, application of ICT in political writings, discuss about the components involved in political writings such as real world consequences, disturbances or peace, high taxes, jobs or unemployment, health care, use of social media and its impact on citizens political participation in political process i.e. political campaigns and democracy.
2. **FOR STUDENT**: Students have to go to the field, observe activities related to political reporting such as news reporting, report on political meeting or incident and individually submit his / her observation as a hand-written Fieldwork/Project work Report not exceeding 10 pages in the given format to the teacher.
3. Suggested Fieldwork/Project work Format:

   Title Page, Student Details, Acknowledgements, Index page, Objectives, Step-wise process, Findings, Conclusion and References.

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4. Max marks for Fieldwork/Project work Report: 05
5. Unit Tests /Internal Examinations

b) Suggested Co-Curricular Activities

1. Training of students by a related field expert.
2. Reading Local Daily newspaper either print or online and visit political websites.
3. Reading Editorial pages, blogs and websites for various ideological perspectives.
4. Assignments (including technical assignments like identifying sources of political reporting).
5. A few minutes of each class period shall be devoted to the past week's major political stories and their coverage.
6. Seminars, Group discussions, Quiz, Debates etc.
7. Preparation of videos on Political popular personalities.
8. Collection of material/figures/photos related to political writings by experts covered in Dailies and magazines and organizing them in a systematic way in a file.
9. Visits to press, media houses, governmental offices etc.
10. Invited lectures and presentations on related topics by field experts such as political reporters, editors and professionals in political communication.

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A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four - Year B.A. (Hons)
Domain Subject: **POLITICAL SCIENCE**
IV Year B. A.(Hons) – Semester – V

Max Marks: 100

Course 7A: **LEGAL LITERACY- RIGHTS AWARENESS**
(Skill Enhancement Course (Elective), 4 credits)

I. Learning Outcomes:

Students at the successful completion of the course will be able to;

1. Acquaint student with the structure and manner of functioning of the legal system in India.
2. Understand of the laws related to rights applicable in India.
3. Provide an overview of access to courts and enforcement of rights.
4. Develop an understanding of the formal and Alternate Dispute Redressal (ADR) mechanism that exist in India.

II. **Syllabus:**(Hours: Teaching: 60, Training: 10, Others incl. unit tests: 05)

Unit: 1

Brief understanding of Legal Literacy-Rights and Duties of citizens-Indian Constitution - Fundamental Rights and other constitutional rights and enforcement of certain rights under Article 21 with emphasis on Public Interest Litigation.

Unit: 2

Laws relating to criminal jurisdiction-Provisions relates to FIR, Arrest, Bail, Search and Seizure-Important offences under Indian Penal Code-Offences against Women-Dowry, Sexual harassment and violence, Juvenile justice.

Unit: 3

Anti-terrorist laws-Implication of security and protection of Human Rights-Laws relating to Consumer rights and Cybercrimes.

Unit: 4

System of Courts and Tribunals and their jurisdiction in India-Civil and Criminal courts, Writ jurisdiction, specialized courts such as Juvenile courts, Mahila courts etc.

Unit: 5

Legal Services Authority Act, 1987 and Right to Free Legal Aid-Alternate Dispute Resolution Mechanism (ADR), Lok Adalats and Conduct of Legal Literacy camps-Role of NGOs in promoting legal awareness.

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III. References:

1. Basu, D.D, Introduction to Constitution of India, Nagpur, Lexis Nexis Butter worths, 2018.
2. Kashyap, S, Our Constitution: An Introduction to India's Constitution and Constitutional Laws, New Delhi, National Book Trust, 1994.
3. D.Srivastava, Sexual Harassment and Violence against Women in India : Constitutional and Legal Perspectives in C.Kumar and C.Chockalingam (eds) Human Rights, Justice and Constitutional Empowerment, Delhi, Oxford University Press, 2015.
4. B.L.Wadhera, Public Interest Litigation- A Handbook, Universal Publications, New Delhi, 2016.
5. Aggarwal, N., Women and Law in India, New Century Publishing House, New Delhi, 2019.
6. Kamala Sankaran and Ujwal Singh (eds), Creating Legal Awareness, Oxford University Press, New Delhi, 2017.
7. Indian Social Institute, New Delhi, Legal Literacy Booklets.
8. P.C.Rao and William Sheffiled, Alternate Dispute Resolution: What it is and How it works, Universal Law Books and Publishers, New Delhi, 2012.
9. Parmanand Singh, Access to Justice and the Indian Supreme Court, 10& 11, Delhi Law Review, 1981-82.
10. J.Kothari, Criminal Law on Domestic Violence, Economic and Political Weekly, 2005, Vol.40 (46), pp., .4843-4849.
11. Centre for Good Governance, Right to Information Act,2005 : A Citizen's Guide
12. A.Pandey, Rights of the Consumer, New Delhi, Indian Social Institute, 2004.
13. Pandey, Laws relating to Criminal Justice :Challenges and Prospects in K.Sankaran and U.Singh, Towards Legal Literacy, New Delhi, Oxford University Press, 2008, pp.61-77.
14. S.K.Garg, Guide to Lok Adalats and Free Legal Services under Legal Services Authorities Act, New Delhi, 2018.
15. Web resources suggested by the Teacher concerned and the College Librarian including reading material.

IV. Co-Curricular Activities (Training of students by the teacher: Total 10 hours):

A). Mandatory:

1. **FOR TEACHER:** Training of students by teacher in the classroom for a total of not less than10 hours on understanding various rights enshrined in the Constitution, preparation of FIR, conduct of moot court, identifying techniques of ADR mechanism (Negotiation, Arbitration and Conciliation), drafting of a Public Interest Litigation etc.,

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2. **FOR STUDENT:** Visit to either a court or a legal services authority set up by the LSA Act, observe the proceedings, interact with persons who are seeking legal remedy and interact/interview the advocates if possible and record their experiences and individually submit his / her observation as a hand-written Fieldwork/Project work Report not exceeding 10 pages in the given format to the teacher.

3. Suggested Fieldwork/Project work Format:

Title Page, Student Details, Acknowledgements, Index page, Objectives, Step-wise process, Findings, Conclusion and References.

4. Max marks for Fieldwork/Project work Report: 05

5. Unit Tests /Internal Examinations

b). Suggested Co-Curricular Activities

1. Training of students by a related field expert.
2. Reading Local Daily newspaper either print or online.
3. Reading Editorial pages, blogs and websites for various ideological perspectives.
4. Assignments.
5. Discuss the debates around any recent Ordinance, Bill or Act in the Parliament or State Legislature.
6. Discuss any contemporary practice or event that violates the equality and protection against discrimination laws.
7. Seminars, Group discussions, Quiz, Debates etc.
8. Witness any incident occurred in surroundings that would be considered offensive under the penal code and make a class-room presentation on it. Example: Offenses relates to IPC, Consumer Protection Act, 1986, Filing a petition under RTI Act, 2005 etc.,
9. Invited lectures and presentations on related topics by experts in jurisprudence and ADR Mechanism.
10. Read the guidelines issued by Supreme Court in landmark cases relating to Child abuse, domestic violence, sexual harassment at work place.

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A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four - Year B.A. (Hons)
Domain Subject: **POLITICAL SCIENCE**
IV Year B. A.(Hons) – Semester – V

Max Marks: 100

Course 6 B: **E GOVERNANCE**
(Skill Enhancement Course (Elective), 4 credits)

I. **Learning Outcomes:**

Students at the successful completion of the course will be able to:

1. Acquaint student with the introduction to good governance and how it can be achieved by information and communication technology.
2. Understand the growing needs of E-Governance, improving transparency in the system of governance
3. Have understanding of various government schemes and E-Governance projects and initiatives.
4. Provide the practical knowledge about the effective delivery of citizen services through online mode.
5. Realize the issues and challenges of E-Governance.

II. **Syllabus:**(Hours: Teaching: 60, Training: 10, Others incl. unit tests: 05)

Unit: 1

Brief Introduction to Governance-E-Governance –Meaning, Definition, Nature, Scope, Objectives and Significance-Domains of E-Governance- E-Governance and Good Governance-Global trends in the growth of E-Governance.

Unit: 2

E-Governance in India- - National E-Governance Plan (NeGP)-National Informatics Centre-Strategies for E-Governance-E-Governance Implementations: Required infrastructure of Network, Computing, Cloud Governance, Data system, Human resources, Legal and Technological infrastructure- Major E-Governance Projects and Initiatives:Gyandoot, E-choupal, E-Bhoomi, E-Seva, CARD, E-Panchayat, Real Time Governance (RTG) etc.

Unit: 3

Role of Information and Communication Technology in Administration, Effective delivery of services for public utilities through E-Governance-Online filing of complaints, application registration, issuance of certificates, issuance of land records, online payments of fees, dues etc, e-

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tendering, easy access to information and E-Governance in Social security and welfare schemes: Direct transfer of benefits, Biometric authentication through Aadhar, etc.

Unit: 4

E-Governance under Information Technology Act-Legal status for digital transactions-Public Private Partnership and expansion of E-Governance.

Unit: 5

E-Governance-Transparency and Accountability at gross root level-Issues and Challenges: Digital Divide, Capacity Building, Cyber Security in Cyber Crimes, Socio-political implications, Issues of integration, Networking with NGOs.

III. References:

1. B.Sreenivas Raj, E-Governance Techniques-Indian and Global Experiences, New Century Publications, New Delhi, 2008.
2. Subhash Bhatnagar, Unlocking E-Government Potential-Concepts, Cases and Practical Insights, Sage Publications, New Delhi, 2009.
3. Y.Parthasaradhi, E-Governance and Indian Society, Kanishka Publications, New Delhi, 2009.
4. R.P.Sinha, E-Governance in India, Initiatives and Issues in India, Centre for Public Policy, 2006.Anil Kumar Dhiman, E-Governance –Good Governance using ICTs, S.K.Book Agency, New Delhi, 2017.
5. Ashok Aggarwal, Governance-Case Studies, University Press India Pvt. Ltd, Hyderabad, 2017.
6. Web resources suggested by the Teacher concerned and the College Librarian including reading material.

IV. Co-Curricular Activities (Training of students by the teacher: Total 10 hours):

a) Mandatory:

1. **FOR TEACHER**: Training of students by teacher in the classroom for a total of not less than10 hours on techniques of application of ICT for getting services from the government departments, filing of grievances through online mode, making digital transactions for issuance of certificates or payment of fees, identifying components in e-governance and techniques to handle cyber security etc.,

2. **FOR STUDENT**: Students have to visit urban or local administration offices and have practical study and assess the implementation of E-Governance initiatives, models, citizen centric services, citizen charter and interact with the beneficiaries about the fulfillment of their needs in time or not and if any lapses they noticed or visit to nearby government

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institution covering the various citizen centric services delivering through online mode and observe the citizen charter, mode of operation, time limitation, fees prescribed for services and observe the operation of Real Time Governance (RTG) in administration and record their experiences and individually submit his / her observation as a hand-written Fieldwork/Project work Report not exceeding 10 pages in the given format to the teacher.

3. Suggested Fieldwork/Project work Format:

   Title Page, Student Details, Acknowledgements, Index page, Objectives, Step-wise process, Findings, Conclusion and References.

4. Max marks for Fieldwork/Project work Report: 05

5. Unit Tests /Internal Examinations

b) <u>Suggested Co-Curricular Activities</u>

1. Training of students by a related field expert.
2. Reading Daily newspaper either print or online about the misuse of technology which leads to cybercrimes.
3. Reading articles, blogs and websites for various ideological perspectives.
4. Assignments.
5. Discuss the debates around any recent technological advancements.
6. Discuss the case laws and judgments reported on E-Governance initiatives.
7. Seminars, Group discussions, Quiz, Debates etc.
8. Invited lectures and presentations on related topics by experts in Cyber Security especially the Police personnel associated with the cases of IT Act.

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A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four - Year B.A. (Hons)
Domain Subject: **POLITICAL SCIENCE**
IV Year B. A.(Hons) – Semester – V

Max Marks: 100

Course 7B: **LOCAL ADMINISTRATION**
(Skill Enhancement Course (Elective), 4 credits)

I. **Learning Outcomes:**

Students at the successful completion of the course will be able to;

1. Understand the existing context of Local Government Institutions in India.
2. Have knowledge on the need of empowerment and autonomy of LGIs.
3. Provide an overview on financial resources and constitutional provisions.
4. Analyse the issues, problems and conflicts in Local Administration.
5. Develop communication skills to interact with the elected members and officials.
6. Enhance skills for observation, organizing, networking, documentation.

II. **Syllabus:**(Hours: Teaching: 60, Training: 10, Others incl. unit tests: 05)

Unit: 1

Local Government: Meaning, Nature and Importance, Thoughts on Local Governments by M.K.Gandhi, Jawaharlal Nehru and Dr.B.R.Ambedkar, Important Committees: Balwant Rai Mehta (1957), Ashok Mehta (1978), L.M.Singhvi(1986).

Unit: 2

Decentralization of powers (Political, Administrative and Economic) from the States to Local Institutions- 73rd and 74thConstitutional Amendment Acts-Empowering Local Governments-Decision making powers during crisis and disasters-Relationship between local government authorities and Central and State Government service providers-Role of District Collector in strengthening LGIs.

Unit: 3

Revenue raising avenues for Local Governments-Grants, Aid and support from Centre and State Governments-Public Private Partnerships-Concept of Local Development-Village as a unit, SWOC analysis of a village, existing conditions, expected developmental opportunities, the gap, natural, government and private resources, year-wise planning, finances required -Role of Local Governments in implementation of welfare and developmental programmesi.e., (MGNREGS), (SGSY), (IAY) and (PURA).

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Unit: 4

Challenges for Local Administration, Financial, administrative and Political Constraints-Public relations in Local Administration-Need for training for elected representatives and other stakeholders-Audit training and Participatory training.

Unit: 5

Preparation of Reports-Minutes and Documentation-Types of Reports, Content of Minutes-Methods of Documentation-Best practices of Reporting on functioning of Local Administration-Use of ICT in documentation.

III. References:

1. Basu, D.D, Introduction to Constitution of India, Nagpur, Lexis Nexis Butterworths, 2018
2. Niraja Gopal Jayal, Representing India: Ethnic Diversity and Governance of Public Institutions, 2006, Palgrave Mc Millan Publications.
3. R Venkata Ravi, Empowering Rural India: Experiments and Experiences, Kanishka Publishers, New Delhi, 2006.
4. Sawalia Bihari Verma, Empowerment of the Panchayati Raj Institutions in India, Sarup and Sons, New Delhi, 2006.
5. World Bank, Empowerment in Practice: Analysis and Implementation, World Bank Institute, Washington D.C.
6. S.Chandrasekhar, Panchayati Raj and Financial Resources, Regal Publications, 2008, New Delhi.
7. Rajesh Tondon and Mohini Kak (Eds), Citizen Participation and Democratic Governance, New Delhi, 2016.
8. Anand Prakash, State and District Administration, Wisdom Press, New Delhi, 2008.
9. N.Lalitha, Rural Development in India: Emerging Issues and Trends, Dominant Publishers, New Delhi, 2014.
10. Web resources suggested by the Teacher concerned and the College Librarian including reading material.

IV. Co-Curricular Activities(Training of students by the teacher: Total 10 hours):

a) Mandatory:

1. **FOR TEACHER**: Training of students by teacher in the classroom fora total of not less than10 hours on techniques of identifying financial resources to local bodies, skilling on various components involved in auditing of accounts, analyzing the data of beneficiaries of welfare schemes by using statistical tools, preparation of minutes and reports, imparting

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technical skills with regard to communication and procedures and practices in documentation.

2. **FOR STUDENT**: Students have to visit to a Rural. Local Government Institution, understand its profile, sources of revenue and expenditure, identify major issues and challenges, analyse its development and welfare initiatives, record the experiences, collecting data on implementation of poverty alleviation, employment generation schemes sponsored by governments and interpretation of data and indicate suggestions for better functioning **(or)**

   Participate in regular Gram Sabha meeting observe and record the proceedings and outcome of the meeting, indicate suggestions for better functioning of Gram Sabha

   (or) students may take a village as a unit, make SWOC analysis and individually submit his / her observation as a hand-written Fieldwork/Project work Report not exceeding 10 pages in the given format to the teacher.

3. Suggested Fieldwork/Project work Format:

   Title Page, Student Details, Acknowledgements, Index page, Objectives, Step-wise process, Findings, Conclusion and References.

4. Max marks for Fieldwork/Project work Report: 05

5. Unit Tests /Internal Examinations

b) <u>Suggested Co-Curricular Activities</u>

1. Training of students by a related field expert.
2. Reading Local Daily newspaper either print or online.
3. Reading Editorial pages, blogs and websites for various ideological perspectives.
4. Assignments.
5. Discuss the debates around any recent Ordinance, Bill.or Act in the Parliament or State Legislature.
6. Carry out a resource mapping of a selected area.
7. Plan and organize a capacity building session for the stakeholders
8. Seminars, Group discussions, Quiz, Debates etc.
9. Invited lectures and presentations on related topics by experts in Local Administration.
10. Make visit to a Self-Help Group or NGO, interact with its members and record their experiences.
11. Conduct an interview with an important person at the District Level using a structured schedule (District Panchayat Officer / CEO of Zilla Parishad / District Collector) and document their interventions in local administration and record their experiences.

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A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four - Year B.A. (Hons)
Domain Subject: **POLITICAL SCIENCE**
IV Year B. A.(Hons) – Semester – V
Max Marks: 100
Course 6C: **OFFICE MANAGEMENT**
(Skill Enhancement Course (Elective), 4 credits)

I. Learning Outcomes:

Students at the successful completion of the course will be able to;

1. Understand fundamental knowledge of Office Management that can be applied to a career.
2. Have knowledge on office administration and identify job competencies.
3. Understand the importance of record management and allied sections.
4. Comprehend the administrative process in office
5. Identify the challenges in the background of ICT.
6. Enhance skills, strategies and techniques to compete with the global competencies in office management.

II. **Syllabus:**(Hours: Teaching: 60, Training: 10, Others incl. unit tests: 05)

Unit: 1

Introduction to Office, Office structure-Office Management: Meaning, Nature, Importance, Elements and Functions of Office Management-Basic Principles of office management.

Unit: 2

Office organization: Definition, Characteristics-Office Planning, Accommodation, Layout and Office Environment.

Unit: 3

Office Record Management-Objectives and Importance-Filing System: Steps in filing, Essentials for filing, Classification and arrangements of files, Modern filing methods using Information and Communication Technology and devices-Indexing: Essentials of a good indexing and Records retention and Micro filing.

Unit: 4

Office Communication: Meaning and mailing, Barriers to communication -Correspondence and Report Writing-Types- Periodical reports.

Unit: 5

Form Letters: Meaning, Principles, Factors in designing office forms-Supervisory Skills-Importance of Motivation and Leadership-Issues in Office Management-Recent trends: e-office, use of modern appliances and application of IT in office management.

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III. References:

1. R.S.N.Pillai&Bagavathi, Office Management, S.Chand Publishers, New Delhi, 2014.
2. R.K.Chopra, Office Management, Himalaya Publishing House, New Delhi, 2016.
3. B.N.Tandon, Manual of Office Management and Correspondence, S.Chand Publications, New Delhi, 2014.
4. Sudhir Andrews, Front Office Management and Operations, Tata McGraw Hill Publishing Co. Ltd, India, New Delhi, 2008.
5. Balachandran V, Office Management, Tata McGraw Hill Publishing Co. Ltd, India, New Delhi, 2009.
6. Bhatia R.C, Principles of Office Management, Lotus Press, New Delhi, 2005.
7. Sharma, R.K & Others, Office Management, Kalyani Publishers, New Delhi, 1991.
8. Chopra, R.K, Modern Office and Its Management, Himalaya Publishing House, Hyderabad, 2008.
9. Niraj Kumar, Modern Office Management, New Royal Book Co, Lucknow, 2013.
10. Gopal Krishnan and Sundaresan, M, Material Management: An Integrated Approach, Prentice Hall of India, New Delhi, 2014.
11. Satyasnarayana, J, E-Government, Prentice Hall of India, New Delhi, 2015.
12. Kooiman, J (ed), Modern Governance: New Government-Society Interactions, Sage Publications, London, 2014.
13. Bhatnagar, S.C, E-Government: From Vision to Implementation, Sage Publications, New Delhi, 2014.
14. Singhal. A and Evertt, Rogers, India's Information Revolution, Sage Publications, New York, 1990.
15. Srinivas Vallabhan, S.V, Computer Application in Business, Sultan Chand & Sons, New Delhi, 2014.
16. Web resources suggested by the Teacher concerned and the College Librarian including reading material.

IV. Co-Curricular Activities(Training of students by the teacher: Total 10 hours):

a) Mandatory:

1. **FOR TEACHER**: Training of students by teacher in the classroom or in the field for a total of not less than10 hours on application of ICT tools in Office Management, utilizing the modern tools through hands on experience, procedures and practices in filing, indexing and maintaining office records, imparting skills on office correspondence.
2. **FOR STUDENT**: Students have to visit to a Government office or industry or private organization and observe the filing system, records management, utilization of manuals

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available, application of ICT, communication flow in the organizations, problems encountered by management in communication, record individual observations and individually submit his / her observation as a hand-written Fieldwork/Project work Report not exceeding 10 pages in the given format to the teacher.

3. Suggested Fieldwork/Project work Format:

Title Page, Student Details, Acknowledgements, Index page, Objectives, Step-wise process, Findings, Conclusion and References.

4. Max marks for Fieldwork/Project work Report: 05
5. Unit Tests /Internal Examinations

b) <u>Suggested Co-Curricular Activities</u>

1. Training of students by a related field expert in Office Management.
2. Reading Local Daily newspaper either print or online.
3. Reading Editorial pages, blogs and websites for various ideological perspectives.
4. Assignments.
5. Discuss the debates around any recent trends, technological advancements and invention of new appliances that are to be used in modern officer management.
6. Plan and organize a capacity building session for the stakeholders.
7. Seminars, Group discussions, Quiz, Debates etc.
8. Invited lectures and presentations on recent global trends in office management.
9. Make visit to a Government office or reputed industry or private firm interact with its members and record their experiences and gain Hands on Experience of records maintenance, indexing and filing procedures.

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A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four - Year B.A. (Hons)
Domain Subject: **POLITICAL SCIENCE**
IV Year B. A.(Hons) – Semester – V

Max Marks: 100

Course 7C: **PERSONNEL ADMINISTRATION**
(Skill Enhancement Course (Elective), 4 credits)

I. **Learning Outcomes:**

Students at the successful completion of the course will be able to;

1. Understand Personnel Administration that can be applied to a career.
2. Acquire knowledge on recruitment, selection and training and identify job competencies.
3. Understand the importance and role of civil services in Indian Governance.
4. Provide an overview on issues in administration.
5. Enhance skills, strategies and techniques for redressal of grievances in administration

II. **Syllabus:**(Hours: Teaching: 60, Training: 10, Others incl. unit tests: 05)

Unit: 1

Personnel Administration: Concept, Nature, Scope and Significance-Hierarchy in Personnel Administration-Roles and Responsibilities of Personnel Administrative Officers- Bureaucracy: Meaning, Characteristics, Nature, Importance and its role in modern state.

Unit: 2

Recruitment: Meaning and Importance, Types of Recruitment, Methods of recruitment with regard to All India, Central and State Services-Union Public Service Commission and State Public Service Commissions-Constitutional provisions and Composition, Functions and Role.

Unit: 3

Training: Meaning, Objectives, Types and Significance-Training Institutions in India-Promotion-Promotion procedure-Career Planning, Evaluation and Development-Motivation and Morale-Performance Appraisal.

Unit: 4

Administrative Ethics-Integrity in administration-Code of Conduct-Common Lapses and Disciplinary Procedure-Employee and Employer Relations-Rights of Civil Servants.

Unit: 5

Problems in Personnel Administration-Employees participation in administration-Grievances-Institutional arrangements for settlement of disputes-Change in work place, Counseling and Time Management.

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III. References:

1. Avasthi Maheswari, Public Administration, Lakshminarayan Agarwal, Agra, 2008.
2. Goel, S.L, Personnel Administration, Deep and Deep Publications, New Delhi, 2009.
3. Sharma, M.P, Public Administration Theory and Practice, Kitab Mahal, Allahabad, 2005.
4. Tripathi P.C, Human Resource Development, S.Chand Publications, New Delhi, 2016.
5. David E.Kalaignar, Public Personnel Management, IPMA, Prentice Hall Inc, Eaglewood Chiffs, New Jersy, 1986.
6. C.M.Jain, Public Personnel Administration, College Book Depot, Jaipur, 2003
7. K.Aswarthappa, Human Resource Management : Text and Cases, Tata McGraw Hill, New Delhi, 2008
8. V.S.P.Rao, Human Resource Management, Excel Books, New Delhi, 2007
9. O.GlennStanl, Public Personnel Administration, Oxford IBH Publication Co, New Delhi, 2008.
10. Chatterjee.Bhaskar, Human Resource Management, Sterling Publications, New Delhi, 2009.
11. Administrative Reforms Commission, 1969, Report on Personnel Administration.
12. Government of India, Second ARC, Tenth Report on Refurbishing of Personnel Administration.
13. Jain, R.B, Aspects of Personnel Administration, IIPA, New Delhi, 2008.
14. Maheswari Sriram, Public Administration in India: The Higher Civil Service, Oxford University Press, New Delhi, 2007.
15. Naff, Katherine C, Norma M, Riccucci, Personnel Management in Government, Politics and Process, Tayolr& Francis, New York, 2014.
16. Tead, Ordway, Personnel Administration, University of California Libraries.
17. Pundrik Ojha & Kiran Sharma, Personnel Administration, Raj Publishers, Agra, 2018.
18. Web resources suggested by the Teacher concerned and the College Librarian including reading material.

IV. Co-Curricular Activities(Training of students by the teacher: Total 15 hours):

a) Mandatory:

1.**FOR TEACHER**: Training of students by teacher in the classroom for a total of not less than10 hours on techniques of preparation of training schedules, training programmes, conducting interviews as part of selection, preparation of confidential reports, skilling on minutes reporting and maintaining service records, identifying the techniques for settlement of disputes in the organization.

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2. **FOR STUDENT**: Students have to visit to a Government office or industry, observe the hierarchy of staff, recruitment and selection process, role and responsibilities, interact/interview the employer and employees in order to know how the strategies and techniques using for resolving disputes relating to personal or organizational issues and individually submit his / her observation as a hand-written Fieldwork/Project work Report not exceeding 10 pages in the given format to the teacher.

3. Suggested Fieldwork/Project work Format:

Title Page, Student Details, Acknowledgements, Index page, Objectives, Step-wise process, Findings, Conclusion and References.

4. Max marks for Fieldwork/Project work Report: 05

5. Unit Tests /Internal Examinations

b) **Suggested Co-Curricular Activities**

1. Training of students by a related field expert in Personnel Administration.
2. Reading Local Daily newspaper either print or online.
3. Reading Editorial pages, blogs and websites for various ideological perspectives.
4. Assignments.
5. Discuss the debates around any recent Ordinance, Bill or Act in the Parliament or State Legislature with regard to service matters of civil servants.
6. Plan and organize a capacity building session for the stakeholders
7. Seminars, Group discussions, Quiz, Debates etc.
8. Invited lectures and presentations on recent global trends in Personnel Administration.
9. Make visit to a Government office or reputed industry, interact with its members and record their experiences on job satisfaction, promotions, motivation and institutional arrangements for grievances.

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A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four - Year B.A. (Hons)
Domain Subject: **POLITICAL SCIENCE**
IV Year B. A.(Hons) – Semester – V

Max Marks: 100

Course 6 D: **ELECTORAL POLITICS AND VOTING BEHAVIOUR**
(Skill Enhancement Course (Elective), 4 credits)

I. **Learning Outcomes:**

Students at the successful completion of the course will be able to;

1. Acquaint student with the structure and manner of functioning of Election Commission of India.
2. Understand the political issues in Electoral Politics.
3. Provide an overview on voter turnout, voting behavior in India.
4. Aware of the role of new media and technology in election campaign.
5. Develop an understanding of the required skills for data collection, research in election management.

II. **Syllabus:**(Hours: Teaching: 60, Training: 10, Others incl. unit tests: 05)

Unit: 1

Electoral Democracy-Electoral Politics in India-Pre and Post-Independence, Nature, Characteristics-Electoral Process: Nature and Significance.

Unit: 2

Election Commission of India: Composition, Powers and Functions-Merits and Demerits of Electoral system in India-Political Participation-General Elections in India since 1952-Elections to Local Bodies-State Election Commission.

Unit: 3

Issues in Electoral Politics: Corruption, Money power, rigging, booth capturing, undemocratic party system, politics of Political Defections and Reservations-Need of Reforms in present Electoral System-Reports of Tarkunde, Goswamy, Indrajeet Gupta Committees.

Unit: 4

Public Opinion: Meaning and its role in Democratic Politics-Voting Behaviour: Meaning, Nature and determinants of voting behavior: Caste, Religion, Language, Region etc.

Unit: 5

Management of Elections: Moral Code of Conduct, Filing Election Nominations and Affidavits - Use of new techniques and methods in election campaigns: Membership drive, Responsibility Management, Booth Management, New ways of generating funds, Polling research, Opinion

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Polls, Predictions, Techniques of interpreting collected election data, use of print, electronic and social media in elections.

III. References:

1. Basu, D.D, Introduction to Constitution of India, Nagpur, Lexis Nexis Butterworths, 2018.
2. P.R.Brass, The Politics of India since Independence, Cambridge, Cambridge University Press, 1974.
3. C.P.Bhambhari, Politics in India since Independence, Delhi, Shipra Publications, 1990.
4. J.C.Aggarwal&N.K.Choudari, Election in India, Shipra Publications, New Delhi, 1998.
5. R.Ali, Representative Democracy and Concept of Free and Fair Elections, Deep and Deep Publications, New Delhi, 2006.
6. D.Anand, Electoral Reforms-Curbing Role of Money Power, Indian Institute of Public Administration, New Delhi, 2005.
7. A.Bajpai, Indian Electoral System-An Analytical Study, Nardeen Book Centre, New Delhi, 2002.
8. A.K.Bhagat, Elections and Electoral Reforms in India, Vikas Publications, New Delhi, 2006.
9. R.P.Bhalla, The Electoral System, Its Operation, and Implications for Democracy in India, Teaching Politics, New Delhi, 1989.
10. R.Hegde, Electoral Reforms-Lack of Political Will, Bangalore, Karnataka State Janata Party, 1987.
11. P.N.Sharma, Elections and National Politics, Shipra Publications, New Delhi, 2004.
12. Eldersveld, S.J, Experimental Propaganda Techniques and Voting Behaviour,The American Political Science Review, New York, 1986.
13. Eldersveld, S.J, Theory and Method in Voting Behaviour Research, The American Political Science Review, New York, 1992.
14. Jain, S, State Funding of Elections and Political Parties in India Journal of the Indian Law Institute, Allahabad, 1999.
15. Sridharan, E, Toward State Funding of Elections in India : A Comparative Perspective on Possible Options, The Journal of Policy Reforms, 3:3, pp.229-254.
16. Rosenblum, N, Political Parties as Membership Groups, Columbia Law Review, 100(3), pp.813-844.
17. Web resources suggested by the Teacher concerned and the College Librarian including reading material.

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IV. **Co-Curricular Activities** (Training of students by the teacher: Total 10 hours):

A). Mandatory:

1. **FOR TEACHER**: Training of students by teacher in the classroom for a total of not less than10 hours on collection of data relating to General Elections to Lok Sabha/Assembly or elections to Local bodies for a particular period, analysis of data by using statistical tools, preparation of questionnaire on voting behavior, identifying techniques for interpretation of election data and imparting skills involved in political campaigning by using new media.

2. **FOR STUDENT**: Students have to visit to nearby residential colony or street or a village, collect data regarding their voting behavior, voter turnout by interviewing the voters using formal and informal questionnaire, interaction with the voters and individually submit his / her observation as a hand-written Fieldwork/Project work Report not exceeding 10 pages in the given format to the teacher.

3. Suggested Fieldwork/Project work Format:

Title Page, Student Details, Acknowledgements, Index page, Objectives, Step-wise process, Findings, Conclusion and References.

4. Max marks for Fieldwork/Project work Report: 05

5. Unit Tests /Internal Examinations

b). Suggested Co-Curricular Activities

1. Training of students by a related field expert.
2. Reading Local Daily newspaper either print or online.
3. Reading Editorial pages, blogs and websites for various ideological perspectives.
4. Assignments.
5. Discuss the debates around any recent Ordinance, Bill or Act in the Parliament or State Legislature.
6. Discuss any contemporary practice or event that violates the true spirit of democracy and political equality.
7. Seminars, Group discussions, Quiz, Debates etc.
8. Witness any incident occurred in your surroundings that would be considered for obstacle for reforms in politics
9. Invited lectures and presentations on related topics by experts in Electoral Politics.
10. Read the guidelines issued by Supreme Court in landmark cases relating to Political Defections, Anti-democracy acts of political parties.
11. Arrange Guest Lectures inviting election authorities such as District Returning Officer /Observers / Experts in Election Management.

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A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code:

Four - Year B.A. (Hons)
Domain Subject: **POLITICAL SCIENCE**
IV Year B. A.(Hons) – Semester – V

Max Marks: 100

Course 7 D: **LEGISLATIVE PROCEDURES AND PRACTICES**
(Skill Enhancement Course (Elective), 4 credits)

I. Learning Outcomes:

Students at the successful completion of the course will be able to;

6. Make familiar with legislative procedures and practices.
7. Equip the students with the adequate skills of participation in deliberative processes and democratic decision making.
8. Understand complex policy issues, draft new legislation, analyze ongoing bills, make speeches and floor statements.
9. Provide skills to be part of a legislative support team and expose them to real life legislative work.
10. Enhance understanding of procedures, practices, different committees and motions in the House.

II. **Syllabus:**(Hours: Teaching: 60, Training: 10, Others incl. unit tests: 05)

Unit: 1

Brief Introduction on Legislative bodies, roles and responsibilities-Constitutional Provisions of Legislative Procedures: Articles 107-122, Kinds of Bills: Ordinary Bills, Money Bills, Finance Bills, Constitution Amendment Bills and Private Member Bills.

Unit: 2

Powers and Functions of People's Representatives in Legislative Process: Members of Parliament, Members of State Legislatures, Political Heads of Rural and Urban Local Governments.

Unit: 3

Drafting of the Bill-First Reading and Departmental Standing Committee-Second and Third Reading-Framing rules and regulations, Passage of the Bill, Consent by the President of India and Gazette Notifications:

Unit: 4

Legislative Committees in India: Role in reviewing government policies, finances, programmes and legislation, Types of Committees: Department Standing Committees, Select Committees, Joint Parliamentary Committees, Public Accounts Committee, Estimates Committee, Business Advisory Committee, Ethics Committee etc.

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Unit: 5

Budget process: Reviewing the Union Budget, Examination of Demands for Grants of Ministries, Working of Ministries-Motions and Hours in the House: Question Hour : Rules of putting questions, Types of Questions-Rules relating to Calling Attention Motion, Adjournment Motion, Privilege Motion, Censure Motion, No-Confidence Motion, Cut Motion including Resolutions, Discussion and Short Discussion

III. **References:**

1. Basu, D.D, Introduction to Constitution of India, Nagpur, Lexis Nexis Butterworths, 2018.
2. Jayal, N.G., and Mehta, P. (eds), The Oxford Companion to Politics in India, Oxford University Press, New Delhi, 2007.
3. Bhambri, P.C., Parliamentary Control over State Enterprize in India, Delhi Metropolitan Book Dept, New Delhi, 1998.
4. H.Karla, Public Engagement with the Legislature Process, PRS Centre for Policy Research, New Delhi, 2011 available at http://www.prsindia.org.
5. Kaul, M.N. &S.L.Shakdher, Practice and Procedure of Parliament, New Delhi, Lok Sabha Secretariat, 2016.
6. Mehra, A.K, The Indian Parliament and Democratic Transformation, New Delhi, Routledge, 2017.
7. Pai, Sudha & Kumar, A, (eds), The Indian Parliament : A Critical Appraisal, Orient Black Swan, New Delhi, 2014.
8. Shankar, B. & Rodriguez V, The Indian Parliament : A Democracy at Work, Oxford University Press, New Delhi, 2011.
9. Singh, D, The Indian Parliament : Beyond the Seal and Signature of Democracy, Universal Law Publishing, Gurgaon, 2016.
10. Kapur, D and P.Mehta (eds), Public Institutions in India: Performance and Design, Oxford University Press, New Delhi, 2005.
11. Kapur, D., Mehta, P. &Vaishnab, M (eds), Rethinking Public Institutions in India, Oxford University Press, New Delhi, 2017.
12. Kashyap, S. Reviewing the Constitution, Shipra Publications, New Delhi, 2000.
13. Kashyap, S.Our Parliament, National Book Trust, New Delhi, 2015.
14. Web resources suggested by the Teacher concerned and the College Librarian including reading material.

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IV. Co-Curricular Activities (Training of students by the teacher: Total 10 hours):

A). Mandatory:

1. **FOR TEACHER:** Training of students by teacher in the classroom for a total of not less than10 hours on conducting of a Mock Parliament, Conduct of Sessions, preparation of budget, formulation of policy, Collection and analysis of data for legislation, Imparting skills on asking questions and identifying communication skills.

2. FOR STUDENT: Students have to visit to a legislative/ local body unit nearby, observe legislative/ local body meetings, interact with stakeholders, monitor media and press releases, understanding political process and individually submit his / her observation as a hand-written Fieldwork/Project work Report not exceeding 10 pages in the given format to the teacher.

3. Suggested Fieldwork/Project work Format:

Title Page, Student Details, Acknowledgements, Index page, Objectives, Step-wise process, Findings, Conclusion and References.

4. Max marks for Fieldwork/Project work Report: 05

5. Unit Tests /Internal Examinations

b). Suggested Co-Curricular Activities

1. Training of students by a related field expert.
2. Reading Local Daily newspaper either print or online.
3. Watching live stream of sessions of Parliament or State Legislature.
4. Reading Editorial pages, blogs and websites for various ideological perspectives.
5. Assignments.
6. Discuss the debates around any recent Ordinance, Bill or Act in the Parliament or State Legislature.
7. Discuss any contemporary practice or event that violates the true spirit of democracy and political equality.
8. Seminars, Group discussions, Quiz, Debates etc.
9. Invited lectures and presentations on related topics by experts in Legislative Procedures.
10. Read the guidelines issued by Supreme Court in landmark cases relating to Political Defections, Anti-democracy acts of political parties.

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(10)

MODEL QUESTION PAPER PATTERN

Time: 3 Hours Max. Marks: 75

Section - A (Total 5 x 5 Marks = 25 Marks)

Answer any <u>five</u> of the following. Each answer carries <u>5 Marks</u>
(At least one question should be given from each unit)

1	
2	
3	
4	
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7	
8	

Section - B (Total 5 x 10 Marks = 50 Marks)

Answer any <u>five</u> of the following. Each answer carries <u>10 Marks</u>
(At least one question should be given from each unit)

1	
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9	
10	

@@@@@@@@@@@@

Prepared by: Prof.B.V.Raghavulu, Dept. of Political Science & Public Administration, SK University, Anantapur

&

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ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

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REVISED SYLLABUS OF ENGLISH under (Part – I)

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR B.A. /B.Sc./B.Com/BCA/BBM/BHM & CT, etc.

Andhra Pradesh State Council of Higher Education, Mangalagiri, Guntur District

Revised English Syllabus from 2020-21 Onwards

Under Choice Based Credit System

Introduction

The turn of the twenty first century has made the English Language skills a passport to the job market to all job seekers. Ability to communicate well in English has become a hallmark of good educational foundation and a prerequisite for all graduates. The students are expected to possess a measurable knowledge and a set of skills in using English language in personal and professional life. The present course **English Praxis** in three parts offers suitable context to teach, learn and practise target language skills. Each part of the course aims at certain specified skills which are taught through various text-based classroom activities and the English Language Laboratory activities. The syllabus of the course offers an open platform to the teacher to facilitate active participatory learning to the students. Hence the whole course is offered in three semesters. The first part of the course offers fundamentals of the English language in five units: Listening, Speaking, Grammar, Writing and Soft Skills. These introductory units are developed into full length courses in the subsequent semesters in addition to Reading Skills so as to prepare the learner into a fully equipped individual.

In addition to the classroom interaction, the course also aims at language enhancement through various ICT based online and offline activities in the English Language Laboratory. Each Unit is reinforced with Laboratory activities. The College administration will bestow special attention to make the **English Praxis** course an activity oriented one. The innovative methods and creativity of the English faculty will enhance the learners' participation in teaching and learning.

Semester-I English Praxis Course-I : **A Course in Communication and Soft Skills**

Semester-II English Praxis Course -II : **A Course in Reading & Writing Skills**

Semester-III English Praxis Course -III**: A Course in Conversational Skills**

English Syllabus-Semester-I

English Praxis Course-I

A Course in Communication and Soft Skills

Learning Outcomes

By the end of the course the learner will be able to :

- Use grammar effectively in writing and speaking.
- Demonstrate the use of good vocabulary
- Demonstrate an understating of writing skills
- Acquire ability to use Soft Skills in professional and daily life.
- Confidently use the tools of communication skills

I. UNIT: Listening Skills

i. Importance of Listening
ii. Types of Listening
iii. Barriers to Listening
iv. Effective Listening

II. UNIT: Speaking Skills

a. Sounds of English: Vowels and Consonants
b. Word Accent
c. Intonation

III. UNIT: Grammar

a) Concord
b) Modals
c) Tenses (Present/Past/Future)
d) Articles
e) Prepositions
f) Question Tags
g) Sentence Transformation (Voice, Reported Speech & Degrees of Comparison)
h) Error Correction

IV. UNIT: Writing

i. Punctuation
ii. Spelling
iii. Paragraph Writing

V. UNIT: Soft Skills

a. SWOC
b. Attitude
c. Emotional Intelligence
d. Telephone Etiquette
e. Interpersonal Skills

English Syllabus-Semester-II

English Praxis Course-II

A Course in Reading & Writing Skills

Learning Outcomes

By the end of the course the learner will be able to :

- Use reading skills effectively
- Comprehend different texts
- Interpret different types of texts
- Analyse what is being read
- Build up a repository of active vocabulary
- Use good writing strategies
- Write well for any purpose
- Improve writing skills independently for future needs

I. UNIT

Prose	: 1. How to Avoid Foolish Opinions	Bertrand Russell
Skills	: 2. Vocabulary: Conversion of Words	
	: 3. One Word Substitutes	
	: 4. Collocations	

II. UNIT

Prose	: 1. The Doll's House	Katherine Mansfield
Poetry	: 2. Ode to the West Wind	P B Shelley
Non-Detailed Text	: 3. Florence Nightingale	Abrar Mohsin
Skills	: 4. Skimming and Scanning	

III. UNIT

Prose	: 1. The Night Train at Deoli	Ruskin Bond
Poetry	: 2. Upagupta	Rabindranath Tagore
Skills	: 3. Reading Comprehension	
	: 4. Note Making/Taking	

IV. UNIT

Poetry	: 1. Coromandel Fishers	Sarojini Naidu
Skills	: 2. Expansion of Ideas	
	: 3. Notices, Agendas and Minutes	

V.UNIT

Non-Detailed Text	: 1. An Astrologer's Day	R K Narayan
Skills	: 2. Curriculum Vitae and Resume	
	: 3. Letters	
	: 4. E-Correspondence	

English Syllabus-Semester-III

English Praxis Course-III

A Course in Conversational Skills

Learning Outcomes

By the end of the course the learner will be able to :

- Speak fluently in English
- Participate confidently in any social interaction
- Face any professional discourse
- Demonstrate critical thinking
- Enhance conversational skills by observing the professional interviews

I. UNIT

Speech : 1. Tryst with Destiny Jawaharlal Nehru
Skills : 2. Greetings
: 3. Introductions

II. UNIT

Speech : 1. Yes, We Can Barack Obama
Interview : 2. A Leader Should Know How to Manage Failure
Dr.A.P.J.Abdul Kalam/ India Knowledge at Wharton
Skills : 3. Requests

III. UNIT

Interview : 1. Nelson Mandela's Interview With Larry King
Skills : 2. Asking and Giving Information
: 3. Agreeing and Disagreeing

IV. UNIT

Interview : 1. JRD Tata's Interview With T.N.Ninan
Skills : 2. Dialogue Building
: 3. Giving Instructions/Directions

V. UNIT

1. **Speech** : 1. You've Got to Find What You Love Steve Jobs
Skills : 2. Debates
: 3. Descriptions
: 4. Role Play

SUBJECT EXPERTS

Prof. K.Ratna Shiela Mani,
Department of English,
Acharya Nagarjuna University,
Nagarjuna Nagar.

Dr. I. Vijaya Babu,
Principal,
Government Degree College,
S.Kota, Vizianagaram District– 533255

SYLLABUS VETTED BY

Prof. C.L.L.Jayaprada,
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Andhra University,
Visakhapatnam.



ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

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REVISED SYLLABUS OF TELUGU under (Part – I)

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR B.A. /B.Sc./B.Com/BCA/BBM/BHM & CT

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Q.P.)

For Fifteen Courses of 1, 2, 3 Semesters)

(To be Implemented from 2020-21 Academic Year)

TELUGU

Andhra Pradesh State Council of Higher Education
B.A., B.Com., & B.Sc., etc., Programmes

Revised Syllabus under CBCS Pattern
w.e.f. 2020-21

Language Subjects - TELUGU
Revised Syllabus of
GENERAL TELUGU

ఆంధ్ర ప్రదేశ్ రాష్ట్ర ఉన్నత విద్యామండలి

బి.ఎ., బి.కాం., బి.యస్.సి., తదితర ప్రోగ్రాములు

సి.బి.సి.ఎస్.పద్ధతిలో సవరించబడిన పాఠ్యప్రణాళిక

2020-21 విద్యా సంవత్సరం నుంచి

జనరల్ తెలుగు - పాఠ్య ప్రణాళిక

Subject Curricular Framework

Sem	Course	Title	Hrs/Wk	Credits	Max. Marks IA	SE	Total
I	I	Pracheena Telugu Kavithvam	04	03	25	75	100
II	II	Aadhunika Telugu Sahithyam	04	03	25	75	100
III	III	Srujanaathmaka Rachana	04	03	25	75	100

పాఠ్యప్రణాళిక (3 కోర్సులు)

సెమి.	కోర్సు	శీర్షిక	పీరియడ్లు/వారానికి	క్రెడిట్లు	మొత్తం మార్కులు		
I	I	ప్రాచీన తెలుగు కవిత్వం	04	03	25	75	100
II	II	ఆధునిక తెలుగు సాహిత్యం	04	03	25	75	100
III	III	సృజనాత్మక రచన	04	03	25	75	100

బి.ఏ., బి.కాం., బి.యస్‌సి., తదితర ప్రోగ్రాములు

అంశం: జనరల్ తెలుగు సెమిస్టర్-1

కోర్సు-1 : ప్రాచీన తెలుగు కవిత్వం

యూనిట్ల సంఖ్య: 5 పీరియడ్ల సంఖ్య: 60

✦ **అభ్యసన ఫలితాలు:-**

ఈ కోర్సు విజయవంతంగా ముగించాక, విద్యార్థులు క్రింది అభ్యసన ఫలితాలను పొందగలరు.

1. ప్రాచీన తెలుగుసాహిత్యం యొక్క ప్రాచీనతను, విశిష్టతను గుర్తిస్తారు. తెలుగుసాహిత్యంలో ఆదికవి నన్నయ కాలంనాటి భాషాసంస్కృతులను, ఇతిహాసకాలం నాటి రాజనీతి విషయాలపట్ల పరిజ్ఞానాన్ని సంపాదించగలరు.

2. శివకవుల కాలంనాటి మతపరిస్థితులను, భాషావిశేషాలను గ్రహిస్తారు. తెలుగు నుడికారం, సామెతలు, లోకోక్తులు మొదలైన భాషాంశాల పట్ల పరిజ్ఞానాన్ని పొందగలరు.

3. తిక్కన భారతంనాటి మత, ధార్మిక పరిస్థితులను, తిక్కన కవితాశిల్పాన్ని, నాటకీయతను అవగాహన చేసుకోగలరు.

4. ఎఱ్ఱన సూక్తివైచిత్రిని, ఇతిహాస కవిత్వంలోని విభిన్న రీతులపట్ల అభిరుచిని పొందగలరు. శ్రీనాథుని కాలం నాటి కవితావిశేషాలను, మొల్ల కవితా విశిష్టతను గుర్తించగలరు.

5. తెలుగు పద్యం స్వరూప-స్వభావాలను, సాహిత్యాభిరుచిని పెంపొందించుకుంటారు. ప్రాచీన కావ్యభాషలోని వ్యాకరణాంశాలను అధ్యయనం చేయడం ద్వారా భాషాసామర్థ్యాన్ని, రచనల మెళకువలను గ్రహించగలరు.

పాఠ్య ప్రణాళిక

యూనిట్-I

రాజనీతి - నన్నయ

మహాభారతం-సభాపర్వం-ప్రథమాశ్వాసం-(26-57 పద్యాలు)

యూనిట్-II

దక్షయజ్ఞం - నన్నెచోడుడు

కుమారసంభవం-ద్వితీయాశ్వాసం-(49-86 పద్యాలు)

యూనిట్-III

ధౌమ్య ధర్మోపదేశము - తిక్కన

మహాభారతం-విరాటపర్వం-ప్రథమాశ్వాసం-(116-146) పద్యాలు

యూనిట్-IV

పలనాటి బెబ్బులి - శ్రీనాథుడు (పలనాటి వీరచరిత్ర-ద్విపద కావ్యం పుట 108-112
'బాలచంద్రుడు భీమంబగు సంగ్రామం బొనర్చుట.. (108)..
..... వెఱగంది కుంది' (112) సం. అక్కిరాజు ఉమాకాంతం
ముద్రణ.వి.కె.స్వామి, బెజవాడ 1911.

యూనిట్-V

సీతారావణ సంవాదం - మొల్ల

రామాయణము-సుందరకాండము-(40-87 పద్యాలు)

✦వ్యాకరణం

సంధులు: ఉత్వ, త్రిక, ద్రుతప్రకృతిక, ముగాగమ, ద్విరుక్తటకారాదేశ, యణాదేశ, వృద్ధి, శ్చుత్వ, జశ్త్వ, అనునాసిక సంధులు.

సమాసాలు: అవ్యయీభావ, తత్పురుష, కర్మధారయ, ద్వంద్వ, ద్విగు, బహువ్రీహి.

అలంకారాలుః

అర్థాలంకారాలు ः ఉపమ, ఉత్ప్రేక్ష, రూపక, స్వభావోక్తి, అర్థాంతరవ్యాస, అతిశయోక్తి.

శబ్దాలంకారాలు ः అనుప్రాస (వృత్యనుప్రాస, ఛేకామప్రాస లాటానుప్రాస, అంత్యానుప్రాస)

ఛందస్సు

వృత్తాలు: ఉత్పలమాల, చంపకమాల, శార్దూలము, మత్తేభము;

జాతులు : కందం, ద్విపద; ఉపజాతులు : ఆటవెలది, తేటగీతి, సీసం మరియు ముత్యాలసరాలు

CHAIRMAN
Telugu B.O.S.

ఆధార గ్రంథాలు:

1. శ్రీమదాంధ్ర మహాభారతము : సభాపర్వము-తిరుమల తిరుపతి దేవస్థానం ప్రచురణ
2. శ్రీమదాంధ్ర మహాభారతము : విరాటపర్వము-తిరుమల తిరుపతి దేవస్థానం ప్రచురణ
3. కుమార సంభవం - నన్నెచోడుడు
4. పలనాటి వీరచరిత్ర - శ్రీనాథుడు
5. రామాయణము - మొల్ల

✦ **సూచించబడిన సహపాఠ్య కార్యక్రమాలు:**

1. నన్నయ్య, తిక్కన, ఎఱ్ఱన మొదలైన ప్రసిద్ధ కవుల పాఠ్యాంశేతర పద్యాలను ఇచ్చి, విద్యార్థులచేత సమీక్షలు రాయించడం; ఆయా పద్యాల్లోని యతిప్రాసాది ఛందోవిశేషాలను గుర్తింపజేయడం.
2. విద్యార్థులచేత పాఠ్యాంశాలకు సంబంధించిన వ్యాసాలు రాయించడం (సెమినార్/అసైన్‌మెంట్)
3. ప్రాచీన పాఠ్యాంశాలలోని సమకాలీనతను గూర్చిన బృంద చర్చ, ప్రాచీన సాహిత్యాన్ని నేటి సామాజిక దృష్టితో పునర్మూల్యాంకనం చేయించడం.
4. చారిత్రిక, సాంస్కృతిక అంశాలకు సంబంధించిన పర్యాటక ప్రదేశాలను సందర్శించడం.
5. వ్యక్తిగత/బృంద ప్రాజెక్టులు చేయించడం. ప్రశ్నాపత్ర నిర్మాతలకు సూచనలు ప్రతిపదార్థ పద్యాలు, కంఠస్థ పద్యాలు "రాజనీతి, దక్షయజ్ఞం, ధౌమ్య ధర్మోపదేశం, సీతారావణ సంవాదం" అనే నాలుగు పాఠ్యాంశాల నుండి మాత్రమే ఇవ్వాలి.

ప్రశ్నాపత్ర నమూనా

అ. ప్రతిపదార్థ పద్యాలు-(అంతర్గత ఛాయిస్)	(2-1)	1×8=8 మా
ఆ. కంఠస్థ పద్యం-(అంతర్గత ఛాయిస్)	(2-1)	1×3=3 మా
ఇ. సందర్భ వాక్యాలు-	(6-4)	4×3=12 మా
ఈ. సంగ్రహ సమాధాన ప్రశ్నలు	(6-4)	4×3=12 మా
ఉ. వ్యాస ప్రశ్నలు (అంతర్గత ఛాయిస్)	(6-3)	3×8=24 మా
ఊ. వ్యాకరణం-సంధులు	(6-4)	4×1=4 మా
సమాసాలు	(6-4)	4×1=4 మా
అలంకారాలు	(2-1)	1×4=4 మా
ఛందస్సు	(2-1)	1×4=4 మా

B. A. S. Telugu
(CHAIRMAN)

బి.ఏ., బి.కాం., బి.యస్‌సి., తదితర ప్రోగ్రాములు

అంశం: జనరల్ తెలుగు **సెమిస్టర్-2**

కోర్సు-2 : ఆధునిక తెలుగు సాహిత్యం

యూనిట్ల సంఖ్య:5 **పీరియడ్ల సంఖ్య:60**

✦ **అభ్యసన ఫలితాలు:-**

ఈ కోర్సు విజయవంతంగా ముగించాక, విద్యార్థులు క్రింది అభ్యసన ఫలితాలను పొందగలరు.

1. ఆంగ్లభాష ప్రభావం కారణంగా తెలుగులో వచ్చిన ఆధునిక సాహిత్యాన్ని, దాని విశిష్టతను గుర్తిస్తారు.

2. సమకాలీన ఆధునిక సాహిత్య ప్రక్రియలైన "వచన కవిత్వం, కథ, నవల, నాటకం, విమర్శ"లపై అవగాహన పొందుతారు.

3. భావకవిత, అభ్యుదయ కవితాలక్ష్యాలను గూర్చిన జ్ఞానాన్ని పొందుతారు.అస్తిత్వవాద ఉద్యమాలపుట్టుకను, ఆవశ్యకతను గుర్తిస్తారు.

4. కథాసాహిత్యం ద్వారా సామాజిక చైతన్యాన్ని పొందుతారు. సిద్ధాంతాల ద్వారా కాకుండా, వాస్తవ పరిస్థితులను తెలుసుకోవడం ద్వారా సిద్ధాంతాన్ని సమీక్షించగలరు.

5. ఆధునిక తెలుగు కల్పనాసాహిత్యం ద్వారా సామాజిక, సాంస్కృతిక,రాజకీయ చైతన్యాన్ని పొందుతారు.

CHAIRMAN
TELUGU B.O.S.

పాఠ్య ప్రణాళిక

యూనిట్-I : ఆధునిక కవిత్వం

1. ఆధునిక కవిత్వం- పరిచయం
2. కొండవీడు - దువ్వూరి రామిరెడ్డి
   ('కవికోకిల' గ్రంథావళి-ఖండకావ్యాలు-నక్షత్రమాల సంపుటి నుండి)
3. మాతృసంగీతం - అనిసెట్టి సుబ్బారావు ('అగ్నివీణ' కవితాసంపుటి నుండి)
4. 'తాతకో నూలుపోగు' - బండారు ప్రసాదమూర్తి ('కలనేత' కవితాసంపుటి నుండి)

యూనిట్-II : కథానిక

5. తెలుగు కథానిక - పరిచయం
6. భయం (కథ) - కాళీపట్నం రామారావు
7. స్వేదం ఖరీదు....? - (కథ) - రెంటాల నాగేశ్వరరావు

యూనిట్-III : నవల

8. తెలుగు 'నవల' - పరిచయం
9. రథచక్రాలు (నవల) - మహీధర రామ్మోహన రావు (సంక్షిప్త ఇతివృత్తం మాత్రం)
10. రథచక్రాలు (సమీక్షా వ్యాసం) - డా॥ యల్లాప్రగడ మల్లికార్జునరావు

యూనిట్-IV: నాటకం

11. తెలుగు 'నాటకం' - పరిచయం
12. యక్షగానము (నాటిక) - ఎం.వి.ఎస్. హరనాథరావు.
13. "అపురూప కళారూపాల విధ్వంసదృశ్యం 'యక్షగానము' (సమీక్షా వ్యాసం)"
    -డా॥కందిమళ్ళసాంబశివరావు

యూనిట్-V: విమర్శ

14. తెలుగు సాహిత్య విమర్శ - పరిచయం
15. విమర్శ-స్వరూప స్వభావాలు; ఉత్తమ విమర్శకుడు-లక్షణాలు

Chairman
B.O.S

ఆధార గ్రంథాలు/వ్యాసాలు:

1. ఆధునిక కవిత్వం-పరిచయం : చూ. 'దృక్పథాలు' పుట 1-22, ఆచార్య ఎస్వీ. సత్యనారాయణ
2. తెలుగు కథానిక-పరిచయం : చూ. మన నవలలు-మన కథానికలు, పుట 118-130, ఆచార్య రాచపాళెం చంద్రశేఖర రెడ్డి
3. తెలుగు నవల-పరిచయం : చూ. నవలాశిల్పం, పుట 1-17, వల్లంపాటి వెంకటసుబ్బయ్య
4. తెలుగు నాటకం-పరిచయం : చూ. తెలుగు నాటకరంగం, పుట 17-25 ఆచార్య ఎస్.గంగప్ప
5. తెలుగుసాహిత్య విమర్శ-పరిచయం: చూ.తెలుగుసాహిత్య విమర్శ-నాడు,నేడు పుట 213-217 తెలుగువాణి, అయిదవ అఖిలభారత తెలుగు మహాసభల ప్రత్యేక సంచిక ఆచార్య జి.వి.సుబ్రహ్మణ్యం
6. నూరేళ్ళ తెలుగు నాటక రంగం - ఆచార్య మొదలి నాగభూషణశర్మ
7. నాటకశిల్పం - ఆచార్య మొదలి నాగభూషణశర్మ
8. సాంఘిక నవల-కథన శిల్పం - ఆచార్య సి.మృణాళిని.

✦ **సూచించబడిన సహపాఠ్య కార్యక్రమాలు:**

1. ఆధునిక కవిత్వానికి సంబంధించిన కొత్త కవితలను/అంశాలను ఇచ్చి, విద్యార్థులచేత వాటిమీద అసైన్‌మెంట్లు రాయించడం
2. పాఠ్యాంశాలకు సంబంధించిన విషయాలపై వ్యాసాలు రాయించడం (సెమినార్/అసైన్‌మెంట్)
3. తెలుగు సాహిత్యంలోని ప్రసిద్ధ కథలపై, కవితలపై సమీక్షలు రాయించడం.
4. ఆధునిక పద్యనిర్మాణ రచన చేయించడం.
5. విద్యార్థులను బృందాలుగా విభజించి, నాటకలపై/నవలలపై సమీక్షలు రాయించడం.
6. సాహిత్యవ్యాసాలు సేకరించడం, బృందచర్చ నిర్వహించడం, క్షేత్రపర్యటనలు.
7. ప్రసిద్ధుల విమర్శావ్యాసాలు చదివించి, వాటిని విద్యార్థుల సొంత మాటల్లో రాయించడం.
8. పాఠ్యాంశాలపై స్వీయ విమర్శావ్యాసాలు రాయించడం.

✦ప్రశ్నాపత్ర నమూనా ✦

అ-విభాగము

సంక్షిప్త సమాధాన ప్రశ్నలు - ప్రతి యూనిట్ నుంచి తప్పనిసరిగా ఒక ప్రశ్న ఇస్తూ, మొత్తం ఎనిమిది ప్రశ్నలు ఇచ్చి, ఐదింటికి సమాధానం రాయమనాలి. 5×5=25 మా.

ఆ-విభాగము

వ్యాసరూప సమాధాన ప్రశ్నలు-ప్రతి యూనిట్ నుంచి తప్పనిసరిగా రెండు ప్రశ్నలు ఇచ్చి ఒక ప్రశ్నకు సమాధానం రాయమనాలి. మొత్తం ప్రశ్నలు 5. 5×10=50 మా.

✦ మాదిరి ప్రశ్నాపత్రం ✦

అ-విభాగము

క్రింది వానిలో ఐదింటికి సంక్షిప్త సమాధానాలు రాయండి.

ప్రతి సమాధానానికి 5 మార్కులు. 5×5=25 మా.

1. కొండవీడు
2. తెలుగు నవల
3. తెలుగు నాటకం
4. ఆధునిక కవిత్వం
5. కథానిక
6. విమర్శ
7. అనిసెట్టి సుబ్బారావు
8. కాళీపట్నం రామారావు

ఆ-విభాగము

క్రింది వానిలో అన్ని ప్రశ్నలకు సమాధానాలు రాయండి.

ప్రతి సమాధానానికి 10 మార్కులు. 5×10=50 మా.

9. ఆధునిక కవిత్వ ఆవిర్భావ వికాసాలను వివరించండి.

(లేదా)

కొండవీడులో దువ్వూరి రామిరెడ్డి గారి సందేశాన్ని వివరించండి.

10. తెలుగు కథానికను పరిచయం చేయండి.

(లేదా)

భయం కథలోని రచయిత సందేశాన్ని రాయండి.

11. సాహిత్య ప్రక్రియగా నవల స్థానాన్ని విమర్శించండి.

(లేదా)

రథచక్రాలు నవలలోని ఇతివృత్తాన్ని విశ్లేషించండి.

12. తెలుగు నాటక పరిణామాన్ని గూర్చి రాయండి.

(లేదా)

యక్షగానం నాటికపై సమీక్షా వ్యాసం రాయండి.

13. తెలుగు సాహిత్య విమర్శను పరిచయం చేయండి

(లేదా)

విమర్శ స్వరూప స్వభావాలను వివరిస్తూ, ఉత్తమ విమర్శకుని లక్షణాలను రాయండి.

Chairman
Tel B.O.S.

బి.ఏ., బి.కాం., బి.యస్‌సి., తదితర ప్రోగ్రాములు

అంశం: జనరల్ తెలుగు సెమిస్టర్-3

కోర్సు-3 : సృజనాత్మక రచన

యూనిట్ల సంఖ్య:5 పీరియడ్ల సంఖ్య:60

✦ **అభ్యసన ఫలితాలు:-**

ఈ కోర్సు విజయవంతంగా ముగించాక, విద్యార్థులు క్రింది అభ్యసన ఫలితాలను పొందగలరు.

1. తెలుగు సాహిత్య అభ్యసన ద్వారా నేర్చుకున్న నైపుణ్యాలను, సృజనాత్మక నైపుణ్యాలుగా మార్చుకోగలరు.
2. విద్యార్థులు భాషాతత్వాన్ని, భాష యొక్క ఆవశ్యకతను, భాష యొక్క ప్రాధాన్యాన్ని గుర్తిస్తారు. మనిషి వ్యక్తిగత జీవనానికి, సామాజికవ్యవస్థ పటిష్టతకు భాష ప్రధానమని తెలుసుకుంటారు. తెలుగుభాషలోని కీలకాంశాలైన 'వర్ణం-పదం-వాక్యా'ల ప్రాధాన్యాన్ని గుర్తిస్తూ, వాగ్రూప- లిఖితరూప వ్యక్తీకరణ ద్వారా భాషానైపుణ్యాలను మెరుగుపరచుకోగలరు.
3. భాషానైపుణ్యాలను అలవరచుకోవడంతోపాటు వినియోగించడం నేర్చుకుంటారు. రచనా, భాషణానైపుణ్యాలను సృజనాత్మక రూపంలో వ్యక్తీకరించగలరు.
4. ప్రాచీన పద్యరచనతో పాటు ఆధునిక కవిత, కథ, వ్యాసం, మొదలైన సాహిత్యప్రక్రియల నిర్మాణాలకు సంబంధించిన సిద్ధాంతవిషయాలను నేర్పడంతో పాటు వారిలో రచనా నైపుణ్యాలను పెంపొందించుకోగలరు.
5. సృజన రంగం, ప్రసారమాధ్యమ రంగాల్లో ఉపాధి అవకాశాలను అందిపుచ్చుకోగలరు.
6. అనువాద రంగంలో నైపుణ్యం సంపాదించగలరు.

CHAIRMAN
B.O.S. Telugu.

పాఠ్య ప్రణాళిక

యూనిట్-I: వ్యక్తీకరణ నైపుణ్యాలు

1. భాష-ప్రాథమికాంశాలు: భాష-నిర్వచనం, లక్షణాలు, ఆవశ్యకత, ప్రయోజనాలు
2. వర్ణం-పదం-వాక్యం', వాక్య లక్షణాలు, సామాన్య-సంయుక్త-సంశ్లిష్టవాక్యాలు
3. భాషా నిర్మాణంలో 'వర్ణం-పదం-వాక్యం' ప్రాధాన్యత

యూనిట్-II సృజనాత్మక రచన

4. కవితా రచన : ఉత్తమ కవిత - లక్షణాలు
5. కథారచన : ఉత్తమ కథ - లక్షణాలు
6. వ్యాస రచన : ఉత్తమ వ్యాసం-లక్షణాలు

యూనిట్-III: అనువాద రచన

7. అనువాదం-నిర్వచనం, అనువాద పద్ధతులు,
8. అనువాద సమస్యలు-భౌగోళిక,భాషా,సాంస్కృతిక సమస్యలు, పరిష్కారాలు
9. అభ్యాసము : ఆంగ్లం నుండి తెలుగుకు,తెలుగు నుండి ఆంగ్లానికి ఒక పేరానుఅనువదించడం

యూనిట్ IV మాధ్యమాలకు రచన-1 (ముద్రణామాధ్యమం/ప్రింట్ మీడియా)

10. ముద్రణామాధ్యమం (అచ్చుమాధ్యమం) : పరిచయం, పరిధి, వికాసం
11. వివిధ రకాల పత్రికలు-పరిశీలన, పత్రికాభాష, శైలి, వైవిధ్యం
12. పత్రికా రచన : వార్తా రచన, సంపాదకీయాలు, సమీక్షలు-అవగాహన

యూనిట్ V మాధ్యమాలకు రచన-2 (ప్రసార మాధ్యమం/ఎలక్ట్రానిక్ మీడియా)

13. ప్రసారమాధ్యమాలు : నిర్వచనం, రకాలు, విస్తృతి, ప్రయోజనాలు
14. శ్రవణ మాధ్యమాలు - రచన: రేడియో రచన, ప్రసంగాలు, నాటికలు, ప్రసార సమాచారం
15. దృశ్యమాధ్యమాలు - రచన: వ్యాఖ్యానం (యాంకరింగ్), టెలివిజన్ రచన

ఆధార గ్రంథాలు/వ్యాసాలు:

1. వ్యక్తీకరణ నైపుణ్యాలు – చూ. 1. ఆధునిక భాషాశాస్త్ర సిద్ధాంతాలు–ఆచార్య పి.ఎస్.సుబ్రహ్మణ్యం
   2. తెలుగు భాషా చరిత్ర – సం.ఆచార్య భద్రిరాజు కృష్ణమూర్తి
   3. తెలుగు వాక్యం – డా. చేకూరి రామారావు
2. ఉత్తమ కవిత–లక్షణాలు – చూ. నవ్యకవిత్వ లక్షణములు– ఆచార్య సి.నారాయణరెడ్డి
   ఆధునికాంధ్ర కవిత్వము–సంప్రదాయములు, ప్రయోగములు: చతుర్థ ప్రకరణము.
3. ఉత్తమ కథ–లక్షణాలు – చూ.కథాశిల్పం–వల్లంపాటి వెంకటసుబ్బయ్య, పుటలు 11–17
4. ఉత్తమ వ్యాసం–లక్షణాలు– చూ.చదువు–సంస్కృతి (వ్యాసం) – కొడవటిగంటి కుటుంబరావు
5. అనువాద రచన – చూ.1. అనువాద సమస్యలు – రాచమల్లు రామచంద్రారెడ్డి
   పుటలు 61–75, 85–94
   2. అనువాదన పద్ధతులు ఆచరణ సమస్యలు–చేకూరి రామారావు
   "భాషాంతరంగం", పుటలు 130–146, తెలుగు విశ్వవిద్యాలయం ప్రచురణ
6. ముద్రణా మాధ్యమం – చూ. మాధ్యమాలకు రచన, పుటలు 9–12
   – డా॥ బి.ఆర్.అంబేద్కర్ విశ్వవిద్యాలయ ప్రచురణ
7. పత్రికా భాష – చూ. మాధ్యమాలకు రచన, పుటలు 67–74
   – డా॥ బి.ఆర్.అంబేద్కర్ విశ్వవిద్యాలయ ప్రచురణ
8. పత్రికా రచన – చూ. తెలుగు– మౌలికాంశాలు, పుటలు 59–69
   – డా॥ బి.ఆర్.అంబేద్కర్ విశ్వవిద్యాలయ ప్రచురణ
9. ప్రసార మాధ్యమాలు – చూ. మాధ్యమాలకు రచన, పుటలు 3-10
   – డా॥ బి.ఆర్.అంబేద్కర్ విశ్వవిద్యాలయ ప్రచురణ
10. రేడియో రచన – చూ.మాధ్యమాలకు రచన, పుటలు 141-148
    – డా॥ బి.ఆర్.అంబేద్కర్ విశ్వవిద్యాలయ ప్రచురణ
11. వ్యాఖ్యానం (యాంకరింగ్) – చూ.మాధ్యమాలకు రచన, పుటలు 178-181
    – డా॥ బి.ఆర్.అంబేద్కర్ విశ్వవిద్యాలయ ప్రచురణ
12. టెలివిజన్ రచన – చూ.మాధ్యమాలకు రచన, పుటలు 153-160
    – డా॥ బి.ఆర్.అంబేద్కర్ విశ్వవిద్యాలయ ప్రచురణ
13. తెలుగు జర్నలిజం – డా॥ బూదరాజు రాధాకృష్ణ



సూచించబడిన సహపాఠ్య కార్యక్రమాలు

1. భాషాంశాలపై, వాక్య నిర్మాణంపై అసైన్‌మెంట్లు రాయించడం, పత్రికల్లోని సాహిత్య/భాషాంశాలను సేకరింపజేయడం.
2. విద్యార్థులచేత తెలుగుభాషా సాహిత్యాలపై ప్రసంగవ్యాసం ఇప్పించడం (సెమినార్/ అసైన్‌మెంట్)
3. వ్యాసరచన, లేఖారచన, స్వీయకవితలు రాయించి, తరగతిలో చదివింపచేయడం మొదలైనవి.
4. వివిధ కార్యక్రమాల్లో విద్యార్థులచేత సదస్సు నిర్వహణ, వ్యాఖ్యానం (యాంకరింగ్) చేయించడం.
5. సమకాలీన భాషాసమస్యలపై / ఉద్యమాలపై/సాంఘిక సమస్యలపై 'బృందచర్చ' (Group Discussion) నిర్వహింపచేయడం.
6. తెలుగుభాషా దినోత్సవం/అంతర్జాతీయ మాతృభాషా దినోత్సవం మొదలైన రోజుల్లో జరిగే సాంస్కృతిక కార్యక్రమాలు విద్యార్థులచేత నిర్వహింపజేయడం, వాటిపై సమీక్షలు/పత్రికా ప్రకటనలు రాయించడం.
7. సమకాలీన సంఘటనలపై సామాజిక మాధ్యమాల్లో/ టి.వి.ల్లో జరిగే చర్చలను నమోదు చేయించి సంకలనం చేయడం.
8. సాంస్కృతిక / చారిత్రక ప్రాశస్త్యం కలిగిన కట్టడాలు , దేవాలయాలు, కళానిలయాలను 'బృందపర్యటన/ క్షేత్ర పర్యటన' ద్వారా విద్యార్థులచేత సందర్శింపజేయడం.

✦ప్రశ్నాపత్ర నమూనా ✦

అ-విభాగము

సంక్షిప్త సమాధాన ప్రశ్నలు - ప్రతి యూనిట్ నుంచి తప్పనిసరిగా ఒక ప్రశ్న ఇస్తూ, మొత్తం ఎనిమిది ప్రశ్నలు ఇచ్చి, ఐదింటికి సమాధానం రాయమనాలి. 5×5=25 మా.

ఆ-విభాగము

వ్యాసరూప సమాధాన ప్రశ్నలు-ప్రతి యూనిట్ నుంచి తప్పనిసరిగా రెండు ప్రశ్నలు ఇచ్చి ఒక ప్రశ్నకు సమాధానం రాయమనాలి. మొత్తం ప్రశ్నలు 5. 5×10=50 మా.



✦ మాదిరి ప్రశ్నాపత్రం ✦

అ-విభాగము

క్రింది వానిలో ఐదింటికి సంక్షిప్త సమాధానాలు రాయండి. 8వ ప్రశ్నకు తప్పనిసరిగా సమాధానం రాయాలి. ప్రతి సమాధానానికి 5 మార్కులు. 5×5=25 మా.

1. భాష-ప్రయోజనాలు 2. వాక్యం-లక్షణాలు 3. టెలివిజన్ రచన 4. రేడియో రచన
5. ఉత్తమ వ్యాసం-లక్షణాలు 6. సంశ్లిష్ట వాక్యం 7. సంపాదకీయాలు
8. క్రింది అంశాన్ని తెలుగులోకి అనువదించి రాయండి.

To many, Indian thought, Indian manners, Indian customs, Indian Philoshophy, Indian Literature are repulsive at the first sight; but let them preservere, let them read, let them become familiar with the great principles underlying these ideas, and it is ninety-nine to one that the charm will come over them, and fascination will be the result. Slow and silent, as the gentle dew that falls in the morning, unseen and unheard yet producing, a most tremendous result, has been the work of the calm, patient, all-suffering spiritual race upon the World of thought.

ఆ-విభాగము

క్రింది వానిలో అన్ని ప్రశ్నలకు సమాధానాలు రాయండి.
ప్రతి సమాధానానికి 10 మార్కులు. 5×10=50 మా.

9. భాషానిర్మాణంలో 'వర్ణం-పదం-వాక్యా'ల ప్రాధాన్యతను వివరించండి. (లేదా)
   భాషను నిర్వచించి, లక్షణాలు రాసి, ప్రామాణిక భాషను పరిచయం చేయండి.
10. ఉత్తమ కవితా లక్షణాలను విశ్లేషించండి.
   (లేదా)
   ఉత్తమ కథా లక్షణాలను వివరించండి.
11. అనువాద సమస్యలను, వాటి పరిష్కారాలను గూర్చి రాయండి.
   (లేదా)
   అనువాద లక్షణాలను వివరిస్తూ, అనువాద పద్ధతులను గురించి రాయండి.
12. ముద్రణా మాధ్యమాన్ని పరిచయం చేస్తూ; దాని పరిధి, వికాసాలను వివరించండి.
   (లేదా)
   పత్రికా రచనను గురించి విశ్లేషణాత్మక వ్యాసం రాయండి.
13. ప్రసార మాధ్యమాల విస్తృతి, ప్రయోజనాలను సమీక్షించండి.
   (లేదా)
   యాంకరింగ్ నిర్వహణ, తీరుతెన్నులను వివరించండి.

Hindi Syllabus for B.A, B.Con, B.Sc. First Semester.

1- गद्य संदेश (Prose)

1- साहित्य की महत्ता - महावीर प्रसाद द्विवेदी
2- सच्ची वीरता - सरदार पूर्णसिंह
3- मित्रता - आचार्य रामचंद्र शुक्ल

2- कथालोक (Short Stories)

1- मुक्तिधन. - मुन्शी प्रेमचंद
2- पुरस्कार - जयशंकर प्रसाद
3- उसने कहा था -चन्द्रधर शर्मा गुलेरी

3- व्याकरण (Grammar)

1- लिंग , वचन , शब्द. , काल. ,वाच्य. , वाक्यों की शुद्धि , शब्द- विलोम. ,अंग्रेजी - हिन्दी पारिभाषिक शब्द- सूची

4- कार्यालयीन हिन्दी (Official Language)

1- कार्यालयीन हिन्दी
2- शब्दावली

5- पत्र- लेखन (Letter Writing)

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Hindi Syllabus for B.A. ,B.Com. ,B.Sc. Second Semester.

1- गद्य संदेश (Prose)

1- साहित्य और संस्कृति का परस्पर संबंध - डॉ जी सुन्दर रेड्डी

2- भारत एक है - रामधारी सिंह दिनकर

3- एच. आई. वी / एड्स -प्रकाश भातल खंडे
एवं डॉ रमण गंगा खडेकर
अनुवाद - श्रीमती साधना मौर्या

2- कथालोक (Short Stories)

1- वापसी - उषा प्रियंवदा

2- भूख हड़ताल- बालशौरि रेड्डी

3- परमात्मा का कुत्ता- मोहन राकेश

व्याकरण (Grammar)

1- कार्यालयी हिन्दी शब्दावली अंग्रेजी- हिन्दी

2-कार्यालयों में प्रयोग होने वाले हिन्दी- अंग्रेजी शब्द

3- वाक्यांश अंग्रेजी- हिन्दी शब्दों का वाक्य में प्रयोग

4- सन्धि- विच्छेद

5- पत्र-लेखन

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Hindi Syllabus for B.A. ,B.Com., B.Sc. Third Semester.

UNIT-I

1- काव्यदीप (Ancient and modern Poetry)

१- कबीर दास - साखी - 2-20 1-10

२ सूरदास का बाल वर्णन - 2 छंद 1-10

३- मातृभूमि - मैथिलीशरण गुप्त

४- तोड़ती पत्थर - सूर्यकांत त्रिपाठी 'निराला'

५-देश कागज पर बना नक्शा नहीं है- सर्वेश्वर दयाल सक्सेना उपरोक्त दोनों के पहले-आधार पर

UNIT-II

2- हिन्दी साहित्य का इतिहास (History of Hindi literature)

१- भक्तिकाल

२-ज्ञानाश्रयी शाखा - कबीर

३-प्रेमाश्रयी शाखा - जायसी

UNIT-III

3-साधारण निबंध (General Essays)

१- समाचार पत्र

२- बेकारी की समस्या

३-कम्प्यूटर

४- पर्यावरण और प्रदूषण

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५- साहित्य और समाज

UNIT- |V

4- अनुवाद. (Translation)

१-अनुवाद अभ्यास - अंग्रेजी से हिन्दी
(Four or five lines) Sentence 10 out of five

UNIT- V

5- प्रयोजनमूलक हिन्दी (Functional Hindi)

१- परिपत्र

२-कार्यालय ज्ञापन

३- अधिसूचना

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ACHARYA NAGARJUNA UNIVERSITY

Hindi Syllabus from the Academic Year 2020-21

B.A., B.Com., BBA & B.Sc. FIRST YEAR SEMESTER - I

SECOND LANGUAGE - HINDI

PROSE - 1) GADYA SANDESH - V.L. Narasimha Sinha

2) KATHALOK - Dr. Ghanshyam

Unit-I : गद्य संदेश (Prose)

1. साहित्य की महत्ता – महावीर प्रसाद द्विवेदी
2. मित्रता – आचार्य रामचंद्र शुक्ल
3. वही की वही बात – रमेश बख्शी

Unit-II : कथा लोक (Short Stories)

1. मुक्तिधन – मुन्शी प्रेमचंद
2. उसने कहा था – चन्द्रधर शर्मा गुलेरी
3. पुरस्कार – जयशंकर प्रसाद

Unit-III : अनुवाद (Translation)

कार्यालयीन शब्दावली (Official Terminology)

प्रशासनिक शब्दावली (Administrative Terminology)

(अंग्रेजी से हिन्दी में - English to Hindi)

Unit-IV : व्याकरण (Grammar)

1. लिंग, वचन, काल, वाच्य, कारक
2. विलोम शब्द
3. शब्दों का वाक्यों में प्रयोग

Unit - V : पत्र लेखन (Letter Writing): वैयक्तिक पत्र (Personal letters)

1. हिन्दी सीखने की आवश्यकता को बताते हुए छोटी बहन के नाम पर पत्र।
2. विहार यात्रा का वर्णन करते अपने मित्र के नाम पत्र।
3. शुल्क भरने के लिए पैसे भेजने अपने पिता के नाम पत्र।

Dr. G. VIJAYA RATNA KUMAR

ACHARYA NAGARJUNA UNIVERSITY
MODEL QUESTION PAPER (नमूना प्रश्न पत्र)
B.A., B.Com., BBA & B.SC. - FIRST YEAR - SEMESTER - I
(From the Academic Year 2020-21)
GENERAL HINDI - I

Time : 3 Hrs Maximum Marks : 75

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1. **निम्न लिखित गद्यांशों में से किन्हीं दो की संदर्भ सहित व्याख्या कीजिए। (2x6=12)**
   a) ज्ञान –राशि के संचित कोष ही का नाम साहित्य है।
   b) विश्वास पात्र मित्र जीवन की एक औषधि है।
   c) पेट का सवाल है बाबूजी – वह बेहद धीमि आवाज में बोला सामने का थीयेटर वाला इस थीयेटर में हल्ला मचा देने का डेढ़ रूपया रोज देता है।
   d) साहित्य में जो शक्ति छिपी रहती है, वह तोप, तलवार और बम के गोलों में भी नहीं पाई जाती।

2. **किसी एक पाठ का सारांश लिखिए। (1x12=12)**
   a) मित्रता b) साहित्य की महत्ता

3. a) **निम्न लिखित में से किसी एक कहानी का सारांश लिखिए। (1x10=10)**
   a) उसने कहा था b) मुक्तिधन

   b) **निम्न लिखित में से किसी एक प्रश्न का उत्तर लिखिए। (1x8=8)**
   a) रहमान का चरित्र चित्रण कीजिए।
   b) पुरस्कार कहानी का उद्देश्य लिखिए।

4. a) **निम्न लिखित पाँच शब्दों के समानार्थक हिन्दी शब्द लिखिए। (5x2=10)**
   i) Editor ii) Chief Minister iii) Governor iv) Collector v) Circular
   vi) Grant vii) Order viii) Translator ix) Minister x) Finance

   b) **सूचना के अनुसार वाक्यों को बदलकर पुनः लिखिए। (5x1=5)**
   i) अभिनेता अभिनय करता है। (लिंग बदलिए)
   ii) मेज़ पर पुस्तक है। (वचन बदलिए)
   iii) लक्ष्मी गाती है। (भूतकाल में बदलिए)
   iv) मैं नहीं जाता हूँ। (वाच्य बदलिए)
   v) राधा __ पति का नाम बताओ। (कारक चिन्ह लिखिए)

   c) **किन्हीं पाँच शब्दों के विलोम शब्द लिखिए। (5x1=5)**
   i) ऊँच ii) आकाश iii) जीत iv) दिन v) गुण
   vi) पाप vii) मूर्ख viii) विष ix) गुप्त x) अपना

   d) **किन्हीं पाँच शब्दों का अपने वाक्यों में प्रयोग कीजिए। (5x1=5)**
   i) अजनबी ii) अनपढ़ iii) संघर्ष iv) जीवन v) विचार
   vi) विश्वास vii) साहित्य viii) संबंध ix) ज्ञान x) राशि

5. **किसी एक विषय पर पत्र लिखिए। (1x8=8)**
   a) हिन्दी सीखने की आवश्यकता को बताते हुए छोटी बहन के नाम पर पत्र लिखिए।
   b) विहार यात्रा का वर्णन करते अपने मित्र के नाम पत्र लिखिए।

* * *

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Nagarjuna Nagar-522 510.

ACHARYA NAGARJUNA UNIVERSITY

Hindi Syllabus from the Academic Year 2020-21

B.A., B.Com., BBA & B.Sc. FIRST YEAR SEMESTER - II

SECOND LANGUAGE - HINDI

PROSE - 1) GADYA SANDESH - V.L. Narasimha Sinha

2) KATHALOK - Dr. Ghanshyam

Unit-I : गद्य संदेश (Prose) :

1. भारत एक है – रामधारी सिंह 'दिनकर'
2. बेईमानी की परत – हरिशंकर परसाई
3. एच.आई.वी. / एड्स – डॉ. प्रकाश भातल बंडे

Unit-II : कथा लोक (Short Stories) :

1. भूख हड़ताल – श्री बालशौरी रेड्डी
2. परमात्मा का कुत्ता – मोहन राकेश
3. वापसी – उषा प्रियंवदा

Unit-III : अनुवाद (Translation)

कार्यालयीन हिन्दी (Functional Hindi)

प्रशासनिक शब्दावली (Administrative Terminology)

(हिन्दी से अंग्रेजी में) (Hindi to English)

Unit-IV : व्याकरण (Grammar)

1. वाक्यों को शुद्ध कीजिए
2. संधि विच्छेद
3. शब्दों का वाक्यों में प्रयोग

Unit - V : पत्र लेखन (Letter Writing) : शिकायती, आवेदन पत्र

1. नौकरी के लिए आवेदन पत्र।
2. नगर पालिका के अधिकारी के नाम शिकायती पत्र।
3. पुस्तक विक्रेता के नाम पर पत्र।

Dr. G. VIJAYA RATNA KUMARI
CHAIRMAN
Board of Studies, Hindi & Urdu (U.G)
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ACHARYA NAGARJUNA UNIVERSITY
MODEL QUESTION PAPER (नमूना प्रश्न पत्र)
B.A., B.Com., BBA & B.Sc. - FIRST YEAR - SEMESTER - II
(From the Academic Year 2020-21)
GENERAL HINDI - II

Time : 3 Hrs Maximum Marks : 75

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1. **निम्न लिखित गद्यांशों में से किन्हीं दो की संदर्भ सहित व्याख्या कीजिए।** **(2x6=12)**
   a) कहते हैं पहले पहल अगस्त्य ऋषि ने विंध्याचल को पार करके दक्षिण के लोगों को अपना संदेश सुनाया था।
   b) इन रोगों के लिए समाज में नियमित और आवश्यक रूप से जागरूकता अभियान चलाने की आवश्यकता है।
   c) ग्लानी से दुबला होने में देर लगती है और पानीदार भी दुबला हो जाता है।
   d) भाषा भेद की समस्या एकता की समस्या है।

2. **किसी एक गद्य पाठ का सारांश लिखिए।** **(1x12=12)**
   a) भारत एक है। b) बेईमानी की परत

3. a) **निम्न लिखित कहानियों में से किसी एक का सारांश लिखिए।** **(1x10=10)**
   a) भूख हड़ताल b) वापसी

   b) **निम्न लिखित में से किसी एक प्रश्न का उत्तर लिखिए।** **(1x8=8)**
   a) 'भूख हड़ताल' कहानी का उद्धेश्य लिखिए।
   b) 'अधेड़ आदमी' चरित्र का चित्रण कीजिए।

4. a) **निम्न लिखित पाँच शब्दों के समानार्थक अंग्रेजी शब्द लिखिए।** **(5x2=10)**
   i) पारपत्र ii) छुट्टी iii) भत्ता iv) प्रबन्धक v) संसद
   vi) राज्यपाल vii) पहचान पत्र viii) नगर निगम ix) मतदाता x) अध्यक्ष

   b) **निम्न लिखित पाँच वाक्यों को शुद्ध कीजिए।** **(5x1=5)**
   i) गोपाल एक आम खाया। ii) दशरथ की तीन रानियाँ थीं।
   iii) सीता का पति का नाम बताओ। iv) वह आते ही मैं जाऊँगा।
   v) राम उसका गाँव जाता है।

   c) **किन्हीं पाँच शब्दों का संधि विच्छेद कीजिए।** **(5x1=5)**
   i) मनोहर ii) विद्यालय iii) एकैक iv) परमात्मा v) सदैव
   vi) सचरित्र vii) निष्पाप viii) निराशा ix) महेश x) स्वागत

   d) **किन्हीं पाँच शब्दों को अपने वाक्यों में प्रयोग कीजिए।** **(5x1=5)**
   i) शान ii) जलवायु iii) अजनबी iv) कामयाबी v) विरासत
   vi) नियंत्रण vii) विषाणु viii) सबूत ix) शायद x) पीढ़ी

5. **किसी एक विषय पर पत्र लिखिए।** **(1x8=8)**
   a) नौकरी के लिए आवेदन पत्र लिखिए।
   b) पुस्तक विक्रेता के नाम पर पत्र लिखिए।

* * *

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Nagarjuna Nagar-522 510.

ACHARYA NAGARJUNA UNIVERSITY

Hindi Syllabus from the Academic Year 2021-22

B.A., B.Com., BBA & B.Sc. SECOND YEAR SEMESTER - III

SECOND LANGUAGE - HINDI

POETRY - KAVYADEEP - B. Radha Krishna Murthy

Unit-I : काव्यदीप (Ancient & Modern Poetry) :

1. साखी – दोहे (1 से 10 तक) – कबीरदास
2. दोहे (1 से 10 तक) – रहीम
3. मातृभूमि – मैथिलीशरण गुप्त
4. तोड़ती पत्थर – सूर्यकांत त्रिपाठी 'निराला'
5. ओ दीपक! बुझने के पहले – प्रो. पी. आदेश्वर राव

Unit-II : हिन्दी साहित्य का इतिहास (History of Hindi Literature) :

भक्तिकाल – निर्गुण भक्ति धारा

1. ज्ञानाश्रयी शाखा – कबीर
2. प्रेमाश्रयी शाखा – जायसी

Unit-III: साधारण निबन्ध (General Essays) :

1. समाचार पत्र
2. बेकारी की समस्या
3. कंप्यूटर
4. पर्यावरण और प्रदूषण
5. साहित्य और समाज

Unit-IV : अनुवाद (Translation) :

अनुवाद (अंग्रेजी से हिन्दी में) (Five Sentences)

Unit - V : प्रयोजनमूलक हिन्दी (Functional Hindi) :

1. परिपत्र (Circular)
2. ज्ञापन (Memorandum)

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ACHARYA NAGARJUNA UNIVERSITY

MODEL QUESTION PAPER (नमूना प्रश्न पत्र)

B.A., B.Com., BBA & B.Sc. - SECOND YEAR - SEMESTER - III

(From the Academic Year 2021-22)

GENERAL HINDI - III

Time : 3 Hrs Maximum Marks : 75

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1. **निम्न लिखित पद्यांशों में से किन्हीं दो की सप्रसंग व्याख्या कीजिए।** **(2x5=10)**

a) साधू ऐसा चाहिए, जैसा सूप सुभाइ।
सार-सार को गहि रहै, थोथा देइ उड़ाय॥

b) पालन-पोषण और जन्म का कारण तू ही।
वक्ष स्थल पर हमें कर रही धारण तू ही॥

c) रहिमन देखि बडेन को लघु न दीजिए डारि।
जहाँ काम आवै सुई, कहाँ करे तरवारी ॥

d) वह तोड़ती पत्थर,
देखा उसे मैं ने इलाहाबाद के पथ पर . . . . .

2. **किसी एक कवि का जीवन परिचय दीजिए।** **(1x10=10)**

a) कबीरदास b) मैथिलीशरण गुप्त c) सूर्यकांत त्रिपाठी 'निराला'

3. **किसी एक कविता का सारांश लिखिए।** **(1x10=10)**

a) तोड़ती पत्थर b) ओ दीपक! बुझने के पहले

4. **किसी एक साहित्यिक विषय पर विश्लेषणात्मक उत्तर लिखिए।** **(1x10=10)**

a) ज्ञानाश्रयी शाखा - कबीरदास का स्थान।

b) प्रेमाश्रयी शाखा - जायसी का योगदान।

5. **किसी एक विषय पर सामान्य निबंध लिखिए।** **(1x10=10)**

a) साहित्य और समाज b) पर्यावरण और प्रदूषण

c) समाचार पत्र

6. **निम्न लिखित वाक्यों में से किन्हीं पाँच का हिन्दी में अनुवाद कीजिए।** **(5x3=15)**

a) We will go to Bombay. b) Rama killed Ravana.

c) We love our Country. d) Beauty is truth.

e) A book is treasure house of knowledge. f) Rakesh wrote a poem.

g) They are working hard. h) Sarita is singing a song.

7. **किसी एक अंश पर टिप्पणी लिखिए।** **(1x10=10)**

a) परिपत्र (Circular) का प्रारूप तैयार कीजिए।

b) ज्ञापन (Memorandum) किसे कहते हैं ? उदाहरण लिखिए।

* * *

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ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

3rd, 4th and 5th floors, Neeladri Towers, Sri Ram Nagar, 6th Battalion Road,
Atmakur (V), Mangalagiri (M), Guntur-522 503, Andhra Pradesh
Web: www.apsche.org **Email**: acapsche@gmail.com

SYLLABUS OF

ANALYTICAL SKILLS

AS PART OF LIFE SKILLS COURSES

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

CBCS/ SEMESTER SYSTEM

(w.e.f 2020-21)

ANALYTICAL SKILLS

Syllabus **Total 30 Hrs**

Course Objective: Intended to inculcate quantitative analytical skills and reasoning as an inherent ability in students.

Course Outcomes:

After successful completion of this course, the student will be able to;

1) Understand the basic concepts of arithmetic ability, quantitative ability, logical reasoning, business computations and data interpretation and obtain the associated skills.

2) Acquire competency in the use of verbal reasoning.

3) Apply the skills and competencies acquired in the related areas

4) Solve problems pertaining to quantitative ability, logical reasoning and verbal ability inside and outside the campus.

UNIT – 1: (10 Hours)

Arithmetic ability: Algebraic operations BODMAS, Fractions, Divisibility rules, LCM & GCD (HCF).

Verbal Reasoning: Number Series, Coding & Decoding, Blood relationship, Clocks, Calendars.

UNIT – 2: (10 Hours)

Quantitative aptitude: Averages, Ratio and proportion, Problems on ages, Time-distance – speed.

Business computations: Percentages, Profit & loss, Partnership, simple compound interest.

UNIT – 3: (07 Hours)

Data Interpretation: Tabulation, Bar Graphs, Pie Charts, line Graphs. Venn diagrams.

Recommended Co-Curricular Activities (03 hrs)

Surprise tests / Viva-Voice / Problem solving/Group discussion.

Text Book:

Quantitative Aptitude for Competitive Examination by R.S. Agrawal, S.Chand Publications.

Reference Books

1. Analytical skills by Showick Thorpe, published by S Chand And Company Limited, Ramnagar, New Delhi-110055
2. Quantitative Aptitude and Reasoning by R V Praveen, PHI publishers.
3. Quantitative Aptitude for Competitive Examination by Abhijit Guha, Tata Mc Graw Hill Publications.



ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

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Web: www.apsche.org **Email**: acapsche@gmail.com

SYLLABUS OF

BASIC COMPUTER APPLICATIONS

AS PART OF

LIFE SKILLS COURSES

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

B.Sc. / B.Com / B.A

Revised Syllabus under CBCS w.e.f. 2020-2021

LIFE SKILL COURSE

BASIC COMPUTER APPLICATIONS

Semester	Course Code	Course Title	Hours	Credits
I	**Life skill course**	**BASIC COMPUTER APPLICATIONS**	**30**	**2**

Objectives:

This course aims at providing exposure to students in skill development towards basic office applications.

Course Learning Outcomes:

After successful completion of the course, student will be able to:

1. Demonstrate basic understanding of computer hardware and software.
2. Apply skills and concepts for basic use of a computer.
3. Identify appropriate tool of MS office to prepare basic documents, charts, spreadsheets and presentations.
4. Create personal, academic and business documents using MS office.
5. Create spreadsheets, charts and presentations.
6. Analyze data using charts and spread sheets.

Unit-I: (08 hrs)

Basics of Computers: Definition of a Computer - Characteristics of computers, Applications of Computers – Block Diagram of a Digital Computer – I/O Devices, hardware, software human ware, application software, system software, Memories - Primary, Auxiliary and Cache Memory.

MS Windows – Desktop, Recycle bin, My Computer, Documents, Pictures, Music, Videos,

Task Bar, Control Panel.

Unit-II: (08 hrs)

MS-Word : Features of MS-Word - MS-Word Window Components - Creating, Editing, Formatting and Printing of Documents – Headers and Footers – Insert/Draw Tables, Table Auto format – Page Borders and Shading – Inserting Symbols, Shapes, Word Art, Page Numbers, Mail Merge.

Unit-III: (10 hrs)

MS-Excel : Overview of Excel features – Creating a new worksheet, Selecting cells, Entering and editing Text, Numbers, Inserting Rows/Columns –Changing column widths and row heights, Formulae, Referencing cells , Changing font sizes and colors, Insertion of Charts, Auto fill, Sort.

MS-PowerPoint: Features of PowerPoint – Creating a Presentation - Inserting and Deleting Slides in a Presentation – Adding Clip Art/Pictures -Inserting Other Objects, Audio, Video - Resizing and scaling of an Object – Slide Transition – Custom Animation.

RECOMMENDED CO-CURRICULAR ACTIVITIES: (04 hrs)

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside
    a. the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz, Group Discussion
4. Solving MCQ's available online.
5. Suggested student hands on activities:
    - Create two folders, Rename the folder, create two files each using notepad and paint, move the files from one folder to another folder, delete a file you have created, copy and paste text within notepad.

    - Create a letter head for your college with watermark, your resume, visiting card, brochure for your college activity, organization chart for your college, any advertisement, Prepare your Class time table.

    - Prepare your mark sheet, Prepare your class time table, Prepare a salary bill for an organization, Sort the bill as per the alphabetical order of the names, Get online weather data and analyze it with various charts.

    - Create a PowerPoint presentation for a student seminar.

REFERENCE BOOKS:

1. Working in Microsoft Office – Ron Mansfield - TMH.
2. MS Office 2007 in a Nutshell –Sanjay Saxena – Vikas Publishing House.
3. Excel 2020 in easy steps-Michael Price – TMH publications

Model Question Paper Format

Time: 1 1/2 hrs (90 Minutes)

Max. Marks: 50 Time: 1 1/2 hrs (90 Minutes

Section -A (Total: 4x5=20 Marks)

(Answer any **four questions**. Each answer carries **5 marks**

(Total 8 questions. At least 1 question should be given from each Unit)

1.
2.
3.
4.
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Section- B (Total: 3x10 = 30 Marks)

(Answer any **three questions**. Each answer carries **10 marks**

(Total five questions. At least 1 question should be given from each Unit)

1.
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5.



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SYLLABUS OF

ELEMENTARY STATISTICS

AS PART OF

LIFE SKILLS COURSES

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

Elementary Statistics

Objective: To provide basic understating of general statistical tools and their elementary applications and to create awareness on Indian Statistical System.

Learning outcomes

Unit-I: To understand the concept of Statistics and its merits and demerits. Distinguishing primary and secondary data. Classification, Tabulation and Pictorial representation of data.

Unit - II: To understand the basic nature of data and how a single value describes the entire data set.Measuring the degree of departure of a distribution from symmetry and reveals the direction of scatterdness of the items.

Unit - III: To understand the spread of the data and to draw conclusions from the comparison of averages.

To understand the concept of correlation and regression and to learn the degree of association between two variables and establishing relationship between the variables.

Unit I: Meaning, scope and limitations of Statistics

Collection of data: Primary and Secondary, Classification and Tabulation, Construction of frequency distribution.

Graphical Representation: Histogram, Bar, Pie and Frequency polygon. (8hrs)

Unit II: *Measures of Central Tendency*: Features of good average, Arithmetic Mean, Median, Mode. Empirical relationship between Mean Median and Mode and skewness based on central values. (8hrs)

Unit III: *Measures of Dispersion:* Range, Quartile Deviation(QD), Mean Deviation(MD), Variance, Standard Deviation(SD), relationship between QD, MD and SD.Familiarizationof the concepts relating to Correlation and Linear Regression line. (8hrs)

Books for Study:

1. Statistics (Theory, Methods, Application) D C Sancheti, V K Kapoor, Sultan Chand and Sons, New Delhi

2. Statistical Methods, S.P. Gupta, Sultan Chand and Sons, New Delhi

3. Statistics (Theory and Practice) B.N Gupta, Sahitya Bhavan, Agra

Web sites for free download books for Statistics
https://www.pdfdrive.com/introduction-to-statistics-books.html
http://www.freebookcentre.net/SpecialCat/Free-Statistics-Books-Download.html
https://bookboon.com/en/statistics-ebooks
http://onlinestatbook.com/Online_Statistics_Education.pdf

Degree	**:**Arts/Science/Commerce
Program Name	**:**Foundation Course
Course Name	**:**Elementary Statistics
Semester	**:**I/II/III
Hrs/Week	**:** 2
Credits	**:**2

Co-curricular activities:

Objective is to apply the theoretical concept to real life data which enhances the learning and interpretation ability to the current environment.

CoCA I: (i) Collect primary or secondary data and establish frequency distribution.
(ii) Suitable pictorial/ Graphical representation to the established frequency distribution

CoCA II: (i) Select the data and then calculate AM,Median and Mode and interpret the result.
(ii) Calculate the skewness based on central values and interpret the degree of departure of a distribution from symmetry and the direction of scatterdness of the items.

CoCA III: (i) Calculate the dispersion values of a data for a single or double data sets and to draw conclusions from the comparison of averages.

(ii) Select the bivariate data (for example, select marks of any two subjects of your course) and calculate the degree of association and establish the linear relationship and find the forecasting value.

CoCA IV: If there is an internet facility at your college/home, go through the Ministry of Statistics and Program Implementationsite *www.mospi.gov.in*to know about the Indian Statistical System and *https://desap.cgg.gov.in*or www.apdes.in to know about the Andhra Pradesh Directorate of Economics and Statistics(APDES) and its activities.

SUBJECT COMMITTEE MEMBERS

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Head Department of Statistics,
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SYLLABUS OF

ENTREPRENEURSHIP DEVELOPMENT

AS PART OF

LIFE SKILLS COURSES

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

PROGRAMME: THREE-YEAR B.A./B. Sc./B. Com.

LIFE SKILL COURSE

ENTREPRENEURSHIP DEVELOPMENT

(With Learning Outcomes, Unit-wise Syllabus, References, Co-curricular Activities & Model Question Paper

(To be Implemented from 2020-21 Academic Year)

Sl. No	Code	Sem	Course	Name of Life Skill Course (Course consists 3 Units)	Hours/ Week	Credits	Marks (Sem-End)
1		**II**		Entrepreneurship Development	**2**	**2**	**50**

Syllabus

ENTREPRENEURSHIP DEVELOPMENT

(**Total 30Hrs**)

Course Objective: A Generic Course that is intended to inculcate an integrated personal Life Skill to the student.

Learning Outcomes:

After successful completion of the course the student will be able to;

- Understand the concept of Entrepreneurship, its applications and scope.
- Know various types of financial institutions that help the business at Central, State and Local Level
- Understand Central and State Government policies, Aware of various tax incentives, concessions
- Applies the knowledge for generating a broad idea for a starting an enterprise/start up
- Understand the content for preparing a Project Report for a start up anddifferentiate between financial, technical analysis and business feasibility.

Syllabus:

Unit-I: Entrepreneurship: Definition and Concept of entrepreneurship - Entrepreneur Characteristics – Classification of Entrepreneurs –Role of Entrepreneurship in Economic Development –Start-ups.

Unit-II: Idea Generationand Project Formulation: Ideas in Entrepreneurships – Sources of New Ideas – Techniques for Generating Ideas – Preparation of Project Report –Contents; Guidelines for

Report preparation – Project Appraisal Techniques –Economic Analysis-Financial Analysis-Market Analysis.

Unit-III: Institutions Supporting and Taxation Benefits: Central level Institutions: NABARD; SIDBI,– State Level Institutions –DICs – SFC - Government Policy for MSMEs - Tax Incentives and Concessions.

Reference Books:

1. Arya Kumar, Entrepreneurship, Pearson, Delhi
2. Poornima MCH, Entrepreneurship Development –Small Business Enterprises, Pearson, Delhi
3. Sangeetha Sharma, Entrepreneurship Development, PHI Learning
4. KanishkaBedi, Management and Entrepreneurship, Oxford University Press, Delhi
5. Anil Kumar, S., ET.al., Entrepreneurship Development, New Age International Publishers, New Delhi
6. Khanka, SS, Entrepreneurship Development, S. Chand, New Delhi
7. Peter F. Drucker,Innovation and Entrepreneurship
8. A.Sahay, M. S. Chhikara, New Vistas of Entrepreneurship: Challenges &Opportunities
9. Dr B E V L Naidu, Entrepreneurship. Seven Hills Publishers

Suggested Co-Curricular Activities(As far as possible)

1. Group Discussion
2. Debate
3. Seminar
4. Visit to an SSI and preparing of an outline Report
5. Invited Lecture by a Bank Employee on the Bank Support to a Start Up.
6. Chart showing tax concessions to SSI, MSME both direct and indirect.

Model Question Paper Format

Time: 1 1/2 hrs (90 Minutes)

Max. Marks: 50Time: 1 1/2 hrs (90 Minutes

Section -A(Total: 4x5=20 Marks)

(Answer any **four questions**. Each answer carries **5 marks**

(Total 8 questions. At least 1 question should be given from each Unit)

1.
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Section- B(Total: 3x10 = 30 Marks)

(Answer any **three questions**. Each answer carries **10 marks**

(Total five questions. At least 1 question should be given from each Unit)

1.
2.
3.
4.
5.

Subject Committee Members

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SYLLABUS OF

ENVIRONMENTAL EDUCATION

AS PART OF LIFE SKILLS COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

AP State Council of Higher Education

Revised Syllabus under CBCS Pattern
(w.e.f. 2020-'21 Academic Year)

A Mandatory Course for BA/BCom/BSc etc.

ENVIRONMENTAL EDUCATION

(Total hours of Teaching – 30 Hrs. @ 02 Hrs. per Week)

Course objective: A Generic Course intended to create awareness that the life of human beings is an integral part of environment and to inculcate the skills required to protect environment from all sides.

Learning outcomes: On completion of this course the students will be able to …..

1. Understand the nature, components of an ecosystem and that humans are an integral part of nature.
2. Realize the importance of environment, the goods and services of a healthy biodiversity, dependence of humans on environment.
3. Evaluate the ways and ill effects of destruction of environment, population explosion on ecosystems and global problems consequent to anthropogenic activities.
4. Discuss the laws/ acts made by government to prevent pollution, to protect biodiversity and environment as a whole.
5. Acquaint with international agreements and national movements, and realize citizen's role in protecting environment and nature.

Unit 1: Environment andNatural Resources **06 Hrs.**

1. Multidisciplinary nature of environmental education; scope and importance.
2. Man as an integral product and part of the Nature.
3. A brief account of land, forest and waterresources in India and their importance.

4. Biodiversity : Definition; importance of Biodiversity - ecological,consumptive, productive, social, ethical and moral, aesthetic, and option value.
5. Levels of Biodiversity: genetic, species and ecosystem diversity.

Unit-2: Environmental degradation and impacts 10Hrs

1. Human population growth and its impacts on environment; land use change, land degradation, soil erosion and desertification.
2. Use and over-exploitation of surface and ground water, construction of dams, floods, conflicts over water (within India).
3. Deforestation: Causes and effects due to expansion of agriculture, firewood, mining, forest fires and building of new habitats.
4. Non-renewable energy resources, their utilization and influences.
5. A brief account of air, water, soil and noise pollutions; Biological, industrial and solid wastes in urban areas. Human health and economic risks.
6. Green house effect - global warming; ocean acidification, ozone layer depletion, acid rains and impacts on human communities and agriculture.
7. Threats to biodiversity: Natural calamities, habitat destruction and fragmentation, over exploitation, hunting and poaching, introduction of exotic species, pollution, predator and pest control.

Unit 3: Conservation of Environment 10 Hrs

1. Concept of sustainability and sustainable development with judicious use of land, water and forest resources; afforestation.
2. Control measures for various types of pollution; use of renewable and alternate sources of energy.
3. Solid waste management: Control measures of urban and industrial waste.
4. Conservation of biodiversity: In-situ and ex-situ conservation of biodiversity.
5. Environment Laws: Environment Protection Act; Act; Wildlife Protection Act; Forest Conservation Act.
6. International agreements: Montreal and Kyoto protocols; Environmental movements: Bishnois of Rajasthan, Chipko, Silent valley.

Suggested activities to learner: (4 hours)

1. Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc
2. Visit to a local polluted site-Urban/Rural/Industrial/Agricultural site.
3. Study of common plants, insects, birds and basic principles of identification.
4. Study of simple ecosystems-forest, tank, pond, lake,mangroves etc.
5. Case study of a Forest ecosystem or a pond ecosystem.

Suggested text book :

- ErachBarucha (2004) *Text book of Environmental Studies for Undergraduate courses* (Prepared for University Grants Commmission) Universities Press.
- PurnimaSmarath (2018) *Environmental studies* Kalyani Publishers, Ludhiana

Reference books :

- Odum, E.P., Odum, H.T. & Andrews, J. (1971) *Fundamentals of Ecology*. Philadelphia: Saunders.
- Pepper, I.L., Gerba, C.P. &Brusseau, M.L. (2011). *Environmental and Pollution Science*. Academic Press.
- Raven, P.H., Hassenzahl, D.M. & Berg, L.R. (2012) *Environment. 8th edition*. John Wiley & Sons.
- Singh, J.S., Singh, S.P. and Gupta, S.R. (2014) *Ecology, Environmental Science and Conservation.* S. Chand Publishing, New Delhi.
- Sengupta, R. (2003) Ecology and economics: An approach to sustainable development. OUP.
- Wilson, E. O. (2006) *The Creation: An appeal to save life on earth.* New York: Norton.
- Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll (2006) *Principles of Conservation Biology.* Sunderland: Sinauer Associates,

Model question paper for theory examination at the end of IV Semester
Life Skill Course / ENVIRONMENTAL SCIENCE

Max. Time : 2 Hrs. **Max. Marks: 50**

Max. Marks: 50 Time: 1 1/2 hrs (90 Minutes

Section -A (Total: 4x5=20 Marks)

(Answer any **four questions**. Each answer carries **5 marks**

(Total 8 questions. At least 1 question should be given from each Unit)

1.
2.
3.
4.
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8.

Section- B (Total: 3x10 = 30 Marks)

(Answer any **three questions**. Each answer carries **10 marks**

(Total five questions. At least 1 question should be given from each Unit)

1.
2.
3.
4.
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Note: Questions may be set in such a way to test the outcomes instead of recalling of information.



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SYLLABUS OF

HEALTH AND HYGIENE

AS PART OF LIFE SKILLS COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

APSCHE/ Life Skill Course / HEALTH & HYGIENE
IV Semester/ Optional
(Total teaching hours – 30 Hrs. @ 02 Hrs. per Week)

The course is designed to provide a complete guidance on health and hygiene systems, guidelines for implementing and role of government and public in maintaining a healthy life. At the end of the course the student shall be able to understand –

- the importance of health and hygiene in life
- the importance of nutrition for a healthy life
- different health care programmes of India
- basic concept of health impact assessment as a means of assessing the policies, plans and projects using quantitiative and qualitative techniques
- importance of community and personal health & hygiene measures
- Importance of food, social tenets, mental condition, physical activity on health

Learning Objectives:

- To provide knowledge on different health indicators and types of hygiene methods
- To impart knowledge on different health care programmes taken up by India
- To make student understand the latest concepts of health such as HIA, EIA, SIA and SEA
- To enable student with disaster mitigation strategies
- To create awareness on community health and hygiene
- To enrich knowledge on communicable and non-communicable diseases and their control
- To aware the student on the importance of food, social strategies, mental status and physical activities on health
- To introduce different community-based mobile apps on health to student and thereby to the community

Learning / Course Outcomes: On completion of this course, the students will be able to understand -

- What is a healthy diet
- How can we use available information to optimize our diet?
- Can nutrition be used for a healthy life?
- Is there a one-size-fits-all “good” diet or should we individualize our dietary goals?
- Disaster management and responsiveness of public in pandemic and epidemic diseases
- Assess the impact of policies on health and hygiene Health measures to consider while travelling
- Awareness in public through digital media viz., mobile apps

Unit I: Basics of Nutrition **10 Hrs.**

1. Nutrition – definition, importance, Good nutrition and mal nutrition; Balanced Diet: Basics of Meal Planning
2. Carbohydrates –functions, dietary sources, effects of deficiency.
3. Lipids –functions, dietary sources,effects of deficiency.
4. Proteins –functions, dietary sources, effects of deficiency.
5. Brief account of Vitamins- functions, food sources,effects of deficiency,
6. Macro and micro minerals –functions, effects of deficiency; food sources of Calcium, Potassium and Sodium; food sources of Iron, Iodine and Zinc
7. Importance of water– functions, sources, requirement and effects of deficiency.

Unit II: Health **10 Hrs.**

8. Health - Determinants of health, Key Health Indicators, Environment health & Public health; Health-Education: Principles and Strategies
9. Health Policy & Health Organizations: Health Indicators and National Health Policy of Govt. of India-2017; Functioning of various nutrition and health organizations in India viz., NIN (National Institution of Nutrition), FNB (Food and Nutrition Board), ICMR (Indian Council of Medical Research), IDA (Indian Dietetics Association),WHO-India, UNICEF-India
10. National Health Mission: National Rural Health Mission (NRHM) Framework, National Urban Health Mission (NUHM) Framework
11. Women & Child Health Care Schemes: Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCH+); Janani Shishu Suraksha Karyakaram (JSSK); Rashtriya Bal Swasthya Karyakram(RBSK); India Newborn Action Plan (INAP); Adolecent Heatlh- Rashtriya Kishor Swasthya Karyakram (RKSK)
12. Disaster Management – Containment, Control and Prevention of Epidemics and Pandemics – Acts, Guidelines and Role of Government and Public

Unit III: Hygiene **10 Hrs.**

13. Hygiene – Definition; Personal, Community, Medical and Culinary hygiene; WASH (**WA**ter, **S**anitation and **H**ygiene) programme
14. Rural Community Health: Village health sanitation & Nutritional committee (Roles & Responsibilities); About Accredited Social Health Activist (ASHA); Village Health Nutrition Day, Rogi Kalyan Samitis
15. Community & Personal Hygiene: Environmental Sanitation and Sanitation in Public places
16. Public Awareness through Digital Media - An Introduction to Mobile Apps of Government of India: NHP, Swasth Bharat, No More Tension, Pradhan Mantri Surakshit Mantritva Abhiyan (PM Suman Yojana), My Hospital (Mera aspataal), India fights Dengue, JSK Helpline, Ayushman Bhava, Arogya Setu, Covid 19AP

REFERENCES

- **Bamji, M.S., K. Krishnaswamy & G.N.V. Brahmam (2009)** *Textbook of Human Nutrition(3rd edition*) Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi
- **Swaminathan (1995)***Food & Nutrition*(Vol I, Second Edition) The Bangalore Printing &Publishing Co Ltd., , Bangalore
- **Vijaya Khader (2000)**Food, nutrition & health, Kalyan Publishers, New Delhi
- **Srilakshmi, B., (2010)***Food Science, (5th Edition)* New Age International Ltd., New Delhi
- Weblinks: https://nhm.gov.in/
    - National Rural Health Scheme: https://nhm.gov.in/index1.php?lang=1&level=1&sublinkid=969&lid=49
    - National Urban Health Scheme: https://nhm.gov.in/index1.php?lang=1&level=1&sublinkid=970&lid=137
    - Village health sanitation & Nutritional committee https://nhm.gov.in/index1.php?lang=1&level=1&sublinkid=149&lid=225
    - About Accredited Social Health Activist (ASHA) https://nhm.gov.in/index1.php?lang=1&level=1&sublinkid=150&lid=226
    - Village Health Nutrition Day https://nhm.gov.in/index1.php?lang=1&level=1&sublinkid=152&lid=228

- Rogi Kalyan Samitis https://nhm.gov.in/index1.php?lang=1&level=1&sublinkid=153&lid=229
- Health Impact Assessment - https://www.who.int/hia/about/faq/en/ (suggested information only) http://www.euro.who.int/__data/assets/pdf_file/0011/261929/Health-in-Impact-Assessments-final-version.pdf?ua=1
- WASH https://www.unicef.org/wash/ and https://www.unicef.org/wash/files/UNICEF_Strategy_for_WASH_2016_2030.PDF
- Healthy Living https://www.nhp.gov.in/healthylivingViewall

Note: The above web links are from MoHFW, GoI. Teachers can prepare their notes from other resources also.

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SYLLABUS OF HUMAN VALUES PROFESSIONAL ETHICS AS PART OF LIFE SKILLS COURSES UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

HUMAN VALUES AND PROFESSIONAL ETHICS (HVPE)

(SYLLABUS)

Learning Outcome:

On completion of this course, the UG students will be able to

- ✓ Understand the significance of value inputs in a classroom and start applying them in their life and profession
- ✓ Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.
- ✓ Understand the value of harmonious relationship based on trust and respect in their life and profession
- ✓ Understand the role of a human being in ensuring harmony in society and nature.
- ✓ Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

UNIT: 1 Introduction – Definition, Importance, Process & Classifications of Value Education

- ❖ Understanding the need, basic guidelines, content and process for Value Education
- ❖ Understanding the thought provoking issues; need for Values in our daily life
- ❖ Choices making – Choosing, Cherishing & Acting
- ❖ Classification of Value Education: understanding Personal Values, Social Values, Moral Values & Spiritual Values.

UNIT: 2 Harmony in the Family – Understanding Values in Human Relationships

- ✓ Understanding harmony in the Family- the basic unit of human interaction
- ✓ Understanding the set of proposals to verify the Harmony in the Family;
- ✓ Trust (*Vishwas*) and Respect (*Samman*) as the foundational values of relationship
- ✓ Present Scenario: Differentiation (Disrespect) in relationships on the basis of body, physical facilities, or beliefs.
- ✓ Understanding the Problems faced due to differentiation in Relationships
- ✓ Understanding the harmony in the society (society being an extension of family): *Samadhan*, *Samridhi*, *Abhay*, *Sah-astitva* as comprehensive Human Goals
- ✓ Visualizing a universal harmonious order in society- Undivided Society (*AkhandSamaj*), Universal Order (*SarvabhaumVyawastha*)- from family to world family.

UNIT: 3Professional Ethics in Education

- ✓ Understanding about Professional Integrity, Respect & Equality, Privacy, Building Trusting Relationships.
- ✓ Understanding the concepts; Positive co-operation, Respecting the competence of other professions.
- ✓ Understanding about Taking initiative and Promoting the culture of openness.
- ✓ Depicting Loyalty towards Goals and objectives.

Text Books:

R R Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics.

Bhatia, R. & Bhatia, A (2015) Role of Ethical Values in Indian Higher Education.

References:

- Ivan Illich, 1974, Energy & Equity, The Trinity Press, Worcester, and Harper Collins, U
- E.F. Schumacher, 1973, Small is Beautiful: a study of economics as if people mattered, Blond & Briggs, Britain.
- Sussan George, 1976, How the Other Half Dies, Penguin Press. Reprinted 1986, 1991
- Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, Limits to Growth – Club of Rome's report, Universe Books.
- A Nagraj, 1998, Jeevan Vidya EkParichay, Divya Path Sansthan, Amarkantak.
- P L Dhar, RR Gaur, 1990, Science and Humanism, Commonwealth Publishers.
- A N Tripathy, 2003, Human Values, New Age International Publishers.

Mode of Evaluation:

Assignment/ Seminar/Continuous Assessment Test/Semester End Exam.

Co curricular Activities:

1. Visit to an Old Age Home and spending with the inmates for a day.
2. Conduct of Group Discussions on the topics related to the syllabus.
3. Participation in community service activities.
4. Working with a NGO like Rotary Club or Lions International, etc.

Subject Committee Members

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SYLLABUS OF

INDIAN CULTURE AND SCIENCE

AS PART OF
LIFE SKILLS COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. State Council of Higher Education
B.A., B. Com & B. Sc Programmes

Revised CBCS w.e.f 2020-21
LIFE SKILL COURSE

Indian Culture & Science
Total 30 hrs (02 h/wk, 02 Cr & Max 50 Marks)

Learning Outcomes:
By successful completion of the course, students will be able to:

1. Understand the evolution of India's culture
2. Analyze the process of modernization of Indian society and culture from past to future
3. Comprehend objective education and evaluate scientific development of India in various spheres
4. Inculcate nationalist and moral fervor and scientific temper

Syllabus:

Unit – I: Unity in Diversity in India: (09 hrs)

Coexistence of various religions since ancient times - Hinduism, Buddhism, Jainism and Atheism, and later Sikhism, Islam and Christianity

The Bhakti (Vishnavite and Saivaite) and Sufi Movements

The concepts of seela, karuna, kshama, maitri, vinaya, santhi and ahimsa Achievements in Literature, Music, Dance, Sculpture and Painting - Craftsmanship in cloth, wood, clay, metal and ornaments

Cultural diversity, Monogamy, Family system, Important seasonal festivals

Unit – II: Social Reforms and Modern Society: (09 hrs)

Reforms by Basaveswara - Raja Rama Mohan Roy – Dayananda Saraswathi –Swamy Vivekananda –Mahatma Gandhi - B. R. Ambedkar - Reforms in Andhra by Vemana,Veerabrahmam, Gurajada, Veeresalingam and GurramJashua (only reforms in brief, biographies not needed)

Modern Society: Family unity, Community service, Social Harmony, Civic Sense, Gender Sensitivity, Equality, National Fervor

Unit – III: Science and Technology: ((09 hrs)

Objectivity and Scientific Temper – Education on Scientific lines (Bloom's Taxonomy) - Online Education

Developments in Industry, Agriculture, Medicine, Space, Alternate Energy, Communications, Media through ages

Co-curricular Activities Suggested: (03 hrs)

1. Assignments, Group discussions, Quiz etc
2. Invited Lecture by a local expert
3. Visit to a scientific institutions, local heritage sites, museums, industries etc

Reference Books:

1. History of India and Culture (Upto 1526 A.D), Telugu Academy
2. History of India and Culture (1526 A.D to 1964), Telugu Academy
3. Basham, A.L (ed), A Cultural History of India
4. Hana S. Noor Al-Deen&J.A.Hendricks, Social Media : Usage and Impact
5. Bipan Chandra, Aditya Mukherjee, Mridula Mukherjee, India After Independence
6. S.K.Thakur, ISRO: History and Acheivements
7. V. Ramakrishna, Social Reform Movement Andhra, Vikas Publications

MODEL QUESTION PAPER & PATTERN

Max Marks: 50 **Time: 1 ½ hr (90 Min)**

SECTION A (Total: 4x5=20 Marks)

(Answer any **four questions**. Each answer carries **5 marks**
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)

(Answer any **three questions**. Each answer carries **10 marks**
(At least 1 question should be given from each Unit)

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@@@@@

Subject Experts:

Prof. S. Murali Mohan,
Dept. of History,
Acharya Nagarjuna University,
Guntur

Dr. J. Krishna Prasad Babu,
Associate Professor,
Dept. of History,
Jawahar Bharathi U.G &P.G College,
Kavali

Vetted by:

Prof. G. Sambasiva Reddy,
Dept. of History,
Y. V. University,
Kadapa



ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

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Web: www.apsche.org **Email**: acapsche@gmail.com

SYLLABUS OF

INFORMATION AND COMMUNICATION TECHNOLOGY

AS PART OF LIFE SKILLS COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

B.Sc./B.Com/B.A

Syllabus under CBCS w.e.f.2020-21

INFORMATION & COMMUNICATION TECHNOLOGY

Semester	Course Code	Course Title	Hours	Credits
II	**Life skill Course**	**INFORMATION & COMMUNICATION TECHNOLOGY**	**30**	**2**

Objectives:

This course aims at acquainting the students with basic ICT tools which help them in their day to day and life as well as in office and research.

Course outcomes: After completion of the course, student will be able to;

1. Understand the literature of social networks and their properties.
2. Explain which network is suitable for whom.
3. Develop skills to use various social networking sites like twitter, flickr, etc.
4. Learn few GOI digital initiatives in higher education.
5. Apply skills to use online forums, docs, spreadsheets, etc for communication, collaboration and research.
6. Get acquainted with internet threats and security mechanisms.

SYLLABUS:

UNIT-I: (08 hrs)

Fundamentals of Internet: What is Internet?, Internet applications,Internet Addressing – Entering a Web Site Address, URL–Components of URL, Searching the Internet, Browser –Types of Browsers,Introduction to Social Networking: Twitter, Tumblr, LinkedIn, Facebook, flickr, Skype, yahoo, YouTube, WhatsApp .

UNIT-II:(08 hrs)

E-mail: Definition of E-mail -Advantages and Disadvantages –User Ids, Passwords, Email Addresses, Domain Names, Mailers, Message Components, MessageComposition, Mail Management.

G-Suite: Google drive, Google documents, Google spread sheets, Google Slides and Google forms.

UNIT-III:(10 hrs)

Overview of Internet security, E-mail threats and secure E-mail, Viruses and antivirus software, Firewalls, Cryptography, Digital signatures, Copyright issues.

What are GOI digital initiatives in higher education? (SWAYAM, SwayamPrabha, National Academic Depository, National Digital Library of India, E-Sodh-Sindhu, Virtual labs, e-acharya, e-Yantra and NPTEL).

RECOMMENDED CO-CURRICULAR ACTIVITIES: (04 hrs)

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

1. Assignments(in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
1. Quiz andGroup Discussion
3. Slip Test
4. Try to solve MCQ's available online.
5. Suggested student hands on activities :
    a. Create your accounts for the above social networking sites and explore them, establish a video conference using Skype.
    b. Create an Email account for yourself- Send an email with two attachments to another friend. Group the email addresses use address folder.
    c. Register for one online course through any of the online learning platforms like NPTEL, SWAYAM, Alison, Codecademy, Coursera. Create a registration form for your college campus placement through Google forms.

Reference Books :

1. In-line/On-line : Fundamentals of the Internet and the World Wide Web, 2/e – byRaymond Greenlaw and Ellen Hepp, Publishers : TMH
2. Internet technology and Web design, ISRD group, TMH.
3. Information Technology – The breaking wave, Dennis P.Curtin, Kim Foley, Kunai Sen and Cathleen Morin, TMH.

Model Question Paper Format

Time: 1 1/2 hrs (90 Minutes)

Max. Marks: 50 Time: 1 1/2 hrs (90 Minutes

Section -A (Total: 4x5=20 Marks)

(Answer any **four questions**. Each answer carries **5 marks**

(Total 8 questions. At least 1 question should be given from each Unit)

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Section- B (Total: 3x10 = 30 Marks)

(Answer any **three questions**. Each answer carries **10 marks**

(Total five questions. At least 1 question should be given from each Unit)

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SYLLABUS OF

PERSONALITY ENHANCEMENT AND LEADERSHIP

AS PART OF
LIFE SKILL COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. STATE COUNCIL OF HIGHER EDUCATION
B.A., B. Com & B. Sc Programmes

Revised CBCS w.e.f 2020-21
LIFE SKILL COURSE

Personality Enhancement & Leadership
Total 30 hrs (02 h/wk, 02 Cr & Max 50 Marks)

Learning Outcomes:
By successful completion of the course, students will be able to:

1. Develop comprehensive understanding of personality
2. Know how to assess and enhance one's own personality
3. Comprehend leadership qualities and their importance
4. Understand how to develop leadership qualities

Syllabus:

Unit – I:(7 hrs)

Meaning of Personality – Explanations of Human Personality – Psychodynamic Explanations – Social Cognitive Explanation – Big Five traits of Personality

Unit – II: (8 hrs)

Assessment of Personality - Projective& Self Report Techniques - Building Self-Confidence – Enhancing Personality Skills

Unit – III:(10 hrs)

Leadership Characteristics – Types of Leaders – Importance of Leadership – Leadership Skills – Building and Leading Efficient Teams – Leadership Qualities of Abraham Lincoln, mahatma Gandhi, Prakasam Pantulu, Dr. B. R. Ambedkar & J.R.D.Tata

Co-curricular Activities Suggested: (05 hrs)

1. Assignments, Group discussions, Quiz etc
2. Invited Lecture by a local expert
3. Case Studies (ex., on students behavior, local leaders etc.)

Reference Books:

- Girish Batra, Experiments in Leadership, Chennai: Notion Press, 2018
- Mitesh Khatri, Awaken the Leader in You, Mumbai: Jaico Publishing House, 2013
- Carnegie Dale, Become an Effective Leader, New Delhi: Amaryllis, 2012
- Hall, C.S., Lindzey. G. & Campbell, J.B Theories of Personality. John Wiley & Sons, 1998

MODEL QUESTION PAPER & PATTERN

Max Marks: 50 **Time: 1 ½ hr (90 Min)**

SECTION A (Total: 4x5=20 Marks)

(Answer any **four questions**. Each answer carries **5 marks**
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)

(Answer any **three questions**. Each answer carries **10 marks**
(At least 1 question should be given from each Unit)

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SUBJECT COMMITTEE MEMBERS

Dr. G. Koteshwaraiah,
Associate Professor,
Dept. of Psychology,
Govt. College (Men), Autonomous,
Kadapa

Dr. B. R. Prasad Reddy,
Associate Professor,
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Vetted by:

Prof. S. Samiullah,
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Tirupati



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SYLLABUS OF

TOURISM GUIDANCE

AS PART OF

SKILL DEVELOPMENT COURSES

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. State Council of Higher Education
B.A., B. Com & B. Sc Programmes

Revised CBCS w.e.f. 2020-21
SKILL DEVELOPMENT COURSES

Arts Stream

Tourism Guidance

Total 30 hrs (02 h/wk, 02 Cr & Max 50 Marks)

Learning Outcomes:

By successful completion of the course, students will be able to:

1. *Understand the basic tourism aspects*
2. *Comprehend the requirements, role and responsibilities of profession of a Tourist Guide*
3. *Apply the knowledge acquired in managing different groups and guiding in a tour*
4. *Explain basic values related to tourism and heritage*

Syllabus:

Unit I: (06 hrs)

Tourism – What is Tourism - Characteristics of Tourist Places – Guidance in Tourism - Meaning of Guidance – Types of Tour Guidance - Government/Department Regulations

Unit II: (10 hrs)

Types of Guides – Characteristics of a Guide - Duties and Responsibilities of a Guide - The Guiding Techniques –Guide's personality- Training Institutions – Licence.

Leadership and Social Skills - Presentation and Communication Skills - Working with different age and linguistic groups - Working under difficult circumstances – Precautions at the site -Relationship with Fellow Guides and Officials.

Unit III: (10 hrs)

Guest Relationship Management- Personal and Official - Arrangements to Tourists – Coordinating transport - VISA/Passport -Accident/Death -Handling Guests with Special Needs/ Different Abilities –Additional skills required for Special/Adventure Tours - Knowledge of Local Security and Route Chart – PersonalHygiene and Grooming - Checklist - Code of Conduct

Co-curricular Activities Suggested: (04 hrs)

1. Assignments, Group discussion, Quiz etc.
2. Invited lecture/training by local tourism operators/expert/guides
3. Visit to local Tourism Department office and a tourist service office
4. Organisation of college level short-duration tours to local tourist sites.

Reference Books:

1. Jagmohan Negi (2006); Travel Agency and Tour Operations, Kanishka Publishers,New Delhi
2. Mohinder Chand (2009); Travel Agency and Tour Operations: An Introductory Text, Anmol Publications Pvt. Limited, New
3. Pat Yale(1995); Business of Tour Operations,Longman Scientific & Technical, New Delhi
4. Websites on Tourism guidance.

MODEL QUESTION PAPER FORMAT

Max Marks: 50 **Time: 1 ½ hr (90 Min)**

SECTION A (Total: 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)

(Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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Subject Committee Members

Prof. S. Murali Mohan,
Dept. of History,
Acharya Nagarjuna Univ,
Guntur

Dr. J. Krishna Prasad Babu,
Associate Professor,
Dept. of History,
Jawahar Bharathi U.G &P.G College,
Kavali

Vetted by:
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SYLLABUS OF

JOURNALISTIC REPORTING

AS PART OF

SKILL DEVELOPMENT COURSES

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. State Council of Higher Education

B.A., B. Com & B. Sc Programmes

Revised CBCS w.e.f 2020-21

SKILL DEVELOPMENT COURSES

Arts Stream

JOURNALISTIC REPORTING

Total 30 hrs (02 h/wk, 02 Cr & Max 50 Marks)

Course Outcomes:

After successful completion of this course, the student will be able to:

1. *Understand the evolution of journalism with a focus on its development in India.*
2. *Comprehend the role of Press in the Indian democracy and various reporting methods.*
3. *Realise the ethical aspects of Journalism in India*
4. *Develop basic writing skills for news papers, Radio and Television.*

Syllabus:

Unit-I: 06 Hrs

Introduction to Journalism-Nature, Growth and Development in post independence era -Print Media, Mass Media and Electronic Media, Press as a Fourth Estate-Role of Press in Democracy.

Unit-II: 10 Hrs

Concept of News-News Values-Sources of News - News gathering ways: Press Conferences, Press Releases, Events, Meets, Interviewing-Types of Interviews and Interviewing Techniques- Methods of News Writing: Leads, News Stories and Body Development.

Unit- III 10 Hrs

Reporting-Kinds of Reporting-Objectives, Interpretative, Investigative, Legal, Developmental, Political, Sports, Crime, Economic, Commercial, Disaster, Technical and Scientific Reporting-Writing Special features: Photo features, Human interest features, Profiles, Column Writing, Writing for Radio and Television-Values and Ethics of Journalism.

Co-curricular Activities Suggested: (04 Hrs)

1. Collection and study of various English and Telugu Newspapers
2. Invited lecture/basic training by local experts
3. Visit to local Press office
4. Informally attending Press Conferences andMeets and taking notes
5. Assignments, Group discussion, Quiz etc.

ReferenceBooks:

1. Mencher Melvin, News Reporting and Writing, 1997, Columbia University Press.
2. Mazumdar Aurobindo, Indian Press and Freedom Struggle, 1993, Orient Longman.
3. Barun Roy, Beginners Guide to Journalism and Mass Communication, V&S Publishers, New Delhi.

4. Kamath M.V, Professional Journalism,1983,Vikas Publishers, New Delhi.
5. Carole Fleming, Emma Hemmingway, Gillian Moore and Dave Welford, 2006,SAGE Publications India Pvt.Ltd, New Delhi
6. Websites on Journalistic Reporting.

MODEL QUESTION PAPER & PATTERN

Max Marks: 50 Time: 1 ½ hr (90 Min**)**

SECTION A (Total: 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)

(Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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Subject Committee Members

Prof. B.V.Raghavulu,
Dept. of Political Science & Public Administration,
SK University,
Anantapur.

Dr.T.S.Shyam Prasad,
Lecturer,
Department of Political Science,
Government College (Autonomous),
Anantapur



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SYLLABUS OF

PUBLIC RELATIONS

AS PART OF

SKILL DEVELOPMENT COURSES

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. State Council of Higher Education
B.A., B. Com & B. Sc Programmes

Revised CBCS w.e.f 2020-21

SKILL DEVELOPMENT COURSES

(To be offered from Semesters i to IV)

Arts Stream

PUBLIC RELATIONS

Total 30 hrs (02 h/wk, 02 Cr & Max 50 Marks)

Course Outcomes:

After successful completion of this course, the student will be able to:

1. *Understand the historical background and role Public Relations in various areas*
2. *Have insight into the use of the technological advancementsin Public Relations*
3. *Comprehend tools of Public Relations inorder to develop the required skills.*
4. *Understand the ethical aspects and future of Public Relations in India*
5. *Develop writing skills for news papers and creation of Blogs.*

Syllabus:

Unit I 06 Hrs	Public Relations-Meaning, Definition, Nature and Scope, Historical Background, Technological and Media Revolution and Role in Business, Government, Politics, NGOs and Industry.
Unit II 10 Hrs	Concepts of Public Relations-Press, Publicity, Lobbying, Propaganda, Advertising, Sales Promotion and Corporate Marketing Services, Tools of Public Relations-Press Conferences, Meets, Press Releases, Announcements, Webcasts
Unit III 10 Hrs	Public Relations and Mass Media, Present and future of Public Relations in India, Ethics of Public Relations and Social Responsibility, Public Relations and Writing-Printed Literature, Newsletters, Opinion papers and Blogs

Co-curricular Activities Suggested: (04 Hrs)

1. Invited lecture by local field expert/eminent personality on Public Relations
2. Visit to Press
3. Opinion Survey, Media Survey and Feedback
4. Case Studies
5. Organising mock press conferences, exhibitions
6. Assignments, Group discussion, Quiz etc.

Reference Books:

1. Brown, Rob, Public Relations and the Social Web, Kogan Page India, New Delhi, 2010.
2. Cutlipscottetal, Effective Public Relations, London, 1995.
3. Black Sam, Practical Public Relations, Universal Publishers, 1994.
4. S.M.Sardana, Public Relations: Theory and Practice.

5. J.V.Vilanilam, Public Relations in India: New Tasks and Responsibilities, SAGE Publications India Pvt Ltd, New Delhi2011.
6. Websites on Public relations.

MODEL QUESTION PAPER & PATTERN

Max Marks: 50 Time: 1 ½ hr (90 Min)

SECTION A (Total: 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)

(Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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@@@@@

Subject Committee Members

Prof. B.V.Raghavulu,
Dept. of Political Science & Public Administration,
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Anantapur.

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Lecturer,
Department of Political Science,
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SYLLABUS OF

SURVEY AND REPORTING

AS PART OF

SKILL DEVELOPMENT COURSES

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. State Council of Higher Education

B.A., B. Com & B. Sc Programmes

Revised CBCS w.e.f. 2020-21

SKILL DEVELOPMENT COURSES

Arts Stream

SURVEY & REPORTING

Total Hours : 30 (2h/w), Credits : 02, Max Marks: 50.

Learning Outcomes:

After successful completion of this course, the student will be able to:

1. *Understand the basics of survey and reporting needs and methods*
2. *Comprehend designing of a questionnaire*
3. *Conduct a simple and valid survey and Collect data*
4. *Organize and interpret data and Prepare and submit report.*

Syllabus:

Unit I 08Hrs	Survey: Meaning and Definition –Identifying need for survey - Identifying Sample –Characteristics of Sample - Types of Survey – Survey Methods – Advantages and Disadvantages of Survey – Essential Steps in Survey – Online Survey.
Unit II 09Hrs	Preparing Questionnaire: Types and Parts of Questionnaire – Qualities of good Questionnaire – Precautions inPreparing Questionnaire Administering/Piloting Questionnaire –Collection of data -Dealing with People – Maintaining objectivity/neutrality.
Unit III 10Hrs	Methods of Organizing data – Forms of data presentation - Tables and Figures – Basic Statistical Methods of Analysis of data –Percentages - Mean, Mode and Median –Simple Ways of showing Results– Tables/Graphs/Diagrams Report Writing: Forms of Reporting - Parts of a Report - Title page to Acknowledgements -Characteristics of a Good Report – Style of language to be used - Explaining Data in the Report – Writing fact-based Conclusions – making Recommendations – Annexing required material.

Recommended Co-curricular Activities (03 hrs):

1. Invited Lecture/Training by a Local Expert
2. Collection and study of questionnaires
3. Preparation of sample questionnaire and conduct a live sample survey
4. Preparation of a sample Report
5. Assisting a real time field survey and report writing
6. Assignments, Group discussion, Quiz etc.

References:

1. Denscombe M., The Good Research Guide: For Small-Scale Social Research Projects, Open Uni. Press, 1998
2. Sudman S &Bradburn N.M., Asking Questions, 1973
3. Wayne W Daniel, Questionnaire Design, 1979
4. Websites on Survey and Reporting.

MODEL QUESTION PAPER FORMAT

Max. Marks: 50 Time: 1 1/2hrs (90 Minutes)

SECTION A (Total: 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)
(Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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@@@@@

Subject Committee Members

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Dept. of History,
Acharya Nagarjuna University,
Guntur

Dr. J. Krishna Prasad Babu
Associate Professor,
Dept. of History
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SYLLABUS OF

FINANCIAL MARKETS

AS PART OF

SKILL DEVELOPMENT COURSES

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

AP State Council of Higher Education
B.A, B.Com and B.Sc Programmes
Revised CBCS w.e.f 2020-21

SKILL DEVELOPMENT COURSES

ARTS STREAM

Syllabus of

FINANCIAL MARKETS

Total 30 hrs (2hrs/wk) 02 credits & Maximum 50 Marks

Learning Outcomes:

After successful completion of this course, the students will be able to;

1. *Acquire knowledge of financial terms*
2. *Know the concepts relating to and markets and different avenues of investment*
3. *Understand the career skills related to Stock Exchanges*
4. *Comprehend the personal financial planning and money market skills*

Syllabus

UNIT-I: 06hrs
Indian Financial System- its components - Financial markets and institutions

UNIT-II: 10hrs
Capital Market - its function - organizations - elements - (shares, debentures, bonds, mutual funds) debt market - Equity market (SEBI) and secondary market (NSE)

UNIT-III: 10hrs
Money market - Organized - Unorganized - Sub market (call money, commercial bills, Treasury bill, Certificate of Deposit, Commercial papers)

Co-curricular activities: (04 hrs)

1. Collection and study of pamphlets, application forms etc.
2. Invited lectures on the field topics by local experts
3. IntroducingOnline classes from NSE
4. Field visitto mutual fund offices/share brokers
5. Observation, study and analysis of selected companies share prices
6. Assignments, Group discussion, quiz etc.

Reference books:

1.T.R. Jain R.L.Sarma - Indian Financial System- VK Global publisher
2. Jithendra Gala - Guide to Indian Stock markets Buzzing Stock publishing house

3. Saha Siddhartha- Indian financial System- and Markets - McGraw hill
4. Websites on Indian Financial markets.

MODEL QUESTION PAPER FORMAT

Max. Marks: 50 Time: 1 1/2hrs (90 Minutes)

SECTION A (Total: 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)
(Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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@@@@@

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SYLLABUS OF

DISASTER MANAGEMENT

UNDER SKILL DEVELOPMENT COURSES

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P STATE COUNCIL OF HIGHER EDUCATION
B.A,B.Com & B.Sc Programmes
Revised CBCS w.e.f 2020-21

SKILL DEVELOPMENT COURSES

ARTS STREAM

DISASTER MANAGEMENT

Total 30hrs (2hrs/week) 2 Credits Total 50 Marks

Learning Outcomes:
After successful completion of the course, the students are able to;

1. *Understand the nature, cause and effects of disasters*
2. *Comprehend the importance of Disaster Management and the need of awareness*
3. *Acquire knowledge on disaster preparedness, recoveryremedial measures and personal precautions*
4. *Volunteer in pre and post disaster management service activities*

Syllabus:
UNIT-I: 06 hrs
Introduction of Disaster - Different types of disasters- Natural- (flood, cyclone,earthquake, famineand pandemic) - Accidental- (Fire,Blasting,Chemical leakage, Rail,Aviation, Road boat tragedies and nuclear pollution) - Disaster Management Act 2005

UNIT-II: 09hrs
Causes and immediate effects of Disasters - Preparedness of disasters –Precautions – Dissemination of information - Nature and concepts - Role of National Disaster Management Authority and Role of Government and non governmental organizations in protecting human livestockand natural resources.-Use of technology -Role of Citizens and Youth in the prevention.

UNIT-III - 09 hrs
Post disaster effects - short term - Procedures for Rehabilitation and Recovery - Role of volunteers and Safety Precautions - Long term remedial and preventive measures – Collection, filing and storage of information - Case studies

Suggested co curriculum Activities: (06 hrs)

1. Invite lectures by local experts
2. Training on preparedness, post disaster services
3. Analysis of Case studies
4. Visit to a disaster management office and facility
5. Assignments, Group discussion, quiz etc.

References:

1. Jagbirsingh - Disaster Management Future challenges and opportunities- - K.W.Publishers

2. GOI - UNDP Disaster Management Guidelines
3. J.P.Singhal - Disaster Management - Laxmi Publications
4. www. ndma. gov.in
5. Wikipedia and other websites on Disaster management.

MODEL QUESTION PAPER FORMAT

Max Marks: 50 Time: 1 ½ hr (90 Min)

SECTION A (Total: 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)

(Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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Subject Committee Member:

1. Dr. J. Sanath Kumar, Principal (Retd.), GDC, Tanuku, WG Dt.



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SYLLABUS OF

SOCIAL WORK METHODS

UNDER SKILL DEVELOPMENT COURSES

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

(To be Implemented from 2020-21 Academic Year)

A.P. State Council of Higher Education
B.A., B. Com., B.Sc. etc. Programmes
(Revised CBCS w.e.f.2020-2021)

Skill Development Courses
To be offered from Semesters I to IV

ARTS STREAM

Syllabus of

SOCIAL WORK

(Total 25 hrs (02h/wk), 02 Credits & Max. 50 Marks)

Learning Outcomes:

By successful completion of the course, students will be able to:

1. *Understand the basic concepts relating to social work practice, values, principles of social work and social problems in India*
2. *List out different approaches of providing help to the people in need.*
3. *Acquaint the process of primary methods of social work*
4. *Get to know the skills of working with individuals, groups and communities.*

Syllabus

Unit-I:(07Hrs)- Introduction to social work and concepts related to social work

Introduction to Social Work- Definition- Scope- objectives - Functions- social service, social welfare services, social reform, major social problems in India; Social work philosophy, values, objectives, principles, methods and fields of social work.

Unit-II:(09Hrs) Methods of Working with Individuals and Groups

Social case work –Definition-scope and importance of social case work, principles and process of social case work -Tools and techniques in social case work- Counselling skills. Social Group Work-Definition-scope- the need for social group work –Group work process - Principles of Group Work -Stages of Group Work-Facilitation skills and techniques.

Unit-III: (09Hrs)Workingwith Communitiesand Field Work in social work

Community – definition - characteristics- types- community organisation as a method of social work-definition-objectives-principles- phases of community organization -

concepts of community development, community participation and community empowerment.

Field work in social work – Nature, objectives and types of field work - Importance of field work supervision.

Suggested Co-curricular Activities:(05 hours)

1. Divide the students into groups, each group containing not exceeding 10 students depending upon the total number of students in a class or section. Each group can search in internetabout any one of the institutions which work for the welfare of children or women or elderly or scheduled caste and scheduled tribe children or differently abled persons or Juvenile homes or Correctional homes or hospitals or Mahila Pragathipranganam or Swadhar project or any social welfare project or non governmental organizations (NGOs) to have an idea about welfare agencies working for the needy.
2. Ask each group to exchange and discuss the information with other groups in the classroom with the information they collected on Internet.
3. Group Discussion with the students- what type of community problems they observe in their villages/towns/cities? Ask them to tell what are the line departments which will help to solve the problems of their communities and suggest them what type strategies help the communities to empower.
4. Invited lectures/Training by local experts
5. Visit to a community
6. Assignments, Quiz etc.

References:

1. Chowdhary, Paul. D. (1992). Introduction to Social Work. New Delhi: Atma Ram and Sons.
2. Friedlander W.A. (1955). Introduction to social welfare, New York, Prentice Hall.
3. Government of India, (1987). Encyclopedia of Social Work in India (Set of 4 Volumes). New Delhi, Publications Division, Ministry of Information and Broadcasting.
4. Lal Das, D.K. (2017). Practice of Social Research – Social Work Perspective, Jaipur,
5. Rawat Publications.
6. Madan, G.R. (2009). Indian Social Problems (Volume 1 & 2). New Delhi: Allied publishers Private Limited.
7. Siddiqui, H.Y.(2007). Social Group Work. Jaipur: Rawat Publications
8. Pasty McCarthy &Carolin Hatcher, (2002). Presentation skills. The Essential Guide for Students. New Delhi, Sage Publications.
9. Websites on Social work methods.

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MODEL QUESTION PAPER FORMAT

Max Marks: 50 Time: 1 ½ hr (90 Min)

SECTION A (Total: 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)

(Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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MODEL QUESTION PAPER

Max.Marks:50 Time: $1^{1/2}$ hour (90 minutes)

SECTION-A (Total 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks)

1. Elucidate the objectives of social work.
2. Write the difference between social service and social welfare service.
3. Discuss about values of social work.
4. Write the various fields of social work.
5. Describe the techniques-ventilation and Empathy.
6. Write the qualities of a leader.
7. Explain the characteristics of community.
8. Describe the importance of field work in social work.

SECTION-B (Total=3x10 =30 marks)

(Answer any three questions. Each question carries 10 marks)

9. Discuss any two major social problems in India.
10. Write in detail principles of social work.
11. Define Social Case work and discussthe process of social case work.
12. Describe the stages of social group wok and discuss how you resolve group conflicts in a group.
13. Define Community Organisation? Write the phases of community organisation?

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SYLLABUS OF

PERFORMING ARTS

AS PART OF

SKILL DEVELOPMENT COURSES

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. STATE COUNCIL OF HIGHER EDUCATION

B.A., B.Com., & B.Sc., Programmes

Revised CBCS w.e.f. 2020-21

SKILL DEVELOPMENT COURSES

ARTS STREAM

Syllabus of

PERFORMING ARTS

Total 30 hrs (02h/wk), 02 Credits & Max. 50 Marks

Learning Outcomes:

After successful completion of this course, the student will be able to:

1. Acquire the basic knowledge in performing arts
2. Understand the modern stage and performance on the stage
3. Comprehend and improve the skills related to performing arts on the stage
4. Understand various Telugu folk arts and their significance
5. Know the modes of presentation and skills pertaining to folk arts.

SYLLABUS:

Unit-I: Introduction to performing Arts 06 Hrs

Arts – and its definition; Fine Arts; Arts - Learning &Imitation – Rasaas,Bhaavas and Rasa Sutra.Dasaroopakaas; Nrittha, Nrithya,Natya; Action – Kinds of Actions; Ancient Costume style .

Unit-II: Performing Arts – Stage Arts 10 Hrs

Origin of Drama (Theatre); Features of Stage; Varieties of Modern Telugu Drama; Famous Telugu Dramas.

Stage performance; Dramatic Actor and its definition; Actor–characteristics, Functions and Responsibilities.

Traits of an Actor – Diction, Articulation, Dialogue modulation, Time sense, Observation, Mime, Improvisation, Commentary,

Dress code, Make-up, lighting &Stage Direction.

Unit-III:Performing Arts – Forms 10 Hrs

Folk Arts, theirnature and significance – Brief introduction to Pagativeshaalu, Bommalaatalu, Veedhinaatakaalu, Yakshagaanaalu, Harikathalu, Burrakathalu, Oggukathalu, Chindu,Yakshagaanam, Kolaatamand Pulivesham.

Co-curricular Activities Suggested: (4 hrs)

1. Collection of information on modern stage plays, natakasamajams and audio visual material.
2. Providing training classes/inviting lectures with the help of local artists
3. Visit to a real time performing folk arts, if possible.
4. Mock experience classesof Stage plays and Folk arts.
5. Assignments, Group discussion, Quiz etc.

References:

1. Andhra Naataka Ranga Charithra –Mikkilineni Radha Krishna Murthy
2. Telugu SahithyaSameeksha (Vol-II) – Dr. G. Nagaiah
3. Telugu NaatakaVilaasam – Dr. P.S.RAppa Rao
4. Telugu JaanapadaVignanam – Prof. Tangirala Venkata Subba Rao
5. JaanapadaVignandhyayanam – Prof. G.S. Mohan
6. NaatyaSasthramu (VisleshanathmakaAdhyayanam) – Dr. P.S.RAppa Rao
7. SahithyaSilpaSameeksha – Prof. PingaliLakshmikantham
8. Nurella Telugu NatakaRangam – Prof. ModaliNagabhushanaSarma
9. Websites on Performing Arts.

MODEL QUESTION PAPER FORMAT

Max. Marks: 50 Time: 1 1/2 hrs (90 Minutes)

SECTION - A (Total: 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks)
(At least 1 question should be given from each Unit)

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SECTION - B (Total: 3x10 = 30 Marks)
(Answer any three questions. Each answer carries 10 marks)
(At least 1 question should be given from each Unit)

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MODEL QUESTION PAPER

Time: 1 ½ hours (90 Minutes) Max. Marks: 50

SECTION – A (Total 4 x 5 = 20 Marks)

Answer any Four Questions. Each answer carries 5 marks.

1. Rasa Sutra
2. Fine Arts
3. Natya, Nrittha, Nrithya,
4. Stage - Features
5. Dialogue Modulation
6. *PagatiVeshaalu*
7. *Kolaatam*
8. *VeedhiNaatakaalu*

SECTION – B(Total 3 x 10 = 30 marks

Answer any Three questions. Each answer carries 10 marks.

1. Write about Dasaroopakaas.
2. Describe the main Characteristics of a Stage Actor?
3. Explain about origin and developments of Drama (Theatre)and introduce famous Telugu actors.
4. Write about the importance of Performing Folk Art Forms.
5. Write an explanatory notes on the Folk Arts "*Pagativeshalu* and *Bommalatalu*".

Suggestions for Teachers:

1. The aim of Skill Development Course is to inculcate field – related practical skills with equal emphasis on theory and skills thereby learnt by all students irrespective of their streams.
2. Only a few field visits may be possible in view of large numbers and less time, hence, no undue emphasis on field learning.
3. As there will not be any practical examination for this course, the student shall be able to answer the skills part also theoretically.



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SYLLABUS OF

ADVERTISING

AS PART OF
SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

AP STATE COUNCIL OF HIGHER EDUCATION

B.A,B.com & B.Sc Programmes

Revised CBCS w.e.f 2020-21
SKILL DEVELOPMENT COURSES
COMMERCE STREAM

ADVERTISING

Total 30 hrs (2hrs/wk) 02 credits & Maximum 50 Marks

Learning Outcomes:

After Successful completion of this course, the students are able to;

1. *Understand the field of Advertising*
2. *Comprehend opportunities and challenges in Advertising sector*
3. *Prepare a primary advertising model*
4. *Understand applying of related skills*
5. *Examine the scope for making advertising a future career*

Syllabus

UNIT I: 06hrs

Introduction of advertising concepts- functions - Types of advertising - Creative advertising messages - Factors determining opportunities of a product/service/Idea

UNIT II: 10 hrs

Role of advertising agencies and their responsibilities - scope of their work and functions - - Ethical issues - Identifying target groups -Laws in advertising. Advertising Statutory Bodies in India - Role of AAAI (Advertising Agencies Association of India), ASCI (Advertising Standard Council of India)

UNIT III: 10hrs

Types of advertising – Basic characteristics of a typicaladvertisement –Reaching target groups - Local advertising – Feedback on impact of advertisement - Business promotion.

Recommended Co-curricular Activities (04 hrs):

1. Collection and segmentation of advertisements
2. Invited Lectures/skills training on local advertising basics and skills
3. Visit to local advertising agency
4. Model creation of advertisements in compliance with legal rules
5. Assignments, Group discussion, Quiz etc.

Reference booksand Websites:

1.Bhatia. K.Tej - Advertising and Marketing in Rural India - Mc Millan India

2.Ghosal Subhash - Making of Advertising - Mc Millan India
3.JethWaneyJaishri& Jain Shruti - Advertising Management - Oxford university Press
Publications of Indian Institute of Mass Communications
4. Websites on Advertising

MODEL QUESTION PAPER FORMAT

Max. Marks: 50 Time: 1 1/2 hrs (90 Minutes)

SECTION A (Total: 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)

(Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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SYLLABUS OF

AGRICULTURE MARKETING

AS PART OF
SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. STATE COUNCIL OF HIGHER EDUCATION
B A, B Com & B Sc Programmes

Revised CBCS w.e.f. 2020-21
SKILL DEVELOPMENT COURSES

COMMERCE STREAM

AGRICULTURAL MARKETING

Total 30 hrs (02h/wk), 02 Credits & Max 50 Marks

Learning Outcomes:
By the successful completion of this course, the student will be able to;

1. *Know the kinds of agricultural products and their movement*
2. *Understand the types, structure and functioning of agricultural marketing system*
3. *Comprehend related skills and apply them in sample situations*
4. *Extend this knowledge and skills to their production/consumption environment*

SYLLABUS:

Unit- I: 06hrs
Introduction of Agriculture and agricultural products (including agriculture, horticulture, sericulture, floriculture, aquaculture- genetic culture and dairy product) - Agricultural Marketing - Role of marketing - Concepts - Goods and services - Movement of product from farm to consumer –Middlemen – Moneylenders - Types of agricultural markets (basic classification).

Unit- II: 09hrs
Basic structure and facilities of an agricultural market – Primary, secondary and tertiary markets–Functioning of Market Yards–Market information - RythuBharosaKendras (RBK) - Govtmarket policies and regulations- Contract farming -Govt Apps for marketing of agri products.

Unit- III: 10hrs
Planning production – assembling – grading - transportation– storage facilities.Price fixation. Dissemination of market information –and role of ICT.Marketing - Mix- Product element- Place element- Price element- Promotion element. Selection of target market. Government programs in support of Agricultural marketing in India.

Suggested Co-curricular Activities: 05hrs

1. Study visit to agricultural marketsand RythuBharosaKendras (RBK)
2. Invited lecture by field expert

3. Survey of various involved activities e.gassembling, grading, storage, transportation and distribution
4. Identify the demand for food processing units
5. Application of Govt Apps as one Nation and one Market
6. Assignments, Group discussion, Quiz etc.

Reference books

1.S.S.Acharya&N.L.Agarwala, Agricultural Marketing in India - Oxford and IBH Publications
2. K.S.Habeeb - Ur - Rahman Rural Marketing in India - Himalaya publishing
3. S.S.Chinna Agricultural Marketing in India - KALYANI publishers
4. Publications of National Institute of Agricultural Marketing, Odisha
5. Wikiepediaand other websites on Agricultural Marketing.

MODEL QUESTION PAPER FORMAT

Max. Marks: 50 Time: 1 1/2 hrs (90 Minutes)

SECTION A (Total: 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)

(Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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SYLLABUS OF

BUSINESS COMMUNICATION

AS PART OF SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR UG PROGRAMME

(To be Implemented from 2020-21 Academic Year)

A.P.STATE COUNCIL OF HIGHER EDUCATION

B.A,B.Com & B.Sc Programmes

Revised CBCS w.e.f 2020-21

SKILL DEVELOPMENT COURSE

COMMERCE STREAM

BUSINESS COMMUNICATION

Total 30 hrs (02hrs/wk), 02 Credits, Max 50 marks

Learning Outcomes:

Aftersuccessful completion of this course, students will be able to;

1. *Understand the types of business communication and correspondence*
2. *Comprehend the processes like receiving, filing and replying*
3. *Acquire knowledge in preparing good business communications*
4. *Acquaint with organizational communication requirements and presentations*.

SYLLABUS:

UNIT I : 06hrs

Introduction and Importance of communication an overview - meaning and process of communication - organizational communication and its barriers.

UNIT II: 10hrs

Types of Business Communications –Categories, methods and formats - Business vocabulary - Business idioms and collocations – OrganisationalHierarchy - Various levels of communication in an organization – Top-down, Bottom-up and Horizontal-Business reports, presentations– Online communications.

UNIT III: 10hrs

Receiving business communications -Filing and processing -Sending replies. Routine cycle of communications – Writing Communications - Characteristics of a good business communication -Preparation of business meeting agenda – agenda notes - minutes –circulation of minutes – Presentations of communication using various methods.

Recommended Co-curricularActivities (04hrs):

1. Collection of various model business letters
2. Invited lecture/field level training by a local expert
3. Reading of various business reports and minutes and its analysis
4. Presentations of reports, charts etc.
5. Assignments, Group discussion, field visit etc.

Reference books:

1. Chaturvedi. P.D.Chaturvedi.M - Business Communication concepts, Cases and applications - Pearsons Education
2. Kaul Asha - Effective Business Communication - PHI Learning pvt Ltd
3. www.swayam.gov.in
4. Websites on business communication

MODEL QUESTION PAPER FORMAT

Max. Marks: 50 Time: 1 1/2 hrs (90 Minutes)

SECTION A (Total: 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)

(Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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SYLLABUS OF

INSURANCE PROMOTION

AS PART OF SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. STATE COUNCIL OF HIGHER EDUCATION

B A, B Com & B Sc Programmes

Revised CBCS w.e.f. 2020-21
SKILL DEVELOPMENT COURSES
To be Offered from Semesters I to IV

COMMERCE STREAM

Syllabus of
INSURANCE PROMOTION
Total 30 hrs (02h/wk), 02 Credits & Max 50 Marks

Learning Outcomes:
By successful completion of the course, students will be able to;

1. *Understand the field level structure and functioning of insurance sector and it's role in protecting the risks*
2. *Comprehend pertaining skills and their application for promoting insurance coverage*
3. *Prepare better for the Insurance Agent examination conducted by IRDA*
4. *Plan 'promoting insurance coverage practice' as one of the career options.*

SYLLABUS:
Section I: 06 Hrs

Introduction of Insurance - Types of insurances. Growth of Insurance sector in India - Regulatory mechanism (IRDA) - Its functions

Section II: 10 Hrs

Life Insurance plans. Health insurance plans.Products and features. Contents of documents– Sales Promotion methods - Finding prospective customers –Counselling – Helping customers in filing - Extending post-insurance service to customers.

Section III : 10 Hrs

General Insurance - It's products (Motor, Marine,Machinery, Fire, Travel and Transportation) and features.Contents of documents.Dealing with customers – Explaining Products to Customers - Promoting Customer loyalty. Maintenance of Records.

Co-curricular Activities Suggested: (4 hrs)

1. Collection of pamphlets of various insurance forms and procedures
2. Invited Lectures by Development Officers concerned

3. Mock practice of selling of insurance products
4. Preparation of working documents
5. Assignments, Group discussion, Quiz etc.

Reference books:

1. Principles of Insurance, Himalaya publishing House
2. Principles and Practice of Insurance, "
3. Fundamentals of insurance, "
4. Life and General Insurance Management, "
5. Financial services, Tata McGraw hill
6. Insurance Principles and Practices, Sultan Chand &Sons
7. Websites on insurance promotion

MODEL QUESTION PAPER FORMAT

Max. Marks: 50 Time: 1 1/2 hrs (90 Minutes)

SECTION A (Total: 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)

(Answer any three questions. Each answer carries 10 marks
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SYLLABUS OF

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

AS PART OF SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. State Council of Higher Education
B A, B Com & B Sc Programmes

Revised CBCS w.e.f. 2020-21
SKILL DEVELOPMENT COURSES

COMMERCE STREAM
Syllabus of
LOGISTICS AND SUPPLY CHAIN MANAGEMENT
Total 30 hrs (02h/wk), 02 Credits & Max 50 Marks

Learning Outcomes:
At the successful completion of the course, the student will able to;

1. *Summarize relationship between marketing and Logistic Management*
2. *Understand the concepts of Supply Chain Management in connection with products.*
3. *Understanding various types of seller and suppliers*
4. *Evaluate best logistic method among all means of transport operations*
5. *Analysis of different distribution strategies - online and physical distribution*
6. *Compare the Logistics in National and International Scenario.*
7. *Design and develop new methods and models of Logistics in SCM*

SYLLABUS:

Unit-1: Introduction to Logistics and Supply Chain Management (SCM):

Functions of Logistics - Structure of logistics - Logistics Costs - Modes of Logistics - Logistics in 21st Century -- Role of Supply Chain Management - Design and Development of Supply Chain Network - Different types of Supply Chain Networks

Unit-II: Logistics:

Customer Selection - Process -Customer Service and Customer Retention – Relationship Management - Integrating Logistics and Customer Relationship Management

Unit-III: Supply Chain Management:

Managing and Estimating Supply Chain Demand – Forecasting Techniques – Supplier Networks –Skills to Manage SCM - Recent Trends in SCM

Suggested Co-curricular Activities:

1. Invited lecture from Domain/Industry Experts
2. Field Visit (Manufacturing units, Suppliers)
3. Assignments, Seminars, Group Discussion, Quiz and Role Play
4. Poster presentations on SCM
5. Case Study Development

References:

1. Shailesh Kasande, Materials and logistics Management, NiraliPrakashan
2. Jhamb LC, Materials and logistics Management, Everest Publishing House.
3. Martin Christopher,Logistics & Supply Chain Management, Prentice Hall.
4. Alan Rushton, Phil Croucher & Peter Baker (CILT), Logistics and Distribution Management,Kogan Page Ltd.
5. G. Raghuram , Logics and Supply Chain Management, Macmillan.
6. Dr. Gopal Krishnan – Material Management Rearview, Pearson New Delhi.
7. B.S. Sahay, Macmillan, Supply Chain Management, Pearson Education.
8. Bowersox, Closs & Cooper, Supply Chain Logistics Management, McGraw-Hill.
9. Websites on Logistics and supply chain management.

MODEL QUESTION PAPER FORMAT

Max. Marks: 50 Time: 1 1/2 hrs (90 Minutes)

SECTION A (Total: 4x5=20 Marks)
(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)
(Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

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Web: www.apsche.org **Email**: acapsche@gmail.com

SYLLABUS OF
ONLINE BUSINESS
AS PART OF SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

(To be Implemented from 2020-21 Academic Year)

A.P. State Council of Higher Education
B A, B Com & B Sc Programmes

Revised CBCS w.e.f. 2020-21
SKILL DEVELOPMENT COURSES

COMMERCE STREAM

Syllabus of

ONLINE BUSINESS

Total 30 hrs (02h/wk), 02 Credits & Max 50 Marks

Learning Outcomes:
After successful completion of the course, students will be able to;

1. *Understand the online business and its advantages and disadvantages*
2. *Recognize new channels of marketing, their scope and steps involved*
3. *Analyze the procurement, payment process, security and shipping in online business*
4. *Create new marketing tools for online business*
5. *Define search engine, payment gateways and SEO techniques.*

SYLLABUS:

Section-I: 06 Hrs
Introduction to Online-business-Definition-Characteristics-Advantages of Online Business-Challenges- Differences between off-line business, e-commerce and Online Business.

Section-II: 10 Hrs
Online-business Strategies-Strategic Planning Process- Procurement -Logistics & Supply Chain Management- Customer Relationship management.

Section-III: 10 Hrs
Designing Online Business Website – Policies - Security & Legal Issues - Online Advertisements - Payment Gateways - Case Study

Co-curricular Activities Suggested: (4 hrs)

1. Assignments, Group discussion, Quiz etc.
2. Short practical training in computer lab
3. Identifying online business firms through internet
4. Invited Lectures by e-commerce operators
5. Working with Google and HTML advertisements.
6. Visit to a local online business firm.

Reference books:

1. David Whiteley, “E-Commerce”, Tata McGraw Hill, 2000.
2. E Business by Jonathan Reynolds from Oxford University Press.
3. Soka, From EDI to Electronic Commerce, McGraw Hill.
4. Websites on Online business.

MODEL QUESTION PAPER FORMAT

Max. Marks: 50 Time: 1 1/2 hrs (90 Minutes)

SECTION A (Total: 4x5=20 Marks)
(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)
(Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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SYLLABUS OF

OFFICE SECRETARYSHIP

AS PART OF SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

AP STATE COUNCIL OF HIGHER EDUCATION
B.A, B.Com AND B.Sc PROGRAMMES
Revised CBCS w.e.f 2020 - 21
To be Offered from Semester I to IV
SKILL DEVELOPMENT COURSE
COMMERCE STREAM

OFFICE SECRETARYSHIP

SYLLABUS

Learning Outcomes:

By the successful completion of course,the student will be able to;

1. *Understand the organizational hierarchy and outlines of functioning*
2. *Comprehend the role of office secretaryship in a small and medium organization*
3. *Acquire knowledge on office procedures and interpersonal skills*
4. *Apply the skills in preparing and presenting notes, letters, statements,reports in different situations.*

Syllabus

UNIT I: 06 hrs

Introduction – Organisational structure of a small and medium organization – Types of offices - Kinds of secretaries - The scope of office secretaryship

UNIT II: 10 hrs

The role of an office secretary -Duties and responsibilities- Usage of different devices - Flowchart and office manuals – Coordinating different wings of an office/organisaton – Arranging common meetings - Operations of banking and financial services - travel and hospitality management services

UNIT III: 10hrs

Office procedures – Filing– Circulating files - Preparation of notes, circulars, agenda and minutes of meetings – Issue of press notes - Maintenance of files and records - Inventory, office, human resources, financial and confidential - maintaining public relations.

Co curricular Activities: 04 hrs

1. Visit various organizations (Hospitals, Hotels, Hospitality centers)
2. Preparation of appointment letters, dismissal letters, memos, Issue of appreciation/ motivation letters,
3. Releasing of Press notes, notices and circulars
4. Arranging invited lectures from office executives,auditors and managers
5. Assignments, Group discussion, Quiz etc.

Reference books:

1. Rapidex Professional course - PustalMahal Group

2. James Stromen, Kevin Wilson and Jennifer Wauson - American Management Association
3. M.C.Kuchal, Secretarial Practice - S.Chand Publications
4. Charles K.B 1856 Ober - The Association of Secretaryship - Nabu Press
5. Websites on Office secretaryship

MODEL QUESTION PAPER FORMAT

Max. Marks: 50 Time: 1 1/2 hrs (90 Minutes)

SECTION A (Total: 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)

(Answer any three questions. Each answer carries 10 marks)
(At least 1 question should be given from each Unit)

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SYLLABUS OF

RETAILING

AS PART OF SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

(To be Implemented from 2020-21 Academic Year)

A.P STATE COUNCIL OF HIGHER EDUCATION

B.A, B.Com & B.Sc Programmes
Revised CBCS w.e.f 2020 -21

SKILL DEVELOPMENT COURSES

COMMERCE STREAM

RETAILING

Total 30hrs (02hrs/wk) 02 credits & Maximum 50 Marks

Learning Outcomes:
After successful completion of this course,the students are able to;

1. *Know the retailing business, its growth in India and social impact*
2. *Understand the and organization and supply in retailing*
3. *Comprehend the opportunities and challenges in retailing*
4. *Learn the functions that support outlet operations, sales and services*
5. *Create a shopping experience model that builds customer loyalty and business promotion*

SYLLABUS:

Unit I: 06hrs

Introduction -Retailing - Definition– Role of Retailing- Types of Retailing – Factors influencing the Growth of Retailing in India.

Unit II: 10 hrs

Store location – factors influencing selection of location - Types of retail outlets - stores design & operations- Merchandise planning - Administrative mechanism

Unit III: 10hrs

Human resources in retailing - Job profile- Services to customers – Customer care - Communications with customers - Visual merchandising – enhancing customer loyalty and Sales promotion.

Recommended Co-curricularActivities (04 hrs):

1. Collection of information on local retailing
2. Invited lecture/skills training by a local expert
3. Visit near-by stores /Godowns/warehouses and prepare study projects
4. Field training during leisure hours
5. Assignments, Group discussion, Sharing of experience etc.

Reference books:

1. 1.Swapna pradhan.R.M - Retail Management - Tata Mg Graw Hill

2. Berman, Barry & Evans - Retailing Management- A strategic Approach - Pearson Publications
3. Lamba.A.J. - The Art of Retailing - Tata Mg Graw Hill Publications
4. Websites on Retailing.

MODEL QUESTION PAPER FORMAT

Max. Marks: 50 Time: 1 1/2 hrs (90 Minutes)

SECTION A (Total: 4x5=20 Marks)

(Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (Total: 3x10 = 30 Marks)

(Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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SYLLABUS OF

ELECTRICAL APPLIANCES

AS PART OF SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. STATE COUNCIL OF HIGHER EDUCATION
B A, B Com & B Sc Programmes

Revised CBCS w.e.f. 2020-21
SKILL DEVELOPMENT COURSES

SCIENCE STREAM

Syllabus of
ELECTRICAL APPLIANCES

Total 30 hrs (02h/wk), ***02 Credits & Max Marks :50***

Learning Outcomes:
By successful completion of the course, students will be able to:

1. *Acquire necessary skills/hand on experience/ working knowledge on multimeters, galvanometers, ammeters, voltmeters, ac/dc generators, motors, transformers, single phase and three phase connections, basics of electrical wiring with electrical protection devices.*
2. *Understand the working principles of different household domestic appliances.*
3. *Check the electrical connections at house-hold but will also learn the skill to repair the electrical appliances for the general troubleshoots and wiring faults.*

SYLLABUS:

UNIT-I **(6 hrs)**
Voltage, Current, Resistance, Capacitance, Inductance, Electrical conductors and Insulators, Ohm's law, Series and parallel combinations of resistors, Galvanometer, Ammeter, Voltmeter, Multimeter, Transformers, Electrical energy, Power, Kilowatt hour (kWh), consumption of electrical power

UNIT-II **(10 hrs)**
Direct current and alternating current,RMS and peak values, Power factor, Single phase and three phase connections , Basics of House wiring , Star and delta connection , Electric shock, First aid for electric shock, Overloading , Earthing and its necessity, Short circuiting , Fuses , MCB , ELCB, Insulation, Inverter, UPS

UNIT-III **(10 hrs)**
Principles of working, parts and servicing of Electric fan, Electric Iron box, Water heater; Induction heater, Microwave oven; Refrigerator, Concept of illumination, Electric bulbs, CFL, LED lights, Energy efficiency in electrical appliances, IS codes & IE codes.

Co-curricular Activities (Hands on Exercises): (04 hrs)
[Any four of the following may be taken up]

1. Studying the electrical performance and power consumption of a given number of bulbs connected in series and parallel circuits.
2. Measuring parameters in combinational DC circuits by applying Ohm’s Law for different resistor values and voltage sources

3. Awareness of electrical safety tools and rescue of person in contact with live wire.
4. Checking the specific gravity of lead acid batteries in home UPS and topping-up with distilled water.
5. Identifying Phase, Neutral and Earth on power sockets.
6. Identifying primary and secondary windings and measuring primary and secondary voltages in various types of transformers.
7. Observing the working of transformer under no-load and full load conditions.
8. Observing the response of inductor and capacitor with DC and AC sources.
9. Observing the connections of elements and identify current flow and voltage drops.
10. Studying electrical circuit protection using MCBs, ELCBs
11. Assignments, Model exam etc.

Reference Books:

1. A Text book on Electrical Technology, B.L.Theraja, S.Chand& Co.,
2. A Text book on Electrical Technology, A.K.Theraja.
3. Performance and design of AC machines, M.G.Say, ELBSEdn.,
4. Handbook of Repair & Maintenance of domestic electronics appliances; BPB Publications
5. Consumer Electronics, S.P.Bali, Pearson
6. Domestic Appliances Servicing, K.P.Anwer, Scholar Institute Publications

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MODEL QUESTION PAPER

Max. Marks: 50 *Time: 1½ hrs (90 Minutes)*

SECTION- A (4x5M=20 Marks)

Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (3x10M = 30 Marks)

Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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SYLLABUS OF

SOLAR ENERGY

AS PART OF SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. STATE COUNCIL OF HIGHER EDUCATION
B.A, B.Com & B.Sc. PROGRAMMES

Revised CBCS w.e.f. 2020-21
SKILL DEVELOPMENT COURSES

Science Stream

Syllabus of

SOLAR ENERGY

Total 30 hrs (02h/wk), *02 Credits & Max Marks: 50*

Learning Outcomes:
After successful completion of the course, students will be able to:

1. *Acquire knowledge onsolarradiation principles with respect to solar energy estimation.*
2. *Get familiarized with various collecting techniques of solar energy and its storage*
3. *Learn the solar photovoltaic technology principles and different types of solar cells for energy conversion and different photovoltaic applications.*
4. *Understand the working principles of several solar appliances like Solar cookers, Solar hot water systems, Solar dryers, Solar Distillation, Solar greenhouses*

SYLLABUS:

UNIT-I – Solar Radiation: (6 hrs)

Sun as a source of energy, Solar radiation, Solar radiation at the Earth's surface, Measurement of Solar radiation-Pyroheliometer, Pyranometer, Sunshine recorder, Prediction of available solar radiation, Solar energy-Importance, Storage of solar energy, Solar pond

UNIT-II – Solar Thermal Systems: (10 hrs)

Principle of conversion of solar radiation into heat, Collectors used for solar thermal conversion: Flat plate collectors and Concentrating collectors, Solar Thermal Power Plant, Solar cookers, Solar hot water systems, Solar dryers, Solar Distillation, Solar greenhouses.

UNIT-III – Solar Photovoltaic Systems: (10 hrs)

Conversion of Solar energy into Electricity - Photovoltaic Effect, Solar photovoltaic cell and its working principle, Different types of Solar cells, Series and parallel connections, Photovoltaic applications: Battery chargers, domestic lighting, street lighting and water pumping

Co-curricular Activities (Hands on Exercises): (04 hrs)
[Any four of the following may be taken up]

1. *Plot sun chart and locate the sun at your location for a given time of the day.*
2. *Analyse shadow effect on incident solar radiation and find out contributors.*
3. *Connect solar panels in series & parallel and measure voltage and current.*
4. *Measure intensity of solar radiation using Pyranometer and radiometers.*
5. *Construct a solar lantern using Solar PV panel (15W)*
6. *Assemble solar cooker*
7. *Desigining and constructing photovoltaic system for a domestic house requiring 5kVA power*
8. Assignments/Model Exam.

Reference Books:

1. Solar Energy Utilization, G. D. Rai, Khanna Publishers
1. Solar Energy- Fundamentals, design, modeling & applications, G.N. Tiwari, Narosa Pub., 2005.
2. Solar Energy-Principles of thermal energy collection & storage, S.P. Sukhatme, Tata Mc-Graw Hill Publishers, 1999.
3. Solar Photovoltaics- Fundamentals, technologies and applications, Chetan Singh Solanki, PHI Learning Pvt. Ltd.,
4. Science and Technology of Photovoltaics, P. Jayarama Reddy, BS Publications, 2004.

Recommended MODEL QUESTION PAPER FORMAT

Max. Marks: 50 *Time: 1½ hrs (90 Minutes)*

SECTION- A (4x5M=20 Marks)

Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (3x10M = 30 Marks)

Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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SYLLABUS OF

FOOD ADULTERATION

UNDER SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. STATE COUNCIL OF HIGHER EDUCATION
B.A, B.Com & B.Sc. PROGRAMMES

Revised CBCS w.e.f. 2020-21
SKILL DEVELOPMENT COURSES

Science Stream

Syllabus of

FOOD ADULTERATION

Total 30 hrs (02h/wk), *02 Credits & Max Marks: 50*

Learning Outcomes:
After successful completion of the course, students will be able to:

1. *Get basic knowledge on*various *foods and about adulteration.*
2. *Understand the adulteration of common foods and their adverse impact on health*
3. *Comprehend certain skills of detecting adulteration of common foods.*
4. *Be able to extend their knowledge to other kinds of adulteration, detection and remedies.*
5. *Know the basic laws and procedures regarding food adulteration and consumer protection.*

SYLLABUS:

UNIT-I – Common Foods and Adulteration: (07hrs)

Common Foods subjected to Adulteration - Adulteration – Definition – Types; Poisonous substances, Foreign matter, Cheap substitutes, Spoiled parts. Adulteration through Food Additives – Intentional and incidental. General Impact on Human Health.

UNIT-II –: Adulteration of Common Foods and Methods of Detection: (10hrs)

Means of AdulterationMethods of Detection Adulterants in the following Foods; Milk, Oil, Grain, Sugar, Spices and condiments, Processed food, Fruits and vegetables. Additives and Sweetening agents (at least three methods of detection for each food item).

UNIT-III –:Present Laws and Procedures on Adulteration: (08hrs)

Highlights of Food Safety and Standards Act 2006 (FSSA) –Food Safety and Standards Authority of India–Rules and Procedures of Local Authorities.
Role of voluntary agencies suchas, Agmark, I.S.I.Qualitycontrol laboratories of companies, Private testing laboratories,Quality controllaboratoriesofconsumerco-operatives.
Consumer education,Consumer's problemsrightsandresponsibilities, COPRA 2019 - Offenses and Penalties – Procedures to Complain – Compensation to Victims.

Recommended Co-curricular Activities (including Hands on Exercises): (05hrs)

1. Collection of information on adulteration of some common foods from local market
2. Demonstration of Adulteration detection methods for a minimum of 5 common foods (one method each)
3. Invited lecture/training by local expert

4. Visit to a related nearby laboratory
5. Assignments, Group discussion, Quiz etc.

Reference e Books and Websites:

1. A firstcourseinFoodAnalysis–A.Y.Sathe,NewAgeInternational(P)Ltd.,1999
2. FoodSafety,casestudies–Ramesh.V.Bhat,NIN,1992
3. https://old.fssai.gov.in/Portals/0/Pdf/Draft_Manuals/Beverages and confectionary.pdf
4. https://cbseportal.com/project/Download-CBSE-XII-Chemistry-Project-Food-Adulteration#gsc.tab=0 (Downloadable e material on food adulteration)
5. https://www.fssai.gov.in/
6. https://indianlegalsolution.com/laws-on-food-adulteration/
7. https://fssai.gov.in/dart/
8. https://byjus.com/biology/food-adulteration/
9. Wikiepedia
10. Vikaspedia

Recommended MODEL QUESTION PAPER FORMAT

Max. Marks: 50 *Time: 1½ hrs (90 Minutes)*

SECTION- A (4x5M=20 Marks)

Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (3x10M = 30 Marks)

Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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MODEL QUESTION PAPER

Max. Marks: 50 *Time: 1½ hrs (90 Minutes)*

SECTION- A (4x5M=20 Marks)

Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

1. Define food adulteration?
2. Explain the adulteration through Food Additives
3. Name few cheap substitutes used in food adulteration
4. Give examples for food additives and sweetening agents
5. Write a short notes on processed food
6. Explain the procedures to complain about the food adulteration
7. Name the laws that governs the food adulteration
8. Explain the procedure to get ccompensation to the victims of food adulteration

SECTION B (3x10M = 30 Marks)

Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

9. Write an essay on the common Foods which are subjected to Adulteration and explain the types poisonous substances added for food adulteration
10. Describe the highlights of Food Safety and Standards Act 2006 (FSSAI)
11. Explain the food testing and standardized testing methods and protocols
12. Write in detail about the general Impact of food adulteration on Human Health
13. Write an essay on different types of offenses of food adulteration and the penalties imposed

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SYLLABUS OF

ENVIRONMENTAL AUDIT

AS PART OF SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. STATE COUNCIL OF HIGHER EDUCATION
B A, B Com & B Sc Programmes

Revised CBCS w.e.f. 2020-21
SKILL DEVELOPMENT COURSES

SCIENCE STREAM

Syllabus of

ENVIRONMENTAL AUDIT

Total 30 hrs (02h/wk), 02 Credits & Max 50 Marks

Learning Outcomes:

By successful completion of the course, students will be able to;

1. *Understand the basic concepts Environmental health*
2. *Learn and identify the industrial pollution*
3. *Explain the highlights in the regulatory aspects of Environmental law and policy*
4. *Understand the various phases of Environmental Audit*

UNIT – I

Industrial Pollution and its effects 06h

Climate – Weather and Air Pollution – Classification of water and water bodies – Water Quality Parameters – Water Pollution – Sources – Classification, nature and Toxicology of water pollutants. - Soil parameters –Soil pollution and impacts – Soil conservation

UNIT - II

Environmental Law & Policy: 09h

Highlights of the Acts, Institutional arrangements for: (1) The Water (Prevention & Control of Pollution) Act, 1974 amended in 1988; (2) The Air (Prevention and Control of Pollution) Act, 1981 amended in 1987; (3) The Water (Prevention and Control of Pollution) Cess Act, 1977 amended in 1991; (4) The Environment (Protection) Act, 1986; (5) The Public Liability Insurance Act, 1991; – Indian Policy Statement for abatement of Pollution, 1992.

UNIT - III

Environmental Audit - Scope & Requisites: 10h

Environmental Audit: Definition; Objectives; Scope, Coverage - GOI Notification on Environmental Audit - Benefits to Industry. Reporting Environmental Audit Findings - Importance of Environmental Audit Report to industry, public and the governments.

Co-curricular Activities Suggested: 05h

1. Visit to understand Institutional arrangements and functioning of Pollution Control Boards.
2. Visiting different Ecosystems
3. **Soil analysis**: Determination of soil type and texture, pH, Soil Moisture, Nitrogen, Potassium and Phosphorous.
4. **Water analysis:** Determination of pH, Dissolved solids and suspended solids, Dissolved Oxygen, COD, BOD.
5. Assignments, Group discussion, Quiz etc.

Reference books and websites:

1. Environmental Education in India by K.R. Gupta
2. Environmental Legislation in India by K.R. Gupta
3. https://parivesh.nic.in/
4. https://www.cpcb.nic.in/
5. https://www.free-ebooks.net/environmental-studies-academic

Recommended MODEL QUESTION PAPER FORMAT

Max. Marks: 50 *Time: 1½ hrs (90 Minutes)*

SECTION- A (4x5M=20 Marks)

Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

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SECTION B (3x10M = 30 Marks)

Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

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MODEL QUESTION PAPER

Max. Marks: 50 *Time: 1½ hrs (90 Minutes)*

SECTION- A (4x5M=20 Marks)

Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

1. Write any three global environmental problems?
2. Write a short note on soil pollution and its impact?
3. What is BOD and explain its significance in determining the quality of water?
4. What are the objectives of the environmental Acts and the Institutional arrangements
5. Write a brief note on the environmental laws that governs the water pollution
6. Write a brief note on the functioning of central and state pollution control boards?
7. What are the objectives of environmental audit
8. What is GoI notification on environmental audit?

SECTION B (3x10M = 30 Marks)

Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

1. What is water pollution and explain in detail about the water pollutants?
2. What is air pollution and explain in detail about the air pollutants?
3. Write an essay on the Water (Prevention & Control of Pollution) Act, 1974 amended in 1988
4. Write an essay on the Air (Prevention and Control of Pollution) Act, 1981 amended in 1987
5. What is environmental audit and explain the various stages involved in it and the benefits of environmental audit to the industry?

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ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

3rd, 4th and 5thfloors, Neeladri Towers, Sri Ram Nagar, 6th Battalion Road,
Atmakur (V), Mangalagiri(M), Guntur-522 503, Andhra Pradesh
Web: www.apsche.org **Email**: acapsche@gmail.com

SYLLABUS OF

PLANT NURSERY

UNDER SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. STATE COUNCIL OF HIGHER EDUCATION
B.A, B.Com & B.Sc. PROGRAMMES

Revised CBCS w.e.f. 2020-21
SKILL DEVELOPMENT COURSES
Science Stream

Syllabus of
PLANT NURSERY

Total 30 hrs (02h/wk), 02 Credits & Max Marks: 50

Learning Outcomes :

On successful completion of this course students will be able to;

1. *Understand the importance of a plant nursery and basic infrastructure toestablish it.*
2. *Explain the basic material, tools and techniques required for nursery.*
3. *Demonstrate expertise related to various practices in a nursery.*
4. *Comprehend knowledge and skills to get an employment or to become an entrepreneur in plant nursery sector.*

Syllabus:

Unit-1 :Introduction to plant nursery 06 Hrs.

1. Plant nursery: Definition, importance.
2. Different types of nurseries –on the basis of duration, plants produced, structure used.
3. Basic facilities for a nursery; layout and components of a good nursery.
4. Plant propagation structuresin brief.
5. Bureau of Indian Standards (BIS-2008) related to nursery.

Unit- 2 :Necessities for nursery 09 Hrs.

1. Nursery beds – types and precautions to be taken during preparation.
2. Growing media, nursery tools and implements, and containers for plant nursery, in brief.
3. Seeds and other vegetative material used to raise nursery.in brief.
4. Outlines of vegetative propagation techniques to produce planting material.
5. Sowing methods of seeds and planting material.

Unit-3 :Management of nursery 09 Hrs.

1. Seasonal activities androutine operations in a nursery.
2. Nursery management – watering, weeding and nutrients; pests and diseases.
3. Common possible errors in nursery activities.
4. Economics of nursery development, pricing and record maintenance.
5. Online nursery information and sales systems.

Suggested Co-curricular activities (6 Hrs.)

1. Assignments/Group discussion/Quiz/Model Exam.
2. Demonstration of nursery bed making.
3. Demonstration ofpreparation of media for nursery.
4. Hands on training on vegetative propagation techniques.
5. Hands on training on sowing methods of seeds and other material.
6. Invited lecture cum demonstration by local expert**.**
7. Watching videos on routine practices in plant nurseries.
8. Visit to an agriculture/horticulture /forest nursery.
9. Case study on establishment and success of a plant nursery.

Suggested text books/reference books :

1. Ratha Krishnan, M., et.al. (2014) *Plant nursery management : Principles and practices*, Central Arid Zone Research Institute (ICAR), Jodhpur, Rjasthan
2. Kumar, N., (1997) *Introduction to Horticulture*, Rajalakshmi Publications, Nagercoil.
3. KumarMishra, K., N.K. Mishra and Satish Chand (1994) *Plant Propagation*, John Wiley & Sons, New Jersey.

MODEL QUESTION PAPER

Max. Marks: 50 *Time: 1½ hrs (90 Minutes)*

SECTION- A (4x5M=20 Marks)

Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

1.	
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SECTION B (3x10M = 30 Marks)

Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

1.	
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SYLLABUS OF

FRUITS AND VEGETABLE PRESERVATION

AS PART OF SKILL DEVELOPMENT COURSES

UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-21

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. STATE COUNCIL OF HIGHER EDUCATION

B.A, B.Com & B.Sc. PROGRAMMES

Revised CBCS w.e.f. 2020-21
SKILL DEVELOPMENT COURSES

Science Stream

Syllabus of

FRUITS AND VEGETABLES PRESERVATION

Total 30 hrs (02h/wk), 02 Credits & Max Marks: 50

Learning Outcomes:

On successful completion of this course the students will be able to;

1. *Identify various types of fruits and vegetables and explain their nutritive value.*
2. *Understand the fragile nature of fruits and vegetables and causes for their damage.*
3. *Explain various methods of preservation for fresh fruits and vegetables.*
4. *Get to know the value-added products made from fruits and vegetables.*

Syllabus:

Unit – 1 : Introduction to fruits and vegetables 06 Hrs**.**

1. Fruits: Definition, elementary knowledge on types of fruits (fleshy and dry) with local /common examples.
2. Vegetables: Definition, elementary knowledge on types of vegetables (root, leafy, stem, flower and fruit) with local/ common examples.
3. Importance of fruits and vegetables in human nutrition.
4. Concept of perishable plant products – maturation and spoilage, shelf life; preservation – definition and need for preservation of fruits and vegetables.

Unit – 2 :Preservation of Fruit 09 Hrs**.**

1. Fruits – ripening and biological aging; storage and preservation concerns.
2. Preservation of fresh fruits at room temperature and in cold storage.
3. Fruit preservation at room temperatue as juices, squashes and syrups.
4. Preservation of fruits by application of heat; making of fruit products (jams, jellies and fruit slices in processing factories).
5. Preservation by dehydration (Eg. banana chips), application of sugar (Eg. mango candy), application of salt (pickling).
6. Fruit preservation by freezing – storage at the lowest temperatures.

Unit – 3 :Preservation of vegetables 09 Hrs**.**

1. Vegetables – losses after harvesting and causes; problems in handling and storage.
2. Modern methods of packaging and storage to reduce losses.
3. Trimming of vegetables and packing in cartons; dehydration technique -factory processing.
4. Making of vegetable products (flakes/chips of potato and onion; garlic powder).
5. Frozen vegetables – Carrots, Cauliflower, Okra and Spinach.
6. Preservation of sliced vegetables in factories by canning and bottling.
7.

Suggested Co-curricular activities (6 Hrs.)

1. Assignments/Group discussion/Quiz/Model Exam.
2. Invited lecture and demonstration by local expert
3. Exhibition of various types of locally available fruits and vegetables.
4. Hands on training on handling and packaging methods of fresh fruits and vegetables.
5. Hands on training on making fruit juices.
6. Display of various preserved fruit products available in local markets.
7. Hands on training on making of potato, yam, onion chips.
8. Display of various preserved vegetable products available in local markets.
9. Watching videos on preservation of fruits and vegetables.
10. Visit to Horticulture University or research station to learn about value added products of fruits and vegetables.

Suggested text books/reference books :

1. Giridharilal, G. S. Siddappa and G.L.Tandon(2007) *Preservation of Fruits and Vegetables,* Indian Council of Agri. Res., New Delhi
2. Srivastava, R.P., and Sanjeev Kumar (2019) *Fruit and Vegetable Preservation : Principles and Practices,* CBS Publishers & Distributors Pvt., Ltd., New Delhi
3. Thompson, A.K. (1995) *Post Harvest Technology of Fruits and Vegetables*. Blackwell Sci.,U.K.
4. Verma, L.R. and V.K. Joshi (2000) *Post Harvest Technology of Fruits and Vegetables.* Indus Publ., New Delhi

Recommended MODEL QUESTION PAPER FORMAT

Max. Marks: 50 *Time: 1½ hrs (90 Minutes)*

SECTION- A (4x5M=20 Marks)

Answer any four questions. Each answer carries 5 marks
(At least 1 question should be given from each Unit)

1.	
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SECTION B (3x10M = 30 Marks)

Answer any three questions. Each answer carries 10 marks
(At least 1 question should be given from each Unit)

1.	
2.	
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5.	

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SYLLABUS OF

DAIRY TECHNOLOGY

AS PART OF SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. STATE COUNCIL OF HIGHER EDUCATION

B A, B Com & B Sc Programmes

Revised CBCS w.e.f. 2020-21

SKILL DEVELOPMENT COURSES

To be Offered from Semesters I to IV

ZOOLOGY STREAM

Syllabus of

DAIRY TECHNOLOGY

Total 30 hrs (02h/wk), 02 Credits & Max 50 Marks

Learning Outcomes:

Aftersuccessful completion of the course, students will be able to;

1. Understand the pre-requisites for starting a Dairy farm
2. Recognize different breeds of Cows & buffaloes following safety precautions.
3. Prepare and give recommended feed and water for livestock
4. Maintain health of livestock along with productivity
5. Vaccination of cattle, nutrients requirements
6. Entrepreneurship i.e., Effectively market dairy products
7. Ensure safe and clean dairy farm and Standard safety measures to be taken in establishing am industry
8. Efficiently start and manage to establish or develop a Dairy Industry

SYLLABUS:

Section I (Introduction and Establishment of a Dairy Farm): 05 Hrs

1.1 Dairy development in India – Dairy Cooperatives (NDRI, NDDB, TCMPF)(1hr)

1.2 Constraintsof Present Dairy Farmingand Future Scope of Dairy Farmer.(1 hr)

1.3 Selection of site for dairy farm; Systems of housing – Loose housing system, Conventional Dairy Farm; Records to be maintained in a dairy farm. (2 hrs)

Section II (Livestock Identification and Management): 13 Hrs

2.1 Breeds of Dairy Cattle and Buffaloes – Identification of Indian cattle and buffalo breeds and Exotic breeds; Methods of selection of Dairy animals. (5 hrs)

2.2 Systems of inbreeding and crossbreeding. (2 hrs)

2.3 Weaning of calf, Castration, Dehorning, Deworming and Vaccination programme (3 hrs)

2.4 Care and management of calf, heifer, milk animal, dry and pregnant animal, bulls and bullocks. (3 hrs)

Section III (Feed Management, Dairy Management, Cleaning and Sanitation): 8 Hrs

3.1 Basic Principles of Feed, Important Feed Ingredients, Feed formulation and Feed Mixing(2 hrs)

3.2 Operation Flood –Definition of Milk and Nutritive value of milk and ICMR recommendation of nutrients –Per Capita Milk production and availability in India and Andhra Pradesh -Methods of Collection and Storage of Milk–Labelling and Storage of milk products (4 hrs)

3.3 Cleaning and sanitation of dairy farm – Safety precautions to prevent accidents in an industry. (2 hrs)

Co-curricular Activities Suggested: (4 hrs)

1. Group discussion&SWOT analysis
2. Visit to a Dairy Farm
3. Visit to Milk Cooperative Societies
4. Visit to Feed Milling Plants
5. Market Study and Identification of Government Schemes, Insurance and Bank Loans in relation to dairy farming

Reference books:

1. Dairy Science: Petersen (W.E.) Publisher – Lippincott & Company
2. Principles and practices of Dairy Farm –Jagdish Prasad
3. Text book of Animal Husbandry - G C Benarjee
4. Hand book of Animal Husbandry - ICAR Edition
5. Outlines of Dairy Technology – Sukumar (De) – Oxford University press
6. Indian Dairy Products – Rangappa (K.S.) & Acharya (KT) – Asia Publishing House.
7. The technology of milk Proceesing – Ananthakrishnan, C.P., Khan, A.Q. and Padmanabhan, P.N. – Shri Lakshmi Publications.
8. Dairy India 2007, Sixth edititon
9. Economics of Milk Production – Bharati Pratima Acharya Publishers.
10. http://www.asci-india.com/BooksPDF/Dairy%20Farmer%20or%20Entrepreneur.pdf
11. https://labour.gov.in/industrial-safety-health

Model Format for Question Paper:

MODEL QUESTION PAPER & PATTERN

Max. Marks: 50 **Time: 1 1/2 hrs (90 Minutes)**

SECTION A (Total: 4x5=20 Marks)

(Answer any **four questions**. Each answer carries **5 marks**
(At least 1 question should be given from each Unit)

1.	Conventional Dairy Farm
2.	Animal Inbreeding
3.	Sanitation of Dairy Farm
4.	Dairy development in India
5.	Feed Mixing
6.	Deworming
7.	Milk Storage Methods
8.	Identification of characters of any Two Dairy cattle

SECTION B (Total: 3x10 = 30 Marks)

(Answer any **three questions**. Each answer carries **10 marks**
(At least 1 question should be given from each Unit)

1.	Write an essay on Dairy development in India, its current position and future scenario.
2.	List our different methods involved in selection of dairy animals and discuss briefly.
3.	Give an account of feed ingredients and feed management required for dairy animals.
4.	Explain different methods of collection of milk.
5.	Explain two methods of systems of housing of dairy animals.

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Note: Please read the following in addition to the Guidelines sent.

1. *In Unit-2 and Unit-3, Sub-titles highlighted in Yellow colour are Skills. Sub-titles not highlighted are of Theoretical base.*
2. *Skills, though separately shown, shall also have 'content' to be learnt and written in the examination by the students.*
3. *The field (hands on) skills are learnt through the Co-curricular Activities.*
4. *One or two books referred shall be related to 'learning of skills'*
5. *Topics and syllabus may be prepared keeping all (BA/BSc/BCom) urban as well as rural students in view.*



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SYLLABUS OF

POULTRY FARMING

AS PART OF SKILL DEVELOPMENT COURSES
UNDER CBCS FRAMEWORK WITH EFFECT FROM 2020-2021

PROGRAMME: THREE-YEAR UG PROGRAMME

A.P. STATE COUNCIL OF HIGHER EDUCATION

B A, B Com & B Sc Programmes

Revised CBCS w.e.f. 2020-21

SKILL DEVELOPMENT COURSES

To be Offered from Semesters I to IV

ZOOLOGY STREAM

Syllabus of

POULRY FARMING

Total 30 hrs (02h/wk), 02 Credits & Max 50 Marks

Learning Outcomes:

By successful completion of the course, students will be able to;

1. Understand the field level structure and functioning of insurance sector and it's role in protecting the risks
2. Comprehend pertaining skills and their application for promoting insurance coverage
3. Prepare better for the Insurance Agent examination conducted by IRDA
4. Plan 'promoting insurance coverage practice' as one of the career options.

SYLLABUS:

Section I (Introduction to Poultry Farming): 10Hrs

1.1 General introduction to poultry farming -Definition of Poultry; Past and present scenario of poultry industry in India.

1.2 Principles of poultry housing. Poultry houses. Systems of poultry farming.

1.3 Management of chicks, growers and layers. Management of Broilers.

1.4 Preparation of project report for banking and insurance

Section II (Feed and Livestock Health Management): 10 Hrs

2.1 Poultry feed management – Principles of feeding, Nutrient requirements for different stages oflayers and broilers. Feed formulation and Methods of feeding.

2.2 Poultry diseases – viral, bacterial, fungal and parasitic(two each); symptoms, control and management; Vaccination programme.

Section III(Harvesting of Eggs and Sanitation): 10 Hrs

3.1 Selection, care and handling of hatching eggs. Egg testing.Methods of hatching.

3.2 Brooding andrearing. Sexing of chicks.

3.3 Farm and Water Hygiene, Recycling of poultry waste.

Co-curricular Activities Suggested: (4 hrs)

1. Group discussion& SWOT analysis
2. Visit to a poultry farm
3. Invited Lectures by Concerned officers of government or private farms
4. Cheap and Healthy Feed preparation by students based on government standards
5. Market study and Survey (Monitoring of daily price hike in poultry market and analysis)
6. Online SwayamMoocs course on poultry farming (see reference 9 below)

Reference books:

1. Sreenivasaiah., P. V., 2015. Textbook of Poultry Science. 1st Edition. Write & Print Publications, New Delhi
2. 2. Jull A. Morley, 2007. Successful Poultry Management. 2nd Edition. Biotech Books, New Delhi"
3. Hurd M. Louis, 2003. Modern Poultry Farming. 1st Edition. International Book Distributing Company, Lucknow."
4. Life and General Insurance Management, "
5. Financial services, Tata McGraw hill
6. http://www.asci-india.com/BooksPDF/Small%20Poultry%20Farmer.pdf
7. https://nsdcindia.org/sites/default/files/MC_AGR-Q4306_Small-poultry-farmer-.pdf
8. http://ecoursesonline.iasri.res.in/course/view.php?id=335
9. https://swayam.gov.in/nd2_nou19_ag09/preview

MODEL QUESTION PAPER & PATTERN

Max. Marks: 50 **Time: 1 1/2 hrs (90 Minutes)**

SECTION A (Total: 4x5=20 Marks)

(Answer any **four questions**. Each answer carries **5 marks**
(At least 1 question should be given from each Unit)

1.	Poultry house
2.	Broilers
3.	Any two viral diseases of poultry
4.	Any two bacterial diseases of poultry
5.	Any two fungal diseases of poultry
6.	Egg testing
7.	Brooding
8.	Sexing chicks

SECTION B (Total: 3x10 = 30 Marks)

(Answer any **three questions**. Each answer carries **10 marks**
(At least 1 question should be given from each Unit)

1.	Discuss briefly the past, present and future scenario of poultry farming industry in India.
2.	Explain principles of poultry housing in detail, with examples.
3.	Write an essay on viral diseases of poultry.
4.	Give an account of fungal and bacterial diseases (any two each) of poultry
5.	Write an essay on selection, handling and hatching of eggs.

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Note: Please read the following in addition to the Guidelines sent.

1. *In Unit-2 and Unit-3, Sub-titles highlighted in Yellow colour are Skills. Sub-titles not highlighted are of Theoretical base.*
2. *Skills, though separately shown, shall also have 'content' to be learnt and written in the examination by the students.*
3. *The field (hands on) skills are learnt through the Co-curricular Activities.*
4. *One or two books referred shall be related to 'learning of skills'*
5. *Topics and syllabus may be prepared keeping all (BA/BSc/BCom) urban as well as rural students in view.*

GOVERNEMNT DEGREE COLLEGE, CHEBROLE

Guntur district, Andhra Pradesh

Affiliated to

Acharya Nagarjuna University

SYLLABUS PRESCRIBED BY THE AFFILIATING UNIVERSITY

FOR

B.A., B.COM., B.SC., COURSES

W.E.F., 2015-16

UNDER CBCS

A.P. State Council of Higher Education

Revised Common Framework of CBCS for Colleges in Andhra Pradesh

w.e.f. 2015-16, Revised in April, 2016

Table-7: B.Sc., SEMESTER – I

Sno	Course	Total Marks	Mid Sem Exam*	Sem End Exam	Teaching Hours	Credits
1	First Language (Tel/Hin/Urdu/Sans…)	100	25	75	4	3
2	Second Language English	100	25	75	4	3
3	*Foundation Course - 1* Human Values & Professional Ethics	50	0	50	2	2
4	*Foundation course -2* Environmental Studies	50	0	50	2	2
5	DSC-1 Paper-1 (Core)	100	25	75	4	3
6	DSC 1 Lab Practical	50	0	50	2	2
7	DSC 2 Paper-1 (Core)	100	25	75	4	3
8	DSC 2 Lab Practical	50	0	50	2	2
9	DSC 3 Paper-1 (Core)	100	25	75	4	3
10	DSC 3 A Lab Practical	50	0	50	2	2
	Total	750	-	-	30	25

#DSC: Domain (Subject) Specific Course (Paper)

Foundation Course: value or skill based

Note: For Science Domain Subjects which had no lab practical component earlier (eg. Mathematics) the following format is applicable. They, however, will have co-curricular activities (eg. Problem solving sessions etc.).The total marks will change accordingly for such combinations. For example for Maths, Physics and Chemistry the total marks will be 700.

	DSC (without Lab Practical)	100	25	75	6	5

*Mid sem exam at the college (The marks split between Formal Test and Co-curricular activities may be decided by the University concerned). End Sem Exam by the Univ.

*Practical component will not be applicable to those science subjects which had no such component earlier (ex. Mathematics)

**Syllabus size shall be in accordance with the number of teaching hours

Table-8: B.Sc., SEMESTER – II

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	First Language (Tel/Hin/Urdu/Sans…)	100	25	75	4	3
2	Second Language English	100	25	75	4	3
3	*Foundation course – 3* ICT – I	50	0	50	2	2
4	*Foundation course – 4* CSS – I	50	0	50	2	2
5	DSC 1 Paper-2 (Core)	100	25	75	4	3
6	DSC 1 Lab Practical	50	0	50	2	2
7	DSC 2 Paper-2 (Core)	100	25	75	4	3
8	DSC 2 Lab Practical	50	0	50	2	2
9	DSC 3 Paper-2 (Core)	100	25	75	4	3
10	DSC 3 Lab Practical	50	0	50	2	2
	Total	750	-	-	30	25

B.Sc.Table-9: B.Sc., SEMESTER – III

SEMESTER – III

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	First Language (Tel/Hin/Urdu/Sans…)	100	25	75	4	3
2	Second Language English	100	25	75	4	3
3	*Foundation Course - 5* ICT – II	50	0	50	2	2
4	*Foundation course– 6* CSS – II	50	0	50	2	2
5	DSC 1 Paper-3 (Core)	100	25	75	4	3
6	DSC 1 Practical	50	0	50	2	2
7	DSC 2 Paper-3 (Core)	100	25	75	4	3
8	DSC 2 Practical	50	0	50	2	2
9	DSC 3 Paper-3 (Core)	100	25	75	4	3
10	DSC 3 Practical	50	0	50	2	2
	Total	750	-	-	30	25

Table-10: B.Sc., SEMESTER – IV

SEMESTER – IV

Sno	Course	Total Marks	Mid Sem Exam*	Sem End Exam	Teaching Hours**	Credits
1	*Foundation Course – 7* CSS – 2	50	0	50	2	2
2	*Foundation Course – 8* Analytical Skills	50	0	50	2	2
3	*Foundation Course - 9* Entrepreneurship	50	0	50	2	2
4	*Foundation course – 10* Leadership Education	50	0	50	2	2
5	DSC 1 Paper-4 (Core)	100	25	75	4	3
6	DSC 1 Lab Practical	50	0	50	2	2
7	DSC 2 Paper-4 (Core)	100	25	75	4	3
8	DSC 2 Lab Practical	50	0	50	2	2
9	DSC 3 Paper-4 (Core)	100	25	75	4	3
10	DSC 3 Lab Practical	50	0	50	2	2
	Total	750	-	-	30	23

*Analytical Skills: To be taught by Maths/Stat Teachers (may be partly by English Teachers)
Entrepreneurship: To be taught by Commerce Teachers
Leadership Education: To be taught by Telugu Teachers

Table-11: B.Sc., SEMESTER – V

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	DSC 1 Paper-5 (Core)	100	25	75	3	3
2	DSC 1 Lab Practical	50	0	50	2	2
3	DSC 2 Paper-5 (Core)	100	25	75	3	3
4	DSC 2 Lab Practical	50	0	50	2	2
5	DSC 3 Paper-5 (Core)	100	25	75	3	3
6	DSC 3 Lab Practical	50	0	50	2	2
7	DSC 1 Paper-6 (Core)	100	25	75	3	3
8	DSC 1 Lab Practical	50	0	50	2	2
9	DSC 2 Paper -6 (Core)	100	25	75	3	3
10	DSC 2 Lab Practical	50	0	50	2	2
11	DSC 3 Paper-6 (Core)	100	25	75	3	3
12	DSC 3 Lab Practical	50	0	50	2	2
	Total	900	-	-	30	30

Table-12: B.Sc., SEMESTER – VI

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	Elective 1: DSC 1, Paper -7 (applied/adv)	100	25	75	3	3
2	Elective-1 Lab Practical	50	0	50	2	2
3	Elective-1: DSC 2, Paper -7 (applied/adv)	100	25	75	3	3
4	Elective-2 Lab Practical	50	0	50	2	2
5	Elective-1: DSC 3, Paper -7 (applied/adv)	100	25	75	3	3
6	Elective-3 Lab Practical	50	0	50	2	2
7	Elective -2: DSC 1, Paper -8 App/Inter-domain/Gen El	100	25	75	3	3
8	Elective-2 Lab Practical	50	0	50	2	2
9	Elective -2: DSC 2, Paper -8 App/Inter-domain/Gen El	100	25	75	3	3
10	Elective-2 Lab Practical	50	0	50	2	2
11	Elective -2: DSC 3, Paper -8 App/Inter-domain/Gen El	100	25	75	3	3
12	Elective-2 Lab Practical	50	0	50	2	2
	Total	900	-	-	30	30

*__7__th paper of each of the domain specific subjects (1st paper of semester VI) will be a domain related Elective. More than one Elective may be offered giving choice to students. The Electives may be of Domain specific applied or advanced (specialization) in nature. The number of Electives may be decided (along with the syllabus) by the University concerned keeping the feasibility of conduct of University examinations in view.

** Applied Elective: It is desirable that around 25% of syllabus is taught by field experts. The college has to make such an arrangement.

*__8th__ paper of each of the domain specific subjects (2nd paper of semester VI) will also be an Elective. The Electives may be of Inter-domain Clusters**- each Cluster having three papers with or without project work. or General in nature. The number of Clusters may be decided (along with the syllabus) by the University concerned keeping the feasibility of conduct of University examinations in view. It is desirable that around 25% of syllabus is taught by field experts.

***Cluster: In the last semester, for paper-8, each domain subject has one elective totaling three papers for each student. Electives may be given as Clusters of three papers each for each subject. A student can opt for all the threepapers of the same subject (clusteror stream) including or excluding project work for a wider learning experience. The student will not study the other two domain subjects for paper-8.*

Total Credits for a B.Sc. Course: 158

Andhra Pradesh State Council of Higher Education
CBCS B.A./B.Sc. **Mathematics** Course Structure
w.e.f. 2015-16 (Revised in April, 2016)

Year	Seme-ster	Paper	Subject	Hrs.	Credits	IA	EA	Total
1	**I**	I	Differential Equations & Differential Equations Problem Solving Sessions	6	5	25	75	100
	II	II	Solid Geometry & Solid Geometry Problem Solving Sessions	6	5	25	75	100
2	**III**	III	Abstract Algebra & Abstract Algebra Problem Solving Sessions	6	5	25	75	100
	IV	IV	Real Analysis & Real Analysis Problem Solving Sessions	6	5	25	75	100
3	**V**	V	Ring Theory & Vector Calculus & Ring Theory & Vector Calculus Problem Solving Sessions	5	5	25	75	100
		VI	Linear Algebra & Linear Algebra Problem Solving Sessions	5	5	25	75	100
	VI	VII	**Electives: (any one)** VII-(A) Laplace Transforms VII-(B) Numerical Analysis VII-(C) Number Theory & Elective Problem Solving Sessions	5	5	25	75	100
		VIII	**Cluster Electives:** VIII-A-1: Integral Transforms VIII-A-2: Advanced Numerical Analysis VIII-A-3: *Project work* or VIII-B-1: Principles of Mechanics VIII-B-2: Fluid Mechanics VIII-B-3: *Project work* or VIII-C-1: Graph Theory VIII-C-2: Applied Graph Theory VIII-C-3: *Project work*	5	5	25	75	100
				5	5	25	75	100
				5	5	25	75	100

Andhra Pradesh State Council of Higher Education
w.e.f. 2015-16 (Revised in April, 2016)
B.A./B.Sc. FIRST YEAR MATHEMATICS SYLLABUS

SEMESTER –I, PAPER - 1

DIFFERENTIAL EQUATIONS

60 Hrs

UNIT – I (12 Hours), Differential Equations of first order and first degree :

Linear Differential Equations; Differential Equations Reducible to Linear Form; Exact Differential Equations; Integrating Factors; Change of Variables.

***UNIT – II (12 Hours),* Orthogonal Trajectories.**

Differential Equations of first order but not of the first degree :

Equations solvable for *p*; Equations solvable for *y*; Equations solvable for *x*; Equations that do not contain. x (or y); Equations of the first degree in *x* and *y* – Clairaut's Equation.

UNIT – III (12 Hours), Higher order linear differential equations-I :

Solution of homogeneous linear differential equations of order n with constant coefficients; Solution of the non-homogeneous linear differential equations with constant coefficients by means of polynomial operators.

General Solution of f(D)y=0

General Solution of f(D)y=Q when Q is a function of x.

$\frac{1}{f(D)}$ is Expressed as partial fractions.

P.I. of f(D)y = Q when Q= be^{ax}

P.I. of f(D)y = Q when Q is b sin ax or b cos ax.

UNIT – IV (12 Hours), Higher order linear differential equations-II :

Solution of the non-homogeneous linear differential equations with constant coefficients.

P.I. of f(D)y = Q when Q= bx^k

P.I. of f(D)y = Q when Q= $e^{ax}V$

P.I. of f(D)y = Q when Q= xV

P.I. of f(D)y = Q when Q= x^mV

UNIT –V (12 Hours), Higher order linear differential equations-III :

Method of variation of parameters; Linear differential Equations with non-constant coefficients; The Cauchy-Euler Equation.

Reference Books :

1. Differential Equations and Their Applications by Zafar Ahsan, published by Prentice-Hall of India Learning Pvt. Ltd. New Delhi-Second edition.
2. A text book of mathematics for BA/BSc Vol 1 by N. Krishna Murthy & others, published by S. Chand & Company, New Delhi.
3. Ordinary and Partial Differential Equations Raisinghania, published by S. Chand & Company, New Delhi.
4. Differential Equations with applications and programs – S. Balachandra Rao & HR Anuradha-universities press.

Suggested Activities:

Seminar/ Quiz/ Assignments/ Project on Application of Differential Equations in Real life

B.A./B.Sc. FIRST YEAR MATHEMATICS SYLLABUS

SEMESTER – II, PAPER - 2

SOLID GEOMETRY

60 Hrs

UNIT – I (12 hrs) : The Plane :

Equation of plane in terms of its intercepts on the axis, Equations of the plane through the given points, Length of the perpendicular from a given point to a given plane, Bisectors of angles between two planes, Combined equation of two planes, Orthogonal projection on a plane.

UNIT – II (12 hrs) : The Line :

Equation of a line; Angle between a line and a plane; The condition that a given line may lie in a given plane; The condition that two given lines are coplanar; Number of arbitrary constants in the equations of straight line; Sets of conditions which determine a line; The shortest distance between two lines; The length and equations of the line of shortest distance between two straight lines; Length of the perpendicular from a given point to a given line;

UNIT – III (12 hrs) : Sphere :

Definition and equation of the sphere; Equation of the sphere through four given points; Plane sections of a sphere; Intersection of two spheres; Equation of a circle; Sphere through a given circle; Intersection of a sphere and a line; Power of a point; Tangent plane; Plane of contact; Polar plane; Pole of a Plane; Conjugate points; Conjugate planes;

UNIT – IV (12 hrs) : Sphere &Cones :

Angle of intersection of two spheres; Conditions for two spheres to be orthogonal; Radical plane; Coaxial system of spheres; Simplified from of the equation of two spheres.

Definitions of a cone; vertex; guiding curve; generators; Equation of the cone with a given vertex and guiding curve; Enveloping cone of a sphere; Equations of cones with vertex at origin are homogenous; Condition that the general equation of the second degree should represent a cone; Condition that a cone may have three mutually perpendicular generators;

UNIT – V (12 hrs) Cones & Cylinders :

Intersection of a line and a quadric cone; Tangent lines and tangent plane at a point; Condition that a plane may touch a cone; Reciprocal cones; Intersection of two cones with a common vertex; Right circular cone; Equation of the right circular cone with a given vertex; axis and semi-vertical angle.

Definition of a cylinder; Equation to the cylinder whose generators intersect a given conic and are parallel to a given line; Enveloping cylinder of a sphere; The right circular cylinder; Equation of the right circular cylinder with a given axis and radius.

Reference Books :

1. Analytical Solid Geometry by Shanti Narayan and P.K. Mittal, Published by S. Chand & Company Ltd. 7th Edition.

2. A text book of Mathematics for BA/B.Sc Vol 1, by V Krishna Murthy & Others, Published by S. Chand & Company, New Delhi.

3. A text Book of Analytical Geometry of Three Dimensions, by P.K. Jain and Khaleel Ahmed, Published by Wiley Eastern Ltd., 1999.

4. Co-ordinate Geometry of two and three dimensions by P. Balasubrahmanyam, K.Y. Subrahmanyam, G.R. Venkataraman published by Tata-MC Gran-Hill Publishers Company Ltd., New Delhi.

Suggested Activities:

Seminar/ Quiz/ Assignments/ Project on Application of Solid Geometry in Engineering

B.A./B.Sc. SECOND YEAR MATHEMATICS SYLLABUS

SEMESTER – III, PAPER - 3

ABSTRACT ALGEBRA

60 Hrs

UNIT – 1 : (10 Hrs) GROUPS : -

Binary Operation – Algebraic structure – semi group-monoid – Group definition and elementary properties Finite and Infinite groups – examples – order of a group. Composition tables with examples.

UNIT – 2 : (14 Hrs) SUBGROUPS : -

Complex Definition – Multiplication of two complexes Inverse of a complex-Subgroup definition – examples-criterion for a complex to be a subgroups.

Criterion for the product of two subgroups to be a subgroup-union and Intersection of subgroups.

Co-sets and Lagrange's Theorem :-

Cosets Definition – properties of Cosets–Index of a subgroups of a finite groups–Lagrange's Theorem.

UNIT –3 : (12 Hrs) NORMAL SUBGROUPS : -

Definition of normal subgroup – proper and improper normal subgroup–Hamilton group – criterion for a subgroup to be a normal subgroup – intersection of two normal subgroups – Sub group of index 2 is a normal sub group – simple group – quotient group – criteria for the existence of a quotient group.

UNIT – 4 : (10 Hrs) HOMOMORPHISM : -

Definition of homomorphism – Image of homomorphism elementary properties of homomorphism – Isomorphism – aultomorphism definitions and elementary properties–kernel of a homomorphism – fundamental theorem on Homomorphism and applications.

UNIT – 5 : (14 Hrs) PERMUTATIONS AND CYCLIC GROUPS : -

Definition of permutation – permutation multiplication – Inverse of a permutation – cyclic permutations – transposition – even and odd permutations – Cayley's theorem.

Cyclic Groups :-

Definition of cyclic group – elementary properties – classification of cyclic groups.

Reference Books :

1. Abstract Algebra, by J.B. Fraleigh, Published by Narosa Publishing house.
2. A text book of Mathematics for B.A. / B.Sc. by B.V.S.S. SARMA and others, Published by S.Chand & Company, New Delhi.
3. Modern Algebra by M.L. Khanna.

Suggested Activities:

Seminar/ Quiz/ Assignments/ Project on Group theory and its applications in Graphics and Medical image Analysis

B.A./B.Sc. SECOND YEAR MATHEMATICS SYLLABUS

SEMESTER – IV, PAPER- 4

REAL ANALYSIS

60 Hrs

UNIT – I (12 hrs) : REAL NUMBERS :

The algebraic and order properties of R, Absolute value and Real line, Completeness property of R, Applications of supreme property; intervals. No. Question is to be set from this portion.

Real Sequences: Sequences and their limits, Range and Boundedness of Sequences, Limit of a sequence and Convergent sequence.

The Cauchy's criterion, properly divergent sequences, Monotone sequences, Necessary and Sufficient condition for Convergence of Monotone Sequence, Limit Point of Sequence, Subsequences and the Bolzano-weierstrass theorem – Cauchy Sequences – Cauchey's general principle of convergence theorem.

UNIT –II (12 hrs) : INFINITIE SERIES :

Series : Introduction to series, convergence of series. Cauchey's general principle of convergence for series tests for convergence of series, Series of Non-Negative Terms.

1. P-test
2. Cauchey's n^{th} root test or Root Test.
3. D'-Alemberts' Test or Ratio Test.
4. Alternating Series – Leibnitz Test.

Absolute convergence and conditional convergence, semi convergence.

UNIT – III (12 hrs) : CONTINUITY :

Limits : Real valued Functions, Boundedness of a function, Limits of functions. Some extensions of the limit concept, Infinite Limits. Limits at infinity. No. Question is to be set from this portion.

Continuous functions : Continuous functions, Combinations of continuous functions, Continuous Functions on intervals, uniform continuity.

UNIT – IV (12 hrs) : DIFFERENTIATION AND MEAN VALUE THEORMS :

The derivability of a function, on an interval, at a point, Derivability and continuity of a function, Graphical meaning of the Derivative, Mean value Theorems; Role's Theorem, Lagrange's Theorem, Cauchhy's Mean value Theorem

UNIT – V (12 hrs) : RIEMANN INTEGRATION :

Riemann Integral, Riemann integral functions, Darboux theorem. Necessary and sufficient condition for R – integrability, Properties of integrable functions, Fundamental theorem of integral calculus, integral as the limit of a sum, Mean value Theorems.

Reference Books :

1. Real Analysis by Rabert & Bartely and .D.R. Sherbart, Published by John Wiley.
2. A Text Book of B.Sc Mathematics by B.V.S.S. Sarma and others, Published by S. Chand & Company Pvt. Ltd., New Delhi.
3. Elements of Real Analysis as per UGC Syllabus by Shanthi Narayan and Dr. M.D. Raisingkania Published by S. Chand & Company Pvt. Ltd., New Delhi.

Suggested Activities:

Seminar/ Quiz/ Assignments/ Project on Real Analysis and its applications

B.A./B.Sc. THIRD YEAR MATHEMATICS SYLLABUS

SEMESTER – V, PAPER -5

RING THEORY & VECTOR CALCULUS

60 Hrs

UNIT – 1 (12 hrs) RINGS-I : -

Definition of Ring and basic properties, Boolean Rings, divisors of zero and cancellation laws Rings, Integral Domains, Division Ring and Fields, The characteristic of a ring - The characteristic of an Integral Domain, The characteristic of a Field. Sub Rings, Ideals

UNIT – 2 (12 hrs) RINGS-II : -

Definition of Homomorphism – Homorphic Image – Elementary Properties of Homomorphism – Kernel of a Homomorphism – Fundamental theorem of Homomorhphism –
Maximal Ideals – Prime Ideals.

UNIT –3 (12 hrs) VECTOR DIFFERENTIATION : -

Vector Differentiation, Ordinary derivatives of vectors, Differentiability, Gradient, Divergence, Curl operators, Formulae Involving these operators.

UNIT – 4 (12 hrs) VECTOR INTEGRATION : -

Line Integral, Surface Integral, Volume integral with examples.

UNIT – 5 (12 hrs) VECTOR INTEGRATION APPLICATIONS : -

Theorems of Gauss and Stokes, Green's theorem in plane and applications of these theorems.

Reference Books :-

1. Abstract Algebra by J. Fralieh, Published by Narosa Publishing house.
2. Vector Calculus by Santhi Narayana, Published by S. Chand & Company Pvt. Ltd., New Delhi.
3. A text Book of B.Sc., Mathematics by B.V.S.S.Sarma and others, published by S. Chand & Company Pvt. Ltd., New Delhi.
4. Vector Calculus by R. Gupta, Published by Laxmi Publications.
5. Vector Calculus by P.C. Matthews, Published by Springer Verlag publicattions.
6. Rings and Linear Algebra by Pundir & Pundir, Published by Pragathi Prakashan.

Suggested Activities:

Seminar/ Quiz/ Assignments/ Project on Ring theory and its applications

B.A./B.Sc. THIRD YEAR MATHEMATICS SYLLABUS

SEMESTER – V, PAPER -6

LINEAR ALGEBRA

60 Hrs

UNIT – I (12 hrs) : Vector Spaces-I :

Vector Spaces, General properties of vector spaces, n-dimensional Vectors, addition and scalar multiplication of Vectors, internal and external composition, Null space, Vector subspaces, Algebra of subspaces, Linear Sum of two subspaces, linear combination of Vectors, Linear span Linear independence and Linear dependence of Vectors.

UNIT –II (12 hrs) : Vector Spaces-II :

Basis of Vector space, Finite dimensional Vector spaces, basis extension, co-ordinates, Dimension of a Vector space, Dimension of a subspace, Quotient space and Dimension of Quotientspace.

UNIT –III (12 hrs) : Linear Transformations :

Linear transformations, linear operators, Properties of L.T, sum and product of LTs, Algebra of Linear Operators, Range and null space of linear transformation, Rank and Nullity of linear transformations – Rank – Nullity Theorem.

UNIT –IV (12 hrs) : Matrix :

Matrices, Elementary Properties of Matrices, Inverse Matrices, Rank of Matrix, Linear Equations, Characteristic Roots, Characteristic Values & Vectors of square Matrix, Cayley – Hamilton Theorem.

UNIT –V (12 hrs) : Inner product space :

Inner product spaces, Euclidean and unitary spaces, Norm or length of a Vector, Schwartz inequality, Triangle in Inequality, Parallelogram law, Orthogonality, Orthonormal set, complete orthonormal set, Gram – Schmidt orthogonalisation process. Bessel's inequality and Parseval's Identity.

Reference Books :

1. Linear Algebra by J.N. Sharma and A.R. Vasista, published by Krishna Prakashan Mandir, Meerut-250002.
2. Matrices by Shanti Narayana, published by S.Chand Publications.
3. Linear Algebra by Kenneth Hoffman and Ray Kunze, published by Pearson Education (low priced edition), New Delhi.
4. Linear Algebra by Stephen H. Friedberg et al published by Prentice Hall of India Pvt. Ltd. 4th Edition 2007.

Suggested Activities:

Seminar/ Quiz/ Assignments/ Project on "Applications of Linear algebra Through Computer Sciences"

B.A./B.Sc. THIRD YEAR MATHEMATICS SYLLABUS

SEMESTER – VI, PAPER – VII-(A)

ELECTIVE-VII(A); LAPLACE TRANSFORMS

60 Hrs

UNIT – 1 (12 hrs) Laplace Transform I : -

Definition of - Integral Transform – Laplace Transform Linearity, Property, Piecewise continuous Functions, Existence of Laplace Transform, Functions of Exponential order, and of Class A.

UNIT – 2 (12 hrs) Laplace Transform II : -

First Shifting Theorem, Second Shifting Theorem, Change of Scale Property, Laplace Transform of the derivative of f(t), Initial Value theorem and Final Value theorem.

UNIT – 3 (12 hrs) Laplace Transform III : -

Laplace Transform of Integrals – Multiplication by t, Multiplication by t^n – Division by t. Laplace transform of Bessel Function, Laplace Transform of Error Function, Laplace Transform of Sine and cosine integrals.

UNIT –4 (12 hrs) Inverse Laplace Transform I : -

Definition of Inverse Laplace Transform. Linearity, Property, First Shifting Theorem, Second Shifting Theorem, Change of Scale property, use of partial fractions, Examples.

UNIT –5 (12 hrs) Inverse Laplace Transform II : -

Inverse Laplace transforms of Derivatives–Inverse Laplace Transforms of Integrals – Multiplication by Powers of 'P'– Division by powers of 'P'– Convolution Definition – Convolution Theorem – proof and Applications – Heaviside's Expansion theorem and its Applications.

Reference Books :-

1. Laplace Transforms by A.R. Vasistha and Dr. R.K. Gupta Published by Krishna Prakashan Media Pvt. Ltd. Meerut.
2. Fourier Series and Integral Transforms by Dr. S. Sreenadh Published by S.Chand and Co., Pvt. Ltd., New Delhi.
3. Laplace and Fourier Transforms by Dr. J.K. Goyal and K.P. Gupta, Published by Pragathi Prakashan, Meerut.
4. Integral Transforms by M.D. Raising hania, - H.C. Saxsena and H.K. Dass Published by S. Chand and Co., Pvt.Ltd., New Delhi.

Suggested Activities:

Seminar/ Quiz/ Assignments

B.A./B.Sc. THIRD YEAR MATHEMATICS SYLLABUS

SEMESTER – VI, PAPER – VII-(B)

ELECTIVE–VII-(B); NUMERICAL ANALYSIS

60 Hrs

UNIT- I: (10 hours)

Errors in Numerical computations : Errors and their Accuracy, Mathematical Preliminaries, Errors and their Analysis, Absolute, Relative and Percentage Errors, A general error formula, Error in a series approximation.

UNIT – II: (12 hours)

Solution of Algebraic and Transcendental Equations: The bisection method, The iteration method, The method of false position, Newton Raphson method, Generalized Newton Raphson method. Muller's Method

UNIT – III: (12 hours) Interpolation - I

Interpolation : Errors in polynomial interpolation, Finite Differences, Forward differences, Backward differences, Central Differences, Symbolic relations, Detection of errors by use of Differences Tables, Differences of a polynomial

UNIT – IV: (12 hours) Interpolation - II

Newton's formulae for interpolation. Central Difference Interpolation Formulae, Gauss's central difference formulae, Stirling's central difference formula, Bessel's Formula, Everett's Formula.

UNIT – V : (14 hours) Interpolation - III

Interpolation with unevenly spaced points, Lagrange's formula, Error in Lagrange's formula, Divided differences and their properties, Relation between divided differences and forward differences, Relation between divided differences and backward differences Relation between divided differences and central differences, Newton's general interpolation Formula, Inverse interpolation.

Reference Books :

1. Numerical Analysis by S.S.Sastry, published by Prentice Hall of India Pvt. Ltd., New Delhi. (Latest Edition)
2. Numerical Analysis by G. Sankar Rao published by New Age International Publishers, New – Hyderabad.
3. Finite Differences and Numerical Analysis by H.C Saxena published by S. Chand and Company, Pvt. Ltd., New Delhi.
4. Numerical methods for scientific and engineering computation by M.K.Jain, S.R.K.Iyengar, R.K. Jain.

Suggested Activities:

Seminar/ Quiz/ Assignments

SEMESTER – VI, PAPER – VII-(C)

ELECTIVE– VII-(C) : NUMBER THEORY

UNIT-I (12 hours)

Divisibility – Greatest Common Divisor – Euclidean Algorithm – The Fundamental Theorem of Arithmetic

UNIT-II (12 hours)

Congruences – Special Divisibility Tests - Chinese Remainder Theorem- Fermat's Little Theorem – Wilson's Theorem – Residue Classes and Reduced Residue Classes – Solutions of Congruences

UNIT-III (12 hours)

Number Theory from an Algebraic Viewpoint – Multiplicative Groups, Rings and Fields

UNIT-IV (12 hours)

Quadratic Residues - Quadratic Reciprocity – The Jacobi Symbol

UNIT-V (12 hours)

Greatest Integer Function – Arithmetic Functions – The Moebius Inversion Formula

Reference Books:

1. "Introduction to the Theory of Numbers" by Niven, Zuckerman & Montgomery (John Wiley & Sons)
2. "Elementary Number Theory" by David M. Burton.
3. Elementary Number Theory, by David, M. Burton published by 2nd Edition (UBS Publishers).
4. Introduction to Theory of Numbers, by Davenport H., Higher Arithmetic published by 5th Edition (John Wiley & Sons) Niven,Zuckerman & Montgomery.(Camb, Univ, Press)
5. Number Theory by Hardy & Wright published by Oxford Univ, Press.
6. Elements of the Theory of Numbers by Dence, J. B & Dence T.P published by Academic Press.

B.A./B.Sc. THIRD YEAR MATHEMATICS SYLLABUS,
SEMESTER – VI, CLUSTER – A, PAPER – VIII-A-1
Cluster Elective- VIII-A-1: INTEGRAL TRANSFORMS

60 Hrs

UNIT – 1 (12 hrs) Application of Laplace Transform to solutions of Differential Equations : -

Solutions of ordinary Differential Equations.
Solutions of Differential Equations with constants co-efficient
Solutions of Differential Equations with Variable co-efficient

UNIT – 2 (12 hrs) Application of Laplace Transform : -

Solution of simultaneous ordinary Differential Equations.
Solutions of partial Differential Equations.

UNIT – 3 (12 hrs) Application of Laplace Transforms to Integral Equations : -

Definitions : Integral Equations-Abel's, Integral Equation-Integral Equation of Convolution Type, Integro Differential Equations.Application of L.T. to Integral Equations.

UNIT –4 (12 hrs) Fourier Transforms-I : -

Definition of Fourier Transform – Fourier's in Transform – Fourier cosine Transform – Linear Property of Fourier Transform – Change of Scale Property for Fourier Transform – sine Transform and cosine transform shifting property – modulation theorem.

UNIT – 5 (12 hrs) Fourier Transform-II : -

Convolution Definition – Convolution Theorem for Fourier transform – parseval's Indentify – Relationship between Fourier and Laplace transforms – problems related to Integral Equations.

Finte Fourier Transforms : -

Finte Fourier Sine Transform – Finte Fourier Cosine Transform – Inversion formula for sine and cosine Transforms only statement and related problems.

Reference Books :-

1. Integral Transforms by A.R. Vasistha and Dr. R.K. Gupta Published by Krishna Prakashan Media Pvt. Ltd. Meerut.
2. A Course of Mathematical Analysis by Shanthi Narayana and P.K. Mittal, Published by S. Chand and Company pvt. Ltd., New Delhi.
3. Fourier Series and Integral Transforms by Dr. S. Sreenadh Published by S.Chand and Company Pvt. Ltd., New Delhi.
4. Lapalce and Fourier Transforms by Dr. J.K. Goyal and K.P. Gupta, Published by Pragathi Prakashan, Meerut.
5. Integral Transforms by M.D. Raising hania, - H.C. Saxsena and H.K. Dass Published by S.Chand and Company pvt. Ltd., New Delhi.

Suggested Activities:

Seminar/ Quiz/ Assignments

B.A./B.Sc. THIRD YEAR MATHEMATICS SYLLABUS
SEMESTER – VI: PAPER – VIII-A-2
ELECTIVE – VIII-A-2: ADVANCED NUMERICAL ANALYSIS

60 Hrs

Unit – I (10 Hours)

Curve Fitting: Least – Squares curve fitting procedures, fitting a straight line, nonlinear curve fitting, Curve fitting by a sum of exponentials.

UNIT- II : (12 hours)

Numerical Differentiation: Derivatives using Newton's forward difference formula, Newton's backward difference formula, Derivatives using central difference formula, stirling's interpolation formula, Newton's divided difference formula, Maximum and minimum values of a tabulated function.

UNIT- III : (12 hours)

Numerical Integration: General quadrature formula on errors, Trapozoidal rule, Simpson's 1/3 – rule, Simpson's 3/8 – rule, and Weddle's rules, Euler – Maclaurin Formula of summation and quadrature, The Euler transformation.

UNIT – IV: (14 hours)

Solutions of simultaneous Linear Systems of Equations: Solution of linear systems – Direct methods, Matrix inversion method, Gaussian elimination methods, Gauss-Jordan Method ,Method of factorization, Solution of Tridiagonal Systems,. Iterative methods. Jacobi's method, Gauss-siedal method.

UNIT – V (12 Hours)

Numerical solution of ordinary differential equations: Introduction, Solution by Taylor's Series, Picard's method of successive approximations, Euler's method, Modified Euler's method, Runge – Kutta methods.

Reference Books :

1. Numerical Analysis by S.S.Sastry, published by Prentice Hall India (Latest Edition).
2. Numerical Analysis by G. Sankar Rao, published by New Age International Publishers, New – Hyderabad.
3. Finite Differences and Numerical Analysis by H.C Saxena published by S. Chand and Company, Pvt. Ltd., New Delhi.
4. Numerical methods for scientific and engineering computation by M.K.Jain, S.R.K.Iyengar, R.K. Jain.

Suggested Activities:

Seminar/ Quiz/ Assignments

B.A./B.Sc. THIRD YEAR MATHEMATICS SYLLABUS
SEMESTER – VI, CLUSTER-B, PAPER – VIII-B-1

Cluster Elective – VIII-B-1 : PRINCIPLES OF MECHANICS

60 Hrs

Unit – I : (10 hours)

D'Alembert's Principle and Lagrange's Equations : some definitions – Lagrange's equations for a Holonomic system – Lagrange's Equations of motion for conservative, nonholonomic system.

Unit – II: (10 hours)

Variational Principle and Lagrange's Equations: Variatonal Principle – Hamilton's Principle – Derivation of Hamilton's Principle from Lagrange's Equations – Derivation of Lagrange's Equations from Hamilton's Principle – Extension of Hamilton's Principle – Hamilton's Principle for Non-conservative, Non-holonomic system – Generalised Force in Dynamic System – Hamilton's Principle for Conservative, Non-holonomic system – Lagrange's Equations for Non-conservative, Holonomic system - Cyclic or Ignorable Coordinates.

Unit –III: (15 hours)

Conservation Theorem, Conservation of Linear Momentum in Lagrangian Formulation – Conservation of angular Momentum – conservation of Energy in Lagrangian formulation.

Unit – IV: (15 hours)

Hamilton's Equations of Motion: Derivation of Hamilton's Equations of motion – Routh's procedure – equations of motion – Derivation of Hamilton's equations from Hamilton's Principle – Principle of Least Action – Distinction between Hamilton's Principle and Principle of Least Action.

Unit – V: (10 hours)

Canonical Transformation: Canonical coordinates and canonical transformations – The necessary and sufficient condition for a transformation to be canonical – examples of canonical transformations – properties of canonical transformation – Lagrange's bracket is canonical invariant – poisson's bracket is canonical invariant - poisson's bracket is invariant under canonical transformation – Hamilton's Equations of motion in poisson's bracket – Jacobi's identity for poisson's brackets.

Reference Text Books :

1. Classical Mechanics by C.R.Mondal Published by Prentice Hall of India, New Delhi.

2. A Text Book of Fluid Dynamics by F. Charlton Published by CBS Publications, New Delhi.

3. Classical Mechanics by Herbert Goldstein, published by Narosa Publications, New Delhi.

4. Fluid Mechanics by T. Allen and I.L. Ditsworth Published by (McGraw Hill, 1972)

5. Fundamentals of Mechanics of fluids by I.G. Currie Published by (CRC, 2002)

6. Fluid Mechanics : An Introduction to the theory, by Chia-shun Yeh Published by (McGraw Hill, 1974)

7. Introduction to Fluid Mechanics by R.W Fox, A.T Mc Donald and P.J. Pritchard Published by (John Wiley and Sons Pvt. Ltd., 2003)

B.A./B.Sc. THIRD YEAR MATHEMATICS SYLLABUS
SEMESTER – VI, CLUSTER-B, PAPER – VIII-B-2
Cluster Elective–VIII-B-2 : FLUID MECHANICS

60 Hrs

Unit – I : (10 hours)

Kinematics of Fluids in Motion

Real fluids and Ideal fluids – Velocity of a Fluid at a point – Streamlines and pthlines – steady and Unsteady flows – the velocity potential – The Vorticity vector – Local and Particle Rates of Change – The equation of Continuity – Acceleration of a fluid – Conditions at a rigid boundary – General Analysis of fluid motion.

Unit – II : (10 hours)

Equations of motion of a fluid- Pressure at a point in fluid at rest – Pressure at a point in a moving fluid – Conditions at a boundary of two inviscid immiscible fluids – Euler's equations of motion – Bernoulli's equation – Worked examples.

Unit – III : (10 hours)

Discussion of the case of steady motion under conservative body forces - Some flows involving axial symmetry – Some special two-dimensional flows – Impulsive motion – Some further aspects of vortex motion.

Unit – IV : (15 hours)

Some Two – dimensional Flows, Meaning of two-dimensional flow – Use of Cylindrical polar coordinates – The stream function – The complex potential for two-dimensional, Irrotational, Incompressible flow – Uniform Stream – The Milne-Thomson Circle theorem – the theorem of Blasius.

Unit – V : (15 hours)

Viscous flow,Stress components in a real fluid – Relations between Cartesian components of stress – Translational motion of fluid element – The rate of strain quadric and principal stresses – Some further properties of the rate of strain quadric – Stress analysis in fluid motion – Relations between stress and rate of strain – the coefficient of viscosity and laminar flow - The Navier-Stokes equations of motion of a viscous fluid.

Reference Text Books :

1. A Text Book of Fluid Dynamics by F. Charlton Published by CBS Publications, New Delhi.

2. Classical Mechanics by Herbert Goldstein, published by Narosa Publications, New Delhi.

3. Fluid Mechanics by T. Allen and I.L. Ditsworth published by (McGraw Hill, 1972)

4. Fundamentals of Mechanics of fluids by I.G. Currie published by (CRC, 2002)

5. Fluid Mechanics, An Introduction to the theory by Chia-shun Yeh published by (McGraw Hill, 1974)

6. Fluids Mechanics by F.M White published by (McGraw Hill, 2003)

7. Introduction to Fluid Mechanics by R.W Fox, A.T Mc Donald and P.J. Pritchard published by (John Wiley and Sons Pvt. Ltd., 2003

B.A./B.Sc. THIRD YEAR MATHEMATICS SYLLABUS
SEMESTER – VI, CLUSTER-C, PAPER – VIII-C-1
Cluster Elective–VIII-C-1: GRAPH THEORY

60 Hrs

UNIT – I (12 hrs) Graphs and Sub Graphs :

Graphs , Simple graph, graph isomorphism, the incidence and adjacency matrices, sub graphs, vertex degree, Hand shaking theorem, paths and connection, cycles.

UNIT – II (12 hrs)

Applications, the shortest path problem, Sperner's lemma.

Trees :

Trees, cut edges and Bonds, cut vertices, Cayley's formula.

UNIT – III (12 hrs) :

Applications of Trees - the connector problem.

Connectivity

Connectivity, Blocks and Applications, construction of reliable communication Networks,

UNIT – IV (12 hrs):

Euler tours and Hamilton cycles

Euler tours, Euler Trail, Hamilton path, Hamilton cycles , dodecahedron graph, Petersen graph, hamiltonian graph, closure of a graph.

UNIT – V (12 hrs)

Applications of Eulerian graphs, the Chinese postman problem, Fleury's algorithm - the travelling salesman problem.

Reference Books :

1. Graph theory with Applications by J.A. Bondy and U.S.R. Murthy published by Mac. Millan Press

2. Introduction to Graph theory by S. Arumugham and S. Ramachandran, published by scitech Publications, Chennai-17.

3. A Text Book of Discrete Mathamatics by Dr. Swapan Kumar Sankar, published by S.Chand & Co. Publishers, New Delhi.

4. Graph theory and combinations by H.S. Govinda Rao published by Galgotia Publications.

B.A./B.Sc. THIRD YEAR MATHEMATICS SYLLABUS
SEMESTER – VI, CLUSTER-C, PAPER – VIII-C-2
Cluster Elective -VIII-C-2: APPLIED GRAPH THEORY

60 Hrs

UNIT – I (12 hrs) :

Matchings

Matchings – Alternating Path, Augmenting Path - Matchings and coverings in Bipartite graphs, Marriage Theorem, Minimum Coverings.

UNIT –II (12 hrs) :

Perfect matchings, Tutte's Theorem, Applications, The personal Assignment problem -The optimal Assignment problem, Kuhn-Munkres Theorem.

UNIT –III (12 hrs) :

Edge Colorings

Edge Chromatic Number, Edge Coloring in Bipartite Graphs - Vizing's theorem.

UNIT –IV (12 hrs) :

Applications of Matchings, The timetabling problem.

Independent sets and Cliques

Independent sets, Covering number , Edge Independence Number, Edge Covering Number - Ramsey's theorem.

UNIT –V (12 hrs) :

Determination of Ramsey's Numbers – Erdos Theorem, Turan's theorem and Applications, Sehur's theorem. A Geometry problem.

Reference Books :-

1. Graph theory with Applications by J.A. Bondy and U.S.R. Murthy, published by Mac. Millan Press.
2. Introduction to graph theory by S. Arumugham and S. Ramachandran published by SciTech publications, Chennai-17.
3. A text book of Discrete Mathematics by Dr. Swapan Kumar Sarkar, published by S. Chand Publishers.
4. Graph theory and combinations by H.S. Govinda Rao, published by Galgotia Publications.

Andhra Pradesh State Council of Higher Education

B.Sc. PHYSICSSYLLUBUS UNDER CBCS

w.e.f. 2015-16 (Revised in April 2016)

First Semester
Paper I : Mechanics& Properties of Matter
Practical I (Lab-1)

Second Semester
Paper II: Waves & Oscillations
Practical 2 (Lab2)

Third Semester
Paper III: Wave Optics
Practical 3.(Lab 3)

Fourth Semester
Paper IV: Thermodynamics & Radiation Physics
Practical 4.(Lab 4)

Fifth Semester
Paper V: Electricity, Magnetism& Electronics
Paper VI: Modern Physics
Practical 5.(Lab 5)
Practical 6.(Lab 6)

Sixth Semester
PaperVII:Elective (One)
Paper VIII:Cluster Electives (Three)
Practical 7(Lab 7)
Practical 8.(Lab 8)

Proposed Electives in Semester - VI

Paper – VII (one elective is to be chosen from the following0

Paper VII-(A): Analog and Digital Electronics
Paper VII-(B): Materials Science
Paper VII-(C): Renewable Energy

Paper – VIII (one cluster of electives (A-1,2,3 or B-1,2,3 or C-1,2,3) to be chosen *preferably*relating to the elective chosen under paper – VII (A or B or C)

Cluster 1.

Paper VIII-A-1. Introduction to Microprocessors and Microcontrollers
Paper VIII-A-2.Computational Physics and Programming
Paper VIII-A-3.Electronic Instrumentation

Cluster 2

Paper VIII-B-1.Fundamentals of Nanoscience
Paper VIII-B-2.Synthesis and Characterization of Nanomaterials
Paper VIII-B-3.Applications of Nanomaterials and Devices

Cluster 3

Paper VIII-C-1.Solar Thermal and Photovoltaic Aspects
Paper VIII-C-2.Wind, Hydro and Ocean Energies
Paper VIII-C-3.Energy Storage Devices

NOTE: Problems should be solved at the end of every chapter of all Units.

1. Each theory paper is of 100 marks and practical paper is also of 50 marks.
   Each theory paper is 75 marks University Exam (external) + 25 marks mid Semester Exam (internal). Each practical paper is 50 marks external
2. The teaching work load per week for semesters I to VIis 4 hours per paper for theory and2 hours for all laboratory (practical) work.
3. The duration of the examination for each theory paper is 3.00 hrs.
4. The duration of each practical examination is 3 hrs with 50 marks, which are to be distributed as30 marks for experiment
   10 marks for viva
   10 marks for record

Practicals	**50 marks**
Formula & Explanation	6
Tabular form +graph +circuit diagram	6
Observations	12
Calculation, graph, precautions & Result	6
Viva-Voce	10
Record	10

*****NOTE: Practical syllabus is same for both Mathematics and Non Mathematics combinations**

B.Sc. (Physics) (Maths Combinations)
Scheme of instruction and examination to be followed w.e.f. 2015-2016

S.	Semester	Title of the paper	Instruc-	Duration	Max

No			tion hrs/week	of exam(hrs)	Marks (external)
Thoery					
1	First	Paper I: Mechanics& Properties of Matter	4	3	75
2	Second	Paper II: Waves & Oscillations	4	3	75
3	Third	Paper III: Wave Optics	4	3	75
4	Fourth	Paper IV: Thermodynamics & Radiation Physics	4	3	75
5	Fifth	Paper V:Electricity, Magnetism& Electronics	4	3	75
		Paper VI: Modern Physics	4	3	75
6	Sixth	PaperVII :Elective (One)	4	3	75
		Paper VIII: Cluster Electives (Three)	4	3	75
Practicals					
1	First	Practical 1	2	3	50
2	Second	Practical II	2	3	50
3	Third	Practical III	2	3	50
4	Fourth	Practical IV	2	3	50
5	Fifth	Practical V	2	3	50
6		Practical VI	2	3	50
7	Sixth	Practical VII	2	3	50
8		Practical VIII	2	3	50

Model question Paper for all theory papers

Time : 3 hrs **Max marks : 75**

Section-A (Essay type)

Answer All questions with internal choice from all units Marks :10x5 = 50

(Two questions are to be set from each unit with either or type)

Section-B (Short answer type)
Answer any three out of 5 questions from all units (I to V) Marks: 5 x3 = 15
At least one question should be set from each unit.

Section-C
Answer any two out of 5 questions set from all units Marks: 5x2 = 10

B.Sc. PHYSICS SYLLUBUS UNDER CBCS
w.e.f. 2015-16 (Revised in April 2016)
For Mathematics Combinations
B.Sc. 1st Semester Physics
Paper I: Mechanics& Properties of Matter

Work load:60 hrs per semester 4 hrs/week

UNIT-I (10 hrs)
1. Vector Analysis

Scalar and vector fields, gradient of a scalar field and its physical significance. Divergence and curl of a vector field with derivations and physical interpretation. Vector integration (line, surface and volume), Statement and proof of Gauss and Stokes theorems.

UNIT-II (10 hrs)
2. Mechanics of particles

Laws of motion, motion of variable mass system, Equation of motion of a rocket. Conservation of energy and momentum, Collisions in two and three dimensions, Concept of impact parameter, scattering cross-section, Rutherford scattering-derivation.

UNIT-III (16 hrs)
3. Mechanics of Rigid bodies

Definition of rigid body, rotational kinematic relations, equation of motion for a rotating body, angular momentum, Euler equations and its applications, precession of a top, Gyroscope, precession of the equinoxes.

4. Mechanics of continuous media

Elastic constants of isotropic solids and their relations, Poisson's ratio and expression for Poisson's ratio in terms of y, n, k. Classification of beams, types of bending, point load, distributed load, shearing force and bending moment, sign conventions.

UNIT-IV (12Hrs)
5. Central forces

Central forces, definition and examples, characteristics of central forces, conservative nature of central forces, conservative force as a negative gradient of potential energy, equatglobal ion of motion under a central force.Derivation of Kepler's laws.Motion of satellites, idea of Global Positioning System (GPS).

UNIT-V (12 hrs)

6. Special theory of relativity

Galilean relativity, absolute frames.Michelson-Morley experiment, negative result.Postulates of special theory of relativity.Lorentz transformation, time dilation, length contraction, addition of velocities, mass-energy relation.Concept of four-vector formalism.

REFERENCE BOOKS:

1. B. Sc. Physics, Vol.1, Telugu Academy, Hyderabad
2. Fundamentals of Physics Vol. I - Resnick, Halliday, Krane ,Wiley India 2007
3. Unified Physics, Vol. 1, S.L. Gupata & S. Guptha, Jai Prakash Nath & Co, Meerut.
4. College Physics-I. T. Bhimasankaram and G. Prasad. Himalaya Publishing House.
5. University Physics-FW Sears, MW Zemansky& HD Young,Narosa Publications, Delhi
6. Mechanics, S.G.Venkatachalapathy, Margham Publication, 2003.

Practical paper 1: Mechanics & Properties of Matter

Work load: 30 hrs per semester **2 hrs/week**

Minimum of 6 experiments to be done and recorded

1. Viscosity of liquid by the flow method (Poiseuille's method)
2. Young's modulus of the material of a bar (scale) by uniform bending
3. Young's modulus of the material a bar (scale) by non- uniform bending
4. Surface tension of a liquid by capillary rise method
5. Determination of radius of capillary tube by Hg thread method
6. Viscosity of liquid by Searle'sviscometer method
7. Bifilar suspension –moment of inertia of a regular rectangular body.
8. Determination of moment of inertia using Fly-wheel
9. Determination of the height of a building using a sextant.
10. Rigidity modulus of material of a wire-dynamic method (torsional pendulum)

Suggested student activities

Student seminars, group discussions, assignments, field trips, study project and experimentation using virtual lab

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Examples

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Group discussion - A topic from one of the units is given to a group of students and asked to discuss and debate on it.

Assignment - Few problems may be given to the students from the different units and asked them to solve.

Field trip - Visit to Satish Dhawan Space Centre, Sriharikota / Thermal and

hydroelectric power stations / Science Centres, any other such visit etc.
Study project - Web based study of different satellites and applications.

Domain skills:
Logical derivation, experimentation, problem solving, data collection and analysis, measurement skills

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Paper II: Waves & Oscillations
(For Maths Combinations)
II SEMESTER

Work load: 60 hrs per semester **4 hrs/week**

UNIT-I (12 hrs)

1. Simple Harmonic oscillations

Simple harmonic oscillator and solution of the differential equation-Physical characteristics of SHM, torsion pendulum-measurements of rigidity modulus, compound pendulum-measurement of 'g', Principle of superposition,beats, combination of two mutually perpendicular simple harmonic vibrations of same frequency and different frequencies. Lissajous figures.

UNIT-II (12 hrs)

2. Damped and forced oscillations

Damped harmonic oscillator, solution of the differential equation of damped oscillator. Energy considerations, comparison with un-damped harmonic oscillator, logarithmic decrement, relaxation time, quality factor, differential equation of forced oscillator and its solution, amplitude resonance and velocity resonance.

UNIT-III (10 hrs)

3. Complex vibrations

Fourier theorem and evaluation of the Fourier coefficients, analysis of periodic wave functions-square wave, triangular wave, saw tooth wave, simple problems on evolution of Fourier coefficients.

UNIT-IV (17hrs)

4. Vibrating strings: 8 hrs

Transverse wave propagation along a stretched string, general solution of wave equation and its significance, modes of vibration of stretched string clamped at ends, overtones and harmonics. Energy transport and transverse impedance.

5. Vibrations of bars: 9 hrs

Longitudinal vibrations in bars-wave equation and its general solution. Special cases (i) bar fixed at both ends (ii) bar fixed at the midpoint (iii) bar fixed at one end. Tuning fork.

UNIT-V (9 hrs)

6. Ultrasonics: 9hrs

Ultrasonics, properties of ultrasonic waves, production of ultrasonics by piezoelectric and magnetostriction methods, detection of ultrasonics, determination of wavelength of ultrasonic waves.Applications of ultrasonic waves.

REFERENCE BOOKS:

1. BSc Physics Vol.1, Telugu Academy, Hyderabad.
2. Waves and Oscillations. N. Subramanyam and Brijlal, Vikas Pulications.
3. Unified Physics Vol., Mechanics, Waves and Oscillations, Jai Prakash Nath&Co.Ltd.
4. Fundamentals of Physics. Halliday/Resnick/Walker ,Wiley India Edition 2007.
5. Waves & Oscillations. S.Badami, V. Balasubramanian and K.R. Reddy,Orient Longman.
6. College Physics-I. T. Bhimasankaram and G. Prasad. Himalaya Publishing House.
7. Science and Technology of Ultrasonics- Baldevraj, Narosa, New Delhi,2004
8. Introduction to Physics for Scientists and Engineers. F.J. Buche. McGraw Hill.

Practical Paper II: Waves & Oscillations

Work load: 30 hrs per semester **2 hrs/week**

Minimum of 6 experiments to be done and recorded

1. Volume resonator experiment
2. Determination of 'g' by compound/bar pendulum
3. Simple pendulum normal distribution of errors-estimation of time period and the error of the mean by statistical analysis
4. Determination of the force constant of a spring by static and dynamic method.
5. Determination of the elastic constants of the material of a flat spiral spring.
6. Coupled oscillators
7. Verification of laws of vibrations of stretched string –sonometer
8. Determination of frequency of a bar –Melde's experiment.
9. Study of a damped oscillation using the torsional pendulum immersed in liquid-decay constant and damping correction of the amplitude.
10. Formation of Lissajous figures using CRO.

Suggested student activities

Student seminars, group discussions, assignments, field trips, study project and experimentation using virtual lab

.

Examples

Seminars - A topic from any of the Units is given to the student and asked to give a brief seminar presentation.

Group discussion - A topic from one of the units is given to a group of students and asked to discuss and debate on it.

Assignment - Few problems may be given to the students from the different units and asked them to solve.

Field trip - Visit to Satish Dhawan Space Centre, Sriharikota / Thermal and hydroelectric power stations / Science Centres, any other such visit etc.

Study project - Web based study of different satellites and applications.

Domain skills:

Logical derivation, experimentation, problem solving, data collection and analysis, measurement skills

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Paper III: Wave Optics
(For Maths Combinations)
III SEMESTER

Work load:60 hrs per semester **4 hrs/week**

UNIT-I (8 hrs)

1. Aberrations:

Introduction – monochromatic aberrations, spherical aberration, methods of minimizing spherical aberration, coma, astigmatism and curvature of field, distortion. Chromatic aberration-the achromatic doublet.Achromatism for two lenses (i)in contact and (ii) separated by a distance.

UNIT-II (14hrs)

2. Interference

Principle of superposition – coherence-temporal coherence and spatial coherence-conditions for interference of light.Fresnel's biprism-determination of wavelength of light –change of phase on reflection.Oblique incidence of a plane wave on a thin film due to reflected and transmitted light (cosine law) –colors of thin films-

Interference by a film with two non-parallel reflecting surfaces (Wedge shaped film). Determination of diameter of wire, Newton's rings in reflected light. Michelson interferometer, Determination of wavelength of monochromatic light using Newton's rings and Michelson Interferometer.

UNIT-III (14hrs)

3. Diffraction

Introduction,distinction between Fresnel and Fraunhoffer diffraction, Fraunhoffer diffraction –Diffraction due to single slit-Fraunhoffer diffraction due to double slit-Fraunhoffer diffraction pattern with N slits (diffraction grating).Resolving power of grating,

Determination of wavelength of light in normal incidence and minimum deviation methods using diffraction grating,

Fresnel's half period zones-area of the half period zones-zone plate-comparison of zone plate with convex lens-difference between interference and diffraction.

UNIT-IV(10 hrs)

4.Polarisation:

Polarized light: methods of polarization polarization by reflection, refraction, double refraction, scattering of light-Brewster's law-Mauls law-Nicol prism polarizer and analyzer-Quarter wave plate, Half wave plate-optical activity, determination of specific rotation by Laurent's half shade polarimeter-Babinet's compensator - idea of elliptical and circular polarization

UNIT-V (14hrs)

5. Lasers and Holography

Lasers: introduction,spontaneous emission, stimulated emission. Population Inversion, Laser principle-Einstein coefficients-Types of lasers-He-Ne laser, Ruby laser- Applications of lasers.Holography: Basic principle of holography-Gabor hologram and its limitations, Applications of holography.

6. Fiber Optics

Introduction- different types of fibers, rays and modes in an optical fiber, fiber material,principles of fiber communication (qualitative treatment only), advantages of fiber optic communication.

REFERENCE BOOKS:

1. BSc Physics, Vol.2, Telugu Akademy, Hyderabad
2. A Text Book of Optics-N Subramanyam, L Brijlal, S.Chand& Co.
3. Unified Physics Vol.II Optics & Thermodynamics – Jai Prakash Nath&Co.Ltd., Meerut
4. Optics,F..A. Jenkins and H.G. White, Mc Graw-Hill
5. Optics, AjoyGhatak,Tata Mc Graw-Hill.
6. Introduction of Lasers – Avadhanulu, S.Chand& Co.
7. Principles of Optics- BK Mathur, Gopala Printing Press, 1995

Practical Paper III: Wave Optics

Work load:30 hrs **2 hrs/week**

Minimum of 6 experiments to be done and recorded

1. Determination of radius of curvature of a given convex lens-Newton's rings.
2. Resolving power of grating.
3. Study of optical rotation –polarimeter.
4. Dispersive power of a prism.
5. Determination of wavelength of light using diffraction grating-minimum deviation method.
6. Determination of wavelength of light using diffraction grating-normal incidence method.
7. Resolving power of a telescope.

8. Refractive index of a liquid-hallow prism
9. Determination of thickness of a thin wire by wedge method
10. Determination of refractive index of liquid-Boy's method.

Suggested student activities

Student seminars, group discussions, assignments, field trips, study project and experimentation using virtual lab

Examples

Seminars - A topic from any of the Units is given to the student and asked to give a brief seminar presentation.

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Field trip - Visit to Satish Dhawan Space Centre, Sriharikota / Thermal and hydroelectric power stations / Science Centres, any other such visit etc.

Study project - Web based study of different satellites and applications.

Domain skills:

Logical derivation, experimentation, problem solving, data collection and analysis, measurement skills

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Paper IV: Thermodynamics &Radiation Physics
(For Maths Combinations)
IV SEMESTER

Work load: 60 hrs per semester **4 hrs/week**

UNIT-I (10 hrs)

1. Kinetic theory of gases

Introduction –Deduction of Maxwell's law of distribution of molecular speeds, experimental verification. Transport phenomena – Mean free path - Viscosity of gases-thermal conductivity-diffusion of gases.

UNIT-II(12 hrs)

2. Thermodynamics

Introduction- Isothermal and adiabatic process- Reversible and irreversible processes-Carnnot's engine and its efficiency-Carnot's theorem-Second law of thermodynamics. Kelvin's and Claussius statements-Entropy, physical significance –Change in entropy in reversible and irreversible processes-Entropy and disorder-Entropy of Universe–

Temperature-Entropy (T-S) diagram and its uses - Change of entropy of a perfect gas-change of entropy when ice changes into steam.

UNIT-III(12 hrs)

3. Thermodynamic potentials and Maxwell's equations

Thermodynamic potentials-Derivation of Maxwell's thermodynamic relations-Clausius-Clayperon's equation-Derivation for ratio of specific heats-Derivation for difference of two specific heats for perfect gas.Joule Kelvin effect-expression for Joule Kelvin coefficient for perfect and vander Waal's gas.

UNIT-IV(12 hrs)

4. Low temperature Physics

Introduction-Joule Kelvin effect-Porous plug experiment - Joule expansion-Distinction between adiabatic and Joule Thomson expansion-Expression for Joule Thomson cooling-Liquefaction of helium, Kapitza's method-Adiabatic demagnetization, Production of low temperatures -applications of substances at lowtemperature-effects of chloro and fluoro carbons on ozone layer.

UNIT-V(14 hrs)

5. Quantum theory of radiation

Blackbody-Ferry's black body-distribution of energy in the spectrum of black body-Wein's displacement law,Wein's law, Rayleigh-Jean's law-Quantum theory of radiation-Planck's law-Measurement of radiation-Types of pyrometers-Disappearing filament optical pyrometer-experimental determination – Angstrompyrheliometer-determination of solar constant, Temperature of Sun.

REFERENCE BOOKS:

1. BSc Physics, Vol.2, Telugu Akademy, Hyderabad
2. Thermodynamics, R.C.Srivastava, S.K.Saha& Abhay K.Jain, Eastern Economy Edition.
3. Unified Physics Vol.2, Optics & Thermodynamics, Jai Prakash Nath&Co.Ltd., Meerut
4. Fundamentals of Physics. Halliday/Resnick/Walker.C. Wiley India Edition 2007
5. Heat, Thermodynamics and Statistical Physics-N Brij Lal, P Subrahmanyam, PS Hemne, S.Chand& Co.,2012
6. Heat and Thermodynamics- MS Yadav, Anmol Publications Pvt. Ltd, 2000
7. University Physics, HD Young, MW Zemansky,FW Sears, Narosa Publishers, New Delhi

Practical Paper IV: Thermodynamics & Radiation Physics

Work load: 30 hrs **2 hrs/week**

Minimum of 6 experiments to be done and recorded

1. Specific heat of a liquid –Joule's calorimeter –Barton's radiation correction
2. Thermal conductivity of bad conductor-Lee's method
3. Thermal conductivity of rubber.
4. Measurement of Stefan's constant.
5. Specific heat of a liquid by applying Newton's law of cooling correction.
6. Heating efficiency of electrical kettle with varying voltages.
7. Thermoemf- thermo couple - potentiometer

8. Thermal behavior of an electric bulb (filament/torch light bulb)
9. Measurement of Stefan's constant- emissive method
10. Study of variation of resistance with temperature - thermistor.

Suggested student activities

Student seminars, group discussions, assignments, field trips, study project and experimentation using virtual lab

Examples

Seminars - A topic from any of the Units is given to the student and asked to give a brief seminar presentation.

Group discussion - A topic from one of the units is given to a group of students and asked to discuss and debate on it.

Assignment - Few problems may be given to the students from the different units and asked them to solve.

Field trip - Visit to Satish Dhawan Space Centre, Sriharikota / Thermal and hydroelectric power stations / Science Centres, any other such visit etc.

Study project - Web based study of different satellites and applications.

Domain skills:

Logical derivation, experimentation, problem solving, data collection and analysis, measurement skills

***** Documental evidence is to be maintained for the above activities.**

Paper V: Electricity, Magnetism& Electronics
(For Maths Combinations)
V Semester

Work load: 60 hrs per semester **4 hrs/week**

UNIT-I (12 hrs)

1. **Electric field intensity and potential:**
   Gauss's law statement and its proof- Electric field intensity due to (1) Uniformly charged sphere and (2) an infinite conducting sheet of charge. Electrical potential – equipotential surfaces- potential due to i) a point charge, ii)charged spherical shell and uniformly charged sphere.
2. **Dielectrics:**
   Electric dipolemoment and molecular polarizability- Electric displacement D, electric polarization P – relation between D, E and P- Dielectric constant and susceptibility. Boundary conditions at the dielectric surface.

UNIT-II (12 hrs)

3. Electric and magnetic fields

Biot-Savart's law, explanation and calculation of B due to long straight wire, a circular current loop and solenoid – Lorentz force – Hall effect – determination of Hall coefficient and applications.

4. Electromagnetic induction

Faraday's law-Lenz's law- Self and mutual inductance, coefficient of coupling, calculation of self inductance of a long solenoid, energy stored in magnetic field.Transformer - energy losses - efficiency.

UNIT-III (12 hrs)

5. Alternating currents and electromagnetic waves

Alternating current - Relation between current and voltage in LR and CR circuits,vector diagrams, LCR series and parallel resonant circuit, Q –factor, power in ac circuits.

6. Maxwell's equations

Idea of displacement current - Maxwell's equations (integral and differential forms) (no derivation), Maxwell's wave equation (with derivation), Transverse nature of electromagnetic waves.Poynting theorem (statement and proof), production of electromagnetic waves (Hertz experiment).

UNIT-IV (12 hrs)

7. Basic electronics:

PN juction diode, Zener diode, Tunnel diode, I-V characteristics, PNP and NPN transistors, CB, CE and CC configurations – Relation betweenα, β and γ - transistor (CE) characteristics -Determination of hybrid parameters, Transistor as an amplifier.

UNIT-V: (12 hrs)

8. Digital electronics

Number systems - Conversion of binary to decimal system and vice versa.Binary addition and subtraction (1's and 2's complement methods).Laws of Boolean algebra - De Morgan's laws-statement and proof, Basic logic gates, NAND and NOR as universal gates, exclusive-OR gate, Half adder and Full adder, Parallel adder circuits.

REFERENCE BOOKS

1. BSc Physics, Vol.3, Telugu Akademy, Hyderabad.
2. Electricity and Magnetism, D.N. Vasudeva. S. Chand & Co.
3. Electricity, Magnetism with Electronics, K.K.Tewari, R.Chand& Co.,
4. Principles of Electronics, V.K. Mehta, S.Chand& Co.,
5. Digital Principles and Applications, A.P. Malvino and D.P.Leach, Mc GrawHill Edition.

Practical Paper V:Electricity, Magnetism & Electronics

Work load: 30 hrs **2 hrs/week**

Minimum of 6 experiments to be done and recorded

1. Figure of merit of a moving coil galvonometer.
2. LCR circuit series/parallel resonance, Q factor.

3. Determination of ac-frequency –sonometer.
4. Verification of Kirchoff's laws and maximum power transfer theorem.
5. Field along the axis of a circular coil carrying current.
6. PN Junction Diode Characteristics
7. Zener Diode Characteristics
8. Transistor CE Characteristics- Determination of hybrid parameters
9. Logic Gates- OR,AND,NOT and NAND gates. Verification of Truth Tables.
10. Verification of De Morgan's Theorems.

Suggested student activities

Student seminars, group discussions, assignments, field trips, study project and experimentation using virtual lab

Examples

Seminars - A topic from any of the Units is given to the student and asked to give a brief seminar presentation.

Group discussion - A topic from one of the units is given to a group of students and asked to discuss and debate on it.

Assignment - Few problems may be given to the students from the different units and asked them to solve.

Field trip - Visit to Satish Dhawan Space Centre, Sriharikota / Thermal and hydroelectric power stations / Science Centres, any other such visit etc.

Study project - Web based study of different satellites and applications.

Domain skills:

Logical derivation, experimentation, problem solving, data collection and analysis, measurement skills

***** Documental evidence is to be maintained for the above activities.**

Paper VI: Modern Physics
(For Maths Combinations)
V Semester

Work load: 60 hrs per semester **4 hrs/week**

UNIT-I (12 hrs)

1. Atomic and molecular physics

Introduction –Drawbacks of Bohr's atomic model- Sommerfeld's elliptical orbits-relativistic correction (no derivation).Vector atom model and Stern-Gerlach experiment - quantum numbers associated with it. L-S and j- j coupling schemes.Zeeman effect and its experimental arrangement.

Raman effect, hypothesis, Stokes and Anti Stokes lines. Quantum theory of Raman effect. Experimental arrangement – Applications of Raman effect.

UNIT-II (12 hrs)

2. Matter waves & Uncertainty Principle

Matter waves, de Broglie's hypothesis - wavelength of matter waves, Properties of matter waves - Davisson and Germer experiment – Phase and group velocities.

Heisenberg's uncertainty principle for position and momentum (x and p), & energy and time (E and t). Experimental verification - Complementarity principle of Bohr.

UNIT-III (12 hrs)

3. Quantum (wave) mechanics

Basic postulates of quantum mechanics-Schrodinger time independent and time dependent wave equations-derivations. Physical interpretation of wave function. Eigen functions, Eigen values. Application of Schrodinger wave equation to particle in one dimensional infinite box.

UNIT-IV(12 hrs)

4. General Properties of Nuclei

Basic ideas of nucleus -size, mass, charge density (matter energy), binding energy, angular momentum, parity, magnetic moment, electric moments. Liquid drop model and Shell model (qualitative aspects only) - Magic numbers.

5. Radioactivity decay:

Alpha decay: basics of α-decay processes. Theory of α-decay, Gamow's theory, Geiger Nuttal law.β-decay, Energy kinematics for β-decay, positron emission, electron capture, neutrino hypothesis.

UNIT-V (12 hrs)

6. Crystal Structure

Amorphous and crystalline materials, unit cell, Miller indices, reciprocal lattice, types of lattices, diffraction of X-rays by crystals, Bragg's law, experimental techniques, Laue's method and powder diffraction method.

7. Superconductivity:

Introduction - experimental facts, critical temperature - critical field - Meissner effect – Isotope effect - Type I and type II superconductors - BCS theory (elementary ideas only) - applications of superconductors.

REFERENCE BOOKS

1. BSc Physics, Vol.4, Telugu Akademy, Hyderabad
2. Molecular Structure and Spectroscopy by G. Aruldhas. Prentice Hall of India, New Delhi.
3. Modern Physics by R. Murugeshan and Kiruthiga Siva Prasath. S. Chand & Co.
4. Modern Physics by G. Aruldhas & P. Rajagopal. Eastern Economy Edition.
5. Concepts of Modern Physics by Arthur Beiser. Tata McGraw-Hill Edition.
6. Quantum Mechanics, Mahesh C Jain, Eastern Economy Edition.
7. Nuclear Physics, Irving Kaplan, Narosa publishing House.
8. Nuclear Physics, D.C.Tayal, Himalaya Publishing House.
9. Elements of Solid State Physics, J.P.Srivastava, Prentice Hall of India Pvt., Ltd.
10. Solid State Physics, A.J. Dekker, McMillan India.

Practical Paper VI:Modern Physics

Work load: 30 hrs **2 hrs/week**

Minimum of 6 experiments to be done and recorded

1. e/m of an electron by Thomson method.
2. Determination of Planck's Constant (photocell).
3. Verification of inverse square law of light using photovoltaic cell.
4. Study of absorption of α-rays.
5. Study of absorption of β-rays.
6. Determination of Range of β-particles.
7. Determination of M & H.
8. Analysis of powder X-ray diffraction pattern to determine properties of crystals.
9. Energy gap of a semiconductor using junction diode.
10. Energy gap of a semiconductor using thermister.

Note: For all the above 8 practical papers the book "B.Sc Practical Physics" by C.L. Arora Published by S.Chand & Co, New – Delhi may be followed.

NOTE: Problems should be solved at the end of every chapter of all units.

Suggested student activities

Student seminars, group discussions, assignments, field trips, study project and experimentation using virtual lab

Examples

Seminars - A topic from any of the Units is given to the student and asked to give a brief seminar presentation.

Group discussion - A topic from one of the units is given to a group of students and asked to discuss and debate on it.

Assignment - Few problems may be given to the students from the different units and asked them to solve.

Field trip - Visit to Satish Dhawan Space Centre, Sriharikota / Thermal and hydroelectric power stations / Science Centres, any other such visit etc.

Study project - Web based study of different satellites and applications.

Domain skills:

Logical derivation, experimentation, problem solving, data collection and analysis, measurement skills

***** Documental evidence is to be maintained for the above activities.**

Paper–VII-(A)Elective(Electronics)

Semester –VI

Elective Paper –VII-(A):Analog and Digital Electronics

No. of Hours per week: 04 **Total Lectures:60**

Unit-I (14 Hours)

1. FET-Construction, Working, characteristics and uses; MOSFET-enhancement MOSFET, depletion MOSFET, construction and working , drain characteristics of MOSFET, applications of MOSFET
2. Photo electric devices: Structure and operation, characteristics, spectral response and application of LDR, LEDand LCD

Unit-II (10Hours)

3. Operational Amplifiers: Characteristics of ideal and practical Op-Amp (IC 741), Basic differential amplifiers, Op-Amp supply voltage, IC identification, Internal blocks of Op-Amp, its parameter off set voltages and currents, CMRR, slew rate, concept of virtualground.

Unit-III (10 Hours)

4. Applications of Op-Amp: Op-Amp as voltage amplifier, Inverting amplifier, Non-inverting amplifier, voltage follower, summing amplifier, difference amplifier, comparator, integrator, differentiator.

Unit-IV(14 Hours)

5. Data processing circuits: Multiplexers, De-multiplexers, encoders, decoders, Characteristics for Digital ICs -RTL, DTL, TTL, ECL CMOS (NAND & NOR Gates).
6. IC 555 Timer -Its pin diagram,internal architecture, Application as astablemultivibrator and mono stable multivibrator.

Unit-V (12 Hours)

7. Sequential digital circuits:Flip-flops, RS, Clocked SR, JK, D, T, Master-Slave, Flip- flop, Conversion of Flip flops.
8. Code Converters: Design of code converter, BCD to 7 segment, binary/BCD to gray, gray to binary/BCD ,design of counters using state machine.

Reference Books

1. Digital Electronics by G.K.Kharate Oxford University Press
2. Unified Electronics by Agarwal and Agarwal.
3. Op- Amp and Linear ICs by Ramakanth A Gayekwad, 4th edition PHI
4. Digital Principles and Applications by Malvino and Leach, TMH, 1996, 4th edition.
5. Digital Circuit design by Morris Mano,PHI
6. Switching Theory and Logic design by A.AnandKumar ,PHI
7. operations amplifier by SV Subramanyam.

Elective Paper-VII Practical: Analog and Digital Electronics
2hrs/Week

Minimum of 6 experiments to be done and recorded

1) Characteristics of FET
2) Characteristics of MOSFET
3) Characteristics of LDR
4) Characteristics of Op-amp.(IC741)
5)Op-Amp as amplifier/inverting amplifier
6) Op-Amp as integrator/differentiator
7) Op-Amp as summing amplifier/difference amplifier
8) IC 555 as astable multivibrator
9) IC 555 as monostable amplifier
10) Master slave flip-flop
11) JK flip-flop

Semester –VI
Cluster Electives VIII-A
Paper – VIII-A-1: Introduction to Microprocessors and Microcontrollers

No. of Hours per week: 04 **Total Lectures:60**

Unit – I (10Hours)

1. Introduction to microcontrollers:General purpose of computer systems,architecture of embedded system, classification, applications and purposes, challenges and designs, operational and non operational quality attributes, elemental description of embedded processors and micro controllers

Unit –II (10Hours)

2. Microprocessors:Organisation of microprocessorbased system, 8085 microprocessor,its pin diagram and architecture, concept of data bus, and address bus, 8085 programming, instruction classification, stacks and its implementation, hardware and software interrupts.

Unit– III (15Hours)

3. 8051 microcontroller:Introduction , block diagram, assembly language programming, programme counter, ROM memory, data types and directives, flag bits PSW register, jump, loop and call constructions

4. 8051 I/O Programming: Introduction to I/O port programming, pin out diagram, I/O port pin programming, bit manipulation, addressing modes, accessing memory, arithmetic and logic instructions.

Unit – IV (13 Hours)

5. Timers:Programming of 8051 timers, counter programming, interrupts, externalhardware interrupts**,** serial communication interrupts, interrupt priority.

6. Embedded system programming:Structure of programming, infinite loop, compiling, linking locating, down loading and debugging.

Unit –V (12Hours)

7. Embedded system design and development:Embedded system development environment, file type generated after cross compilation, dissembler, decompiler, simulator, emulator and debugging.

8. Embedded product life cycle:Embedded product development life cycle, trends in embedded industry.

Reference Books

1)Embedded Systems.. Architecture,programming and design, R Kamal, 2008, TMH

2) The 8051 micro controller and embedded systems using Assembly and C, M.A.Mazidi, J.G.Mazidi and R.D.McKinlay, second Ed., 2007 pearson Education India

3) Introduction to embedded systems K.V. Shibu, 1st edition, 2009 McGraw Hill

4) Micro Controllers in practice, I Susnea and Mitescu,2005,springer

Elective Paper-VIII-A-1 Practical: Introduction to Microprocessors and Microcontrollers 2hrs/Week

Minimum of 6 experiments to be done and recorded

1. To find that the given numbers is prime or not.
2. To find the factorial of a number.
3. Write a program to make the two numbers equal by increasing the smallest number and decreasing the largest number.
4. Use one of the four ports of 8051 for O/P interfaced to eight LED's. Simulate binary counter (8 bit) on LED's.
5. Program to glow first four LED then next four using TIMER application.
6. Program to rotate the contents of the accumulator first right and then left.
7. Program to run a countdown from 9-0 in the seven segment LED display.
8. To interface seven segment LED display with 8051 microcontroller and display 'HELP' in the seven segment LED display.
9. To toggle '1234' as '1324' in the seven segment LED.
10. Interface stepper motor with 8051 and write a program to move the motor through a given angle in clock wise or counter clockwise direction.
11. Application of embedded systems: Temperature measurement, some information on LCD display, interfacing a keyboard.

Semester –VI

Cluster Elective Paper VIII-A-2: Computational Methods and Programming

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I (12hrs)

1. Fundamentals of C language: C character set-Identifiers and Keywords-Constants -Variables-Data types-Declarations of variables-Declaration of storage class-Defining symbolic constants-Assignment statement.
2. Operators: Arithmetic operators-Relational operators-Logic operators-Assignment operators-Increment and decrement operators-Conditional operators.

UNIT-II (12hrs)

3. Expressions and I/O Statements: Arithmetic expressions-Precedence of arithmetic operators-Type converters in expressions-Mathematical (Library) functions - Data input and output-The getchar and putchar functions-Scanf-Printf simple programs.
4. Control statements:If -Else statements -Switch statements - The operators - GO TO - While, Do - While, FOR statements - BREAK and CONTINUE statements.

UNIT-III (12hrs)

5. Arrays: One dimensional and two dimensional arrays - Initialization - Type declaration - Inputting and outputting of data for arrays - Programs of matrices addition, subtraction and multiplication
6. User defined functions: The form of C functions - Return values and their types - Calling a function - Category of functions. Nesting of functions.Recursion.ANSI C functions- Function declaration. Scope and life time of variables in functions.

UNIT-IV (12hrs)

7. Linear and Non - Linear equations: Solution of Algebra and transcendental equations-Bisection, Falsi position and Newton-Rhapson methods-Basic principles-Formulae-algorithms
8. Simultaneous equations: Solutions of simultaneous linear equations-Guass elimination and Gauss Seidel iterative methods-Basic principles-Formulae – Algorithms.

UNIT-V (12hrs)

9. Interpolations: Concept of linear interpolation-Finite differences-Newton's and Lagrange's interpolation formulae-principles and Algorithms
10. Numerical differentiation and integration: Numerical differentiation-algorithm for evaluation of first order derivatives using formulae based on Taylor's series-Numerical integration-Trapezoidal and Simpson's 1/3 rule- Formulae-Algorithms.

Reference books:

1. Introductory methods of Numerical Analysis: Sastry
2. Numerical Methods: Balaguruswamy
3. Programming in ANSI C (TMH) : Balaguruswamy
4. Programming with 'C'- Byron Gottafried, Tata Mc Graw Hill

Elective PaperVIII-A-2: Practical: Computational Methods and Programming
2hrs/Week

Minimum of 6 experiments to be done and recorded

1. Write a program that reads an alphabet from keyboard and display in the reverse order.
2. Write a program to read and display multiplication of tables.
3. Write a program for converting centigrade to Fahrenheit temperature and Fahrenheit temperature centigrade.
4. Write a program to find the largest element in an array.
5. Write a program based on percentage calculation, the grade by entering the subject marks. (If percentage > 60 I class, if percentage between 50&60 II class, if percentage between 35&50 III class, if percentage below 35 fail).
6. Write a program for generation of even and odd numbers up to 100 using while, do-while and for loop.
7. Write a program to solve the quadratic equation using Bisection method.
8. Write a program for integration of function using Trapezoidal rule.
9. Write a program for solving the differential equation using Simpson's $1/3^{rd}$ rule.

Semester –VI

Cluster Elective Paper –VIII-A-3 :Electronic Instrumentation

No. of Hours per week: 04 **Total Lectures:60**

Unit – I (12Hours)

1. Basic of measurements:Instruments accuracy , precision , sensitivity , resolution range, errors in measurement, Multimeter , principles of measurement of dc voltage and dc currents, ac current and resistance, specifications of multimeter and their significance.

Unit -11 (10 Hours)

2. Electronic Voltmeter:Advantage over conventional multimeter for voltage measurement with respect to input impedence and sensitivity, principles of voltage measurement (block diagram only), specification of an electronic voltmeter/multimeter and their significance.

Unit– III (14 Hours)

3. CRO :Block diagram of basic CRO, construction of CRT, electron gun, electrostatic focusing and acceleration(only explanation) , time base operation, synchronization, front panel controls, specifications of CRO and their significance.

Applications CRO: Measurement of voltage ,dc and ac frequency , time period, special features of dual trace, digital storage oscilloscope, block diagram and principle of working.

Unit – IV (12 Hours)

4. Digital Multimeter:Block diagram,working, frequency and period measurement using universal counter, frequency counter ,accuracy and resolution.

5. Digital instruments:Principle and working of digitalinstruments, characteristics of a digital meter, working principle of digital voltmeter.

Unit – V (12 Hours)

6. Signal generators:Block diagram explanation, specifications of low frequency signal generators, pulse generator, function generator-working, Brief idea for testing, specifications. Distortion factor meter, wave analysis.

7. Bridges:Block diagram, working of basic LCR bridge – specifications – block diagram and working.

Reference Books

1. A text book in electrical technology by B.L.Thereja (S.Chand&Co)
2. Digital circuits and systems by Venugopal 2011 (Tata Mcgraw Hill)
3. Digital Electronics by SubrathaGhoshal 2012 (Cengage Learning)

Elective Paper-VIII-A-3: Practical: Electronic Instrumentation
2hrs/Week

Minimum of 6 experiments to be done and recorded

1. Study the loading effect of a multimeter by measuring voltage across alow and high resistance.
2. Study the limitations of a multimeter for measuring high frequency voltageand currents.
3. Measurement of voltage, frequency, time period and phase angle using CRO.
4. Measurement of time period and frequency using universal counter/frequency counter.
5. Measurement of rise, fall and delay times using a CRO.
6. Measurement of distortion of a RF signal generator using distortion factor meter.
7. Measurement of R, L and C using a LCR bridge/ universal bridge.

Paper VII-(B)Elective (Materials Science)

Semester –VI
Elective Paper –VII-(B): Materials Science

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I (12 hrs)

1.Materials and Crystal Bonding: Materials, Classification, Crystalline, Amorphous, Glasses; Metals, Alloys, Semiconductors, Polymers, Ceramics, Plastics, Bio-materials, Composites, Bulk and nanomaterials. Review of atomic structure – Interatomic forces – Different types of chemical bonds – Ioniccovalent bond or homopolar bond – Metallic bond – Dispersion bond – Dipole bond – Hydrogenbond – Binding energy of a crystal.

UNIT-II (12 hrs)

2. Defects and Diffusion in Materials: Introduction – Types of defects - Point defects- Line defects- Surface defects- Volume defects- Production and removal ofdefects- Deformation-irradiation- quenching- annealing- recovery - recrystallization andgrain growth. Diffusion in solids- Fick's laws of diffusion.

UNIT-III(12 hrs)

3. Mechanical Behavior of Materials: Different mechanical properties of engineering materials – Creep – Fracture – Technologicalproperties – Factors affecting mechanical properties of a material – Heat treatment - Cold andhot working – Types of mechanical tests – Metal forming process – Powder – Misaligning – Deformation of metals.

UNIT-IV (12 hrs)

4. Magnetic Materials:Dia-, Para-, Ferri- and Ferromagnetic materials, Classical Langevin theory of dia magnetism, Quantum mechanical treatment of paramagnetism. Curie's law, Weiss's theory of ferromagnetism, Ferromagnetic domains.Discussion of B-H Curve.Hysteresis and energy Loss.

UNIT-V (12 hrs)

5. Dielectric Materials:Dielectric constant, dielectric strength and dielectric loss, polarizability, mechanism of polarization,factors affecting polarization, polarization curve and hysteresis loop, types of dielectric materials, applications; ferroelectric, piezoelectric and pyroelectric materials, Clausius -Mosotti equation.

Reference books

1. Materials Science by M.Arumugam, Anuradha Publishers. 1990, Kumbakonam.
2.Materials Science and Engineering V.Raghavan, Printice Hall India Ed. V 2004. New Delhi.
3. Elementary Solid State Physics, 1/e M. Ali Omar, 1999, Pearson India
4. Solid State Physics, M.A. Wahab, 2011, Narosa Publications

Elective Paper-VII-B Practical: Materials Science
2hrs/Week

Minimum of 6 experiments to be done and recorded

1. Measurement of susceptibility of paramagnetic solution (Quinck`s Tube Method)
2. Measurement of magnetic susceptibility of solids.
3. Determination of coupling coefficient of a piezoelectric crystal.
4. Measurement of the dielectric constant of a dielectric Materials
5. Study the complex dielectric constant and plasma frequency of metal using surface plasmon resonance (SPR)
7. Study the hysteresis loop of a Ferroelectric Crystal.
8. Study the B-H curve of 'Fe' using solenoid and determine energy loss from hysteresis.

Semester –VI :Cluster Electives – VIII-B
Cluster Elective Paper VIII-B-1 :Fundamentals of Nanoscience

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I (12hrs)

1. Background and history: Emergence of Nanoscience with special reference to Feynman and Drexler; Role of particle size; Spatial and temporal scale; Concept of confinement, strong and weak confinement with suitable example; Development of quantum structures, Basic concept of quantum well, quantum wire and quantum dot.

Finite size Zero, One and Two Dimensional Nanostructures, Concept of Surface and Interfacial Energies. Physics of the solid state – size dependence of properties, crystal structures, Lattice vibrations, Energy bands:- Insulators Semiconductors and conductors.

UNIT-II (12hrs)

2. Classification of Nanomaterials: Inorganic nanomaterials: carbon nanotubes and cones, Organic nanomaterials: dendrimers, micelles, liposomes, block copolymers; Bionanomaterials: Biomimtric, bioceramic and nanotherapeutics; Nanomaterials for molecular electronics and optoelectronics.

UNITS-III (12hrs)

3. Macromolecules: Classification of polymers, chemistry of polymerization, chain polymerization, step polymerization, coordination polymerization. Molecular weight of polymers-number average and weight average molecular weight, degree of polymerization, determination of molecular weight of polymers by viscometry, Osmometry and light scattering methods.Kinetics of free radical polymerization, derivation of rate law.Preparation and application of polyethylene, PVC, Teflon.

UNIT-IV (12hrs)

4. Molecular & Nanoelectronics: Semiconductors, Transition from crystal technology to nanotechnology. Tiny motors, Gyroscopes and accelerometers. Nano particle embedded wrinkle resistant cloth, Transparent Zinc Oxide sun screens.Bio-systems, Nanoscale processes in environment. Nanoscale structures, Novel phenomena and Quantum control and quantum computing. Single electron transistors, Quantum dots, Quantum wires.

UNIT-V (12hrs)

5. Biomaterials: Implant materials: Stainless steels and its alloys, Ti and Ti based alloys, Ceramic implant materials; Hydroxyapatite glass ceramics, Carbon Implant materials, Polymeric Implant materials, Soft tissue replacement implants, Sutures, Surgical tapes and adhesives, heart valve implants, Artificial organs, Hard Tissue replacement Implants, Internal Fracture Fixation Devices, Wires, Pins, and Screws, Fracture Plates.

Reference Books

1. T. Pradeep: Textbook of Nanoscience and Nanotechnology Chapter (McGraw-Hill Professional, 2012), Access Engineering.
2. C. N. R. Rao, A. Mu¨ller, A. K. Cheetham, “The Chemistry of Nanomaterials :Synthesis, Properties and Applications”, Wiley-VCH, 2006.
3. C. Breachignac P. Houdy M. Lahmani, “Nanomaterials and Nanochemistry”, Springer, 2006.
4. Guozhong Cao, “Nanostructures and Nanomaterials: Synthesis, Properties, and Applications”, World Scientific Publishing Private, Ltd., 2011.

5. Zhong Lin Wang, "Characterization of Nanophase Materials", Wiley-VCH, 2004.
6. Carl C. Koch, "Nanostructured Materials: Processing, Properties and Potential Applications", William Andrew Publishing Norwich, 2006.

Elective Paper- VIII-B-1: Practical: Fundamentals of Nanoscience
2hrs/Week

Minimum of 6 experiments to be done and recorded
1. Determination of the Band Gap of Semiconductor Nanoparticles.
2. Surface Enhanced Raman Scattering Activity of Silver Nanoparticles
3. Conversion of Gold Nanorods into Gold Nanoparticles
4. Bimetallic Nanoparticles
5. Processing and Development of Nanoparticle gas sensor
6. Magnetic separation/identification studies of nanoparticles
7. Harvesting light using nano-solar cells
8. Nano-Forensic analysis to identify, individualize and evaluate evidence using nanophase materials
9. Comparison of the performance of nanoparticles based conductive adhesives and conventional non conductive adhesives.
10. Electrodeposition and corrosion behavior of nanostructured composite film
11. Photocatalytic activity of nanomaterials

Semester –VI
Cluster Elective Paper –VIII-B-2: Synthesis and Characterization of Nanomaterials

No. of Hours per week: 04 **Total Lectures:60**

Unit-I (12 hrs)
1. Nanomaterials synthesis: Synthesis and nanofabrication, Bottom-Up and Top-Down approach with examples. Chemical precipitation methods, sol-gel method, chemical reduction, hydrothermal, process. Physical Mehtods- ball milling, Physical Vapour deposition (PVD), Sputtering, ChemicalVapor deposition (CVD), pray pyrolysis, Biological methods- Synthesis using micro organisms and bacteria, Synthesis using plant extract, use of proteins and DNA templates.

Unit-II (12 hrs)
2. Classification of materials: Types of materials, Metals, Ceramics (Sand glasses) polymers, composites, semiconductors.Metals and alloys- Phase diagrams of single component, binary and ternary systems, diffusion, nucleation and growth. Diffusional and diffusionless transformations.Mechanical properties.Metallic glasses. Preparation, structure and properties like electrical, magnetic, thermal and mechanical, applications.

UNITS-III (12 hrs)

3. Glasses: The glass transition - theories for the glass transition, Factors that determine the glass-transition temperature. Glass forming systems and ease of glass formation, preparation of glass materials.Applications of Glasses: Introduction: Electronic applications, Electrochemical applications, optical applications, Magnetic applications.

UNITS-IV (12 hrs)

4. Liquid Crystals: Mesomorphism of anisotropic systems, Different liquid crystalline phase and phase transitions, Thermal and electrical properties of liquid crystals, Types Liquid Crystals displays, few applications of liquid crystals.

UNITS-V (12 hrs)

5. Characterization Methods: XRD, SEM, TEM, AFM, XPS and PL characterization techniques for nano materials.Electrical and mechanical properties, Optical properties by IR and Raman Spectroscopy.

References books

1. Encyclopedia of Nanotechnology by M.Balakrishna Rao and K.Krishna Reddy, Vol.I to X, Campus books.
2. Nano: The Essentials-Understanding Nanoscinece & Nanotechnology by T.Pradeep; Tata Mc. Graw Hill
3. Nanotechnology in Microelectronics & Optoelectronics, J.M Martine Duart, R.J Martin Palma, F. Agullo Rueda, Elsevier
4. Nanoelectronic Circuit Design, N.K Jha, D Chen, Springer
5. Handbook of Nanophysics- Nanoelectronics & Nanophotonics, K.D Sattler, CRC Press
6. Organic Electronics-Sensors & Biotechnology- R. Shinar & J. Shinar, McGraw-Hill

Cluster Elective Paper- VIII-B-2: Practical: Synthesis and Characterization of Nanomaterials 2hrs/Week

Minimum of 6 experiments to be done and recorded

1. Synthesis of nanocrystalline films of II-VI compounds doped with rare earths by chemical process.
2. Synthesis of Alkaline earth aluminates in nanocrystalline form by combustion synthesis.
3. Preparation of surface conducting glass plate by spray pyrolysis method
4. Preparation of surface conducting glass plate by chemical route
5. Fabrication of micro fluidic nanofilter by polymerisation reaction
6. Absorption studies on the nanocrystalline films and determination of absorption coefficient.
7. Determination of band gap from the absorption spectra using Tauc's plots.
8. Study of Hall effect in semiconductors and its application in nanotechnology.
9. Measurement of electrical conductivity of semiconductor film by Four Probe method and study of temperature variation of electrical conductivity.

Semester –VI

Cluster Elective Paper –VIII-B-3: Applications of Nanomaterials and Devices

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I (12 hrs)

1. Optical properties: Coulomb interaction in nanostructures. Concept of dielectric constant for nanostructures and charging of nanostructure.Quasi-particles and excitons. Excitons in direct and indirect band gap semiconductor nanocrystals. Quantitative treatment of quasi-particles and excitons, charging effects. Radiative processes: General formalization-absorption, emission and luminescence. Optical properties of heterostrctures and nanostructures.

UNIT-II (12 hrs)

2. Electrical transport:

Carrier transport in nanostrcutures.Hall effect, etermination of carrier mobility and carrier concentration; Coulomb blockade effect, thermionic emission, tunneling and hoping conductivity. Defects and impurities: Deep level and surface defects.

UNIT-III (12 hrs)

3. Applications: Applications of nanoparticles, quantum dots, nanowires and thin films for photonic devices (LED, solar cells). Single electron transfer devices (no derivation). CNT based transistors. Nanomaterial Devices: Quantum dots heterostructures lasers, optical switching and optical data storage. Magnetic quantum well; magnetic dots - magnetic data storage.Micro Electromechanical Systems (MEMS), Nano Electromechanical Systems (NEMS).

UNIT-IV(12 hrs)

4. Nanoelectronics: Introduction, Electronic structure of Nanocrystals,Tuning the Band gap of Nanoscale semiconductors, Excitons, Quantumdot, Single electron devices, Nanostructured ferromagnetism,Effect of bulk nanostructuring of magnetic properties, Dynamics of nanomagnets, Nanocarbon ferromagnets, Giant and colossal magneto-resistance, Introduction of spintronics, Spintronics devices and applications.

UNIT-V (12 hrs)

5. Nanobiotechnology and Medical application: Introduction, Biological building blocks- size of building blocks and nanostructures, Peptide nanowires and protein nanoparticles, DNA double nanowires, Nanomaterials in drug delivery and therapy, Nanomedicine, Targeted gold nanoparticles for imaging and therapy.

Reference books:

1.C.P. Poole, Jr. Frank J. Owens, Introduction to Nanotechnology (Wiley India Pvt. Ltd.).

2.S.K. Kulkarni, Nanotechnology: Principles & Practices (Capital Publishing Company).

3. K.K. Chattopadhyay and A.N. Banerjee, Introduction to Nanoscience & Technology (PHI Learning Private Limited).

4. Richard Booker, Earl Boysen, Nanotechnology (John Wiley and Sons).

Cluster Elective Paper-VIII-B-3: Practical: Applications of Nanomaterials and Devices 2hrs/Week

Minimum of 6 experiments to be done and recorded
1. Synthesis of metal nanoparticles by chemical route.
2. Synthesis of semiconductor nanoparticles.
3. Surface Plasmon study of metal nanoparticles by UV-Visible spectrophotometer.
4. XRD pattern of nanomaterials and estimation of particle size.
5. To study the effect of size on color of nanomaterials.
6. Prepare a disc of ceramic of a compound using ball milling, pressing and sintering, and study its XRD.
7. Fabricate a thin film of nanoparticles by spin coating (or chemical route) and study transmittance spectra in UV-Visible region.
8. Fabricate a pn-diode by diffusing Al over the surface of n-type Si and study its I-V characteristics.

Paper-VII-(C) Elective (Renewable Energy)

Semester –VI
Elective Paper –VII-C: Renewable Energy

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I (12 hrs)

1. Introduction to Energy: Definition and units of energy, power, Forms of energy, Conservation of energy, second law of thermodynamics, Energy flow diagram to the earth. Origin and time scale of fossil fuels, Conventional energy sources, Role of energy in economic development and social transformation.

2. Environmental Effects: Environmental degradation due to energy production and utilization, air and water pollution, depletion of ozone layer, global warming, biological damage due to environmental degradation. Effect of pollution due to thermal power station, nuclear power generation, hydroelectric power stations on ecology and environment.

UNIT-II (12 hrs)

3. Global Energy Scenario: Energy consumption in various sectors, projected energy consumption for the next century, exponential increase in energy consumption, energy resources, coal, oil, natural gas, nuclear and hydroelectric power, impact of exponential rise in energy usage on global economy.

4. Indian Energy Scene: Energy resources available in India, urban and rural energy consumption, energy consumption pattern and its variation as a function of time, nuclear energy - promise and future, energy as a factor limiting growth, need for use of new and renewable energy sources.

UNIT-III (12 hrs)

5.Solar energy: Solar energy, Spectral distribution of radiation, Flat plate collector, solar water heating system, Applications, Solar cooker. Solar cell, Types of solar cells, Solar module and array, Components of PV system, Applications of solar PV systems.

6. Wind Energy: Introduction, Principle of wind energy conversion, Components of wind turbines, Operation and characteristics of a wind turbine, Advantages and disadvantages of wind mills, Applications of wind energy.

UNIT-IV (12 hrs)

7. Ocean Energy: Introduction, Principle of ocean thermal energy conversion, Tidal power generation, Tidal energy technologies, Energy from waves, Wave energy conversion, Wave energy technologies, advantages and disadvantages.

8. Hydrogen Energy: History of hydrogen energy - Hydrogen production methods - Electrolysis of water, Hydrogen storage options – Compressed and liquefied gas tanks, Metal hydrides; Hydrogen safety - Problems of hydrogen transport and distribution - Uses of hydrogen as fuel.

UNIT-V (12 hrs)

9. Bio-Energy

Energy from biomass – Sources of biomass – Different species – Conversion of biomass into fuels – Energy through fermentation – Pyrolysis, gasification and combustion – Aerobic and anaerobic bio-conversion – Properties of biomass – Biogas plants – Types of plants – Design and operation – Properties and characteristics of biogas.

References:

1. Solar Energy Principles, Thermal Collection &Storage, S.P.Sukhatme: Tata McGraw Hill Pub., New Delhi.
2. Non-Conventional Energy Sources, G.D.Rai, New Delhi.
3. Renewable Energy, power for a sustainable future, Godfrey Boyle, 2004,
4. The Generation of electricity by wind, E.W. Golding.
5. Hydrogen and Fuel Cells: A comprehensive guide, Rebecca Busby, Pennwell corporation (2005)
6. Hydrogen and Fuel Cells: Emerging Technologies and Applications, B.Sorensen, Academic Press (2012).
7. Non-Conventional Energy Resources by B.H. Khan, Tata McGraw Hill Pub., 2009.
8. Fundamentals of Renewable Energy Resources byG.N.Tiwari, M.K.Ghosal, Narosa Pub., 2007.

Elective Paper-VII-C: Practical: Renewable Energy
2hrs/Week

Minimum of 6 experiments to be done and recorded

1. Preparation of copper oxide selective surface by chemical conversion method.
2. Performance testing of solar cooker.
3. Determination of solar constant using pyrheliometer.
4. Measurement of I-V characteristics of solar cell.

5. Study the effect of input light intensity on the performance of solar cell.
6. Study the characteristics of wind.

Semester –VI
Cluster Electives –VIII-C
Elective Paper –VIII-C-1: Solar Thermal and Photovoltaic Aspects

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I (12 hrs)
1. Basics of Solar Radiation: Structure of Sun, Spectral distribution of extra terrestrial radiation, Solar constant, Concept of Zenith angle and air mass, Definition of declination, hour angle, solar and surface azimuth angles; Direct, diffuse and total solar radiation, Solar intensity measurement – Thermoelectric pyranometer and pyrheliometer.
2. Radiative Properties and Characteristics of Materials: Reflection, absorption and transmission of solar radiation throughsingle and multi covers; Kirchoff's law – Relation between absorptance, emittance and reflectance; Selective Surfaces - preparation and characterization, Types and applications; Anti-reflective coating.

UNIT-II (14 hrs)
3. Flat Plate Collectors (FPC) : Description of flat plate collector, Liquid heating type FPC, Energy balance equation,Efficiency, Temperature distribution in FPC, Definitions of fin efficiency and collector efficiency, Evacuated tubular collectors.
4. Concentrating Collectors: Classification, design and performance parameters; Definitions of aperture, rim-angle, concentration ratio and acceptance angle; Tracking systems; Parabolic trough concentrators; Concentrators with point focus.

Unit-III (14 hrs)
5. Solar photovoltaic (PV) cell: Physics of solar cell –Type of interfaces, homo, hetero andschottky interfaces, Photovoltaic Effect, Equivalent circuit of solar cell, Solar cell output parameters, Series and shunt resistances and its effect on cell efficiency; Variation of efficiency with band-gap and temperature.
6. Solar cell fabrication: Production of single crystal Silicon: Czokralski (CZ) and Float Zone (FZ) methods, Silicon wafer fabrication, Wafer to cell formation, Thin film solar cells, Advantages, CdTe/CdS cell formation, Multi-junction solar cell; Basic concept of Dye-sensitized solar cell, Quantum dot solar cell.

UNIT-IV (8 hrs)
Solar PV systems: Solar cell module assembly – Steps involved in the fabrication of solar module, Module performance, I-V characteristics, Modules in series and parallel, Module protection – use of Bypass and Blocking diodes, Solar PV system and its components, PV array, inverter, battery and load.

UNIT-V (12 hrs)

Solar thermal applications: Solar hot water system (SHWS), Types of SHWS, Standard method of testing the efficiency of SHWS; Passive space heating and cooling concepts, Solar desalinator and drier, Solar thermal power generation.
Solar PV applications: SPV systems; Stand alone, hybrid and grid connected systems, System installation, operation and maintenances; Field experience; PV market analysis and economics of SPV systems.

Reference Books:

1. Solar Energy Utilization, G. D. Rai, Khanna Publishers
2. Solar Energy- Fundamentals, design, modeling and applications, G.N. Tiwari, Narosa Pub., 2005.
3. Solar Energy-Principles of thermal energy collection & storage, S.P. Sukhatme, Tata Mc-Graw Hill Publishers, 1999.
4. Solar Photovoltaics- Fundamentals, technologies and applications, Chetan Singh Solanki, PHI Learning Pvt. Ltd.,
5. Science and Technology of Photovoltaics, P. Jayarama Reddy, BS Publications, 2004.

Cluster Elective Paper- VIII-C-1: Practical: Solar Thermal and Photovoltaic Aspects
2hrs/Week
Minimum of 6 experiments to be done and recorded
1. Measurement of direct solar radiation using pyrheliometer.
2. Measurement of global and diffuse solar radiation using pyranometer.
3. Measurement of emissivity, reflectivity and transsivity.
4. Measurement of efficiency of solar flat plate collector.
5. Performance testing of solar air dryer unit.
6. Effect of tilt angle on the efficiency of solar photovoltaic panel.
7. Study on solar photovoltaic panel in series and parallel combination.

Semester - VI
Cluster Elective Paper –VIII-C-2 :Wind, Hydro and Ocean Energies

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I
1. Introduction: Wind generation, meteorology of wind, world distribution of wind, wind speed variation with height, wind speed statistics, Wind energy conversion principles; General introduction; Types and classification of WECS; Power, torque and speed characteristics.
2. Wind Measurements:Eolian features, biological indicators, rotational anemometers, other anemometers, wind measurements withballoons.

UNIT-II
3. Wind Energy Conversion System:Aerodynamic design principles; Aerodynamic theories; Axial momentum, blade element andcombine theory; Rotor characteristics; Maximum power coefficient; Prandlt's tip losscorrection.

4. Design of Wind Turbine: Wind turbine design considerations; Methodology; Theoretical simulation of wind turbinecharacteristics; Test methods.

UNIT-III

5. Wind Energy Application: Wind pumps: Performance analysis, design concept and testing; Principle of wind energy generation; Standalone, grid connected and hybrid applications of wind energy conversion systems, Economics of wind energyutilization; Wind energy in India; Environmental Impacts of Wind farms.

UNIT-IV

6. Small Hydropower Systems: Overview of micro, mini and small hydro systems; Hydrology; Elements of pumps andturbine; Selection and design criteria of pumps and turbines; Site selection;Speed and voltage regulation; Investment issues load management and tariff collection; potential of small hydro power in India.Wind and hydro based stand-alone hybrid power systems.

UNIT-V

7.Ocean Thermal, Tidal and Wave Energy Systems:Ocean Thermal - Introduction, Technology process, Working principle, Resource and site requirements, Location of OCET system, Electricity generation methods from OCET,Advantages and disadvantages, Applications of OTEC,

8. Tidal Energy - Introduction, Origin and nature of tidal energy, Merits and limitations, Tidal energy technology,Tidal range power, Basic modes of operation of tidal systems.Wave Energy – Introduction, Basics of wave motion, Power in waves, Wave energy conversion devices, Advantages anddisadvantages, Applications of wave energy.

Reference Books:

1. Dan Charis, Mick Sagrillo, LanWoofenden, “Power from the Wind”, New Society Pub., 2009.
2. Erich Hau, “Wind Turbines-Fundaments, Technologies, Applications, Economics”, 2ndEdition, Springer Verlag, BerlinHeidelberg, NY, 2006.
3. Joshue Earnest, Tore Wizelius, Wind Power and Project Developmen”, PHI Pub., 2011.
4. T. Burton, D. Sharpe, N. Jenkins, E. Bossanyi, Wind Energy Handbook, John Wiley Pub., 2001.
5. Paul Gipe, “Wind Energy Basics”, Chelsea Green Publications, 1999.
6. Khan, B.H., “Non-Conventional Energy Resources”, TMH, 2nd Edition, New Delhi, 2009.
7. Tiwari, G.N., and Ghosal, M.K, Renewable Energy Resources – Basic Principles and applications, Narosa Publishing House,2007.

Cluster Elective Paper- VIII-C-2 Practical: Wind, Hydro and Ocean Energies
2hrs/Week

Minimum of 6 experiments to be done and recorded

1. Estimation of wind speed using anemometer.
2. Determination of characteristics of a wind generator
3. Study the effect of number and size of blades of a wind turbine on electric power output.
4. Performance evaluation of vertical and horizontal axes wind turbine rotors.

5. Study the effect of density of water on the output power of hydroelectric generator.
6. Study the effect of wave amplitude and frequency on the wave energy generated.

Semester - VI
Cluster Elective Paper –VIII-C-3 :Energy Storage Devices

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I (12 hr)

1. Energy Storage: Need of energy storage; Different modes of energy storage, Flywheel storage, Electrical and magnetic energy storage: Capacitors,electromagnets; Chemical Energy storage: Thermo-chemical, photo-chemical, bio-chemical,electro-chemical, fossil fuels and synthetic fuels. Hydrogen for energy storage.

UNIT-II (12 hrs)

2. Electrochemical Energy Storage Systems: Batteries: Primary, Secondary, Lithium, Solid-state and molten solvent batteries; Leadacid batteries; Nickel Cadmium Batteries; Advanced Batteries. Role of carbon nano-tubes inelectrodes.

UNIT-III (12 hrs)

3. Magnetic and Electric Energy Storage Systems: Superconducting Magnet Energy Storage(SMES) systems; Capacitor and battery:Comparison and application; Super capacitor: Electrochemical Double Layer Capacitor(EDLC), principle of working, structure, performance and application.

UNIT-IV (12 hrs)

4. Fuel Cell: Fuel cell definition, difference between batteries and fuel cells, fuel cell components, principle and working of fuel cell, performance characteristics,efficiency, fuel cell stack, fuel cell power plant: fuel processor, fuel cell powersection, power conditioner, Advantages and disadvantages.

UNIT-V (12 hrs)

5. Types of Fuel Cells: Alkaline fuel cell, polymer electrolyte fuel cell, phosphoric acid fuel cell,molten carbonate fuel cell; solid oxide fuel cell,proton exchange membrane fuel cell, problems with fuel cells, applications of fuel cells.

REFERENCE BOOKS

1. J. Jensen and B. Squrensen, Fundamentals of Energy Storage, John Wiley, NY, 1984.
2. M. Barak, Electrochemical Power Sources: Primary and Secondary Batteries by, P. Peregrinus,IEE,1980.
3.P.D.Dunn, Renewable Energies, Peter Peregrinus Ltd, London, 1986.
4. B.Viswanathan and M. A. Scibioh, Fuel Cells-Principles and Applications, University Press, 2006.

5. Hart, A.B and G.J.Womack, Fuel Cells: Theory and Application, Prentice Hall, NewYork, 1989.

Cluster Elective Paper –VIII-C-3: Practical: Energy Storage Devices
2hrs/Week

Minimum of 6 experiments to be done and recorded
1. Study of charge and discharge characteristics of storage battery.
2. Study of charging and discharging behavior of a capacitor.
3. Determination of efficiency of DC-AC inverter and DC-DC converters
4. Study of charging characteristics of a Ni-Cd battery using solar photovoltaic panel.
5. Performance estimation of a fuel cell.
6. Study of effect of temperature on the performance of fuel cell.

B.Sc. (Physics) (Non-Mathematics Combinations)
Scheme of instruction and examination to be followed w.e.f. 201-2017

S.No	Semester	Title of the paper	Instruction Hrs/week	Duration o f exam (hrs)	Max Marks (external)
Theory					
1	First	Paper I: Mechanics & Properties of Matter	4	3	75
2	Second	Paper II: Waves & Oscillations	4	3	75
3	Third	Paper III: Optics	4	3	75
4	Fourth	Paper IV: Thermodynamics & Radiation Physics	4	3	75
5	Fifth	Paper V: Electricity, Magnetism & electronics Paper VI: Modern Physics & Medical Physics	4 4	3 3	75 75
6	Sixth	PaperVII : Elective Paper VIII: Cluster Electives	4 4	3 3	75 75
Practical					
1	First	Practical 1	2	3	50
2	Second	Practical II	2	3	50
3	Third	Practical III	2	3	50
4	Fourth	Practical IV	2	3	50
5	Fifth	Practical V	2	3	50
6		Practical VI	2	3	50
7	Sixth	Practical VII	2	3	50

8		Practical VIII	2	3	50

B.Sc. Physics under CBCS for Non-Mathematics Combinations

w.e.f. 2015-16(Revised in April, 2016)

B.Sc. 1st Semester Physics

Paper I: Mechanics & Properties of Matter

Work load: 60 hrs per semester **4 hrs/week**

UNIT-I(16 hrs)

1. Mathematical Background

Scalars and vectors –vector addition-scalar and vector products of vector and their physical significance-vector calculus-gradient of a scalar point function-divergence and curl of vector-statements of Stokes and Gauss theorems -examples (no derivations).

2. Motion of system

Collisions- Elastic and inelastic collisions-Collisions in one and two dimension-Rocket propulsion-Center of mass-Motion of the centre of mass-Impact parameter-Scattering cross-section, Rutherford scattering (No derivation-Qualitative ideas only)

UNIT-II(12 hrs)

3. Mechanics of Rigid body

Rigid body, rotational kinematic relations Rotational kinetic energy and moment of inertia - moment of inertia in simple cases (Rod, disc, sphere and cylinder)- No derivations. Parallel& Perpendicular axes theorems-Torque-relation between torque and angular momentum.

Angular momentum of a particle-Torque and angular momentum for a system of particles-conservation of angular momentum-Translation and rotational motion of system-Elementary ideas about gyroscopic motion (No derivation – Qualitative ideas only)-Precession of the equinoxes.

UNIT-III(10 hrs)

4. Central forces

Central force- Definition& examples- General Characteristics of central forces-Conservative nature of central forces, Planetary motion-Kepler's laws (Statements & Explanation), Newton's law of gravitation from Kepler's law, Geostationary Satellite Motion.Uses of communication satellites.

UNIT-IV(10 hrs)

5. Fluid Flow

The flow of ideal fluids Stream line motion -Equation of continuity –Bernoulli's equation-Simple applications - Torricelli's theorem-The Venturimeter-Pitot's tube-Viscosity and the flow of real fluids- Poiseuille's equation.

UNIT-V (12 hrs)

6. Relativistic effects

Moving reference frames-Inertial and Non-inertial reference frames-Galilean relativity – Special theory of relativity-Statements of the two basic postulates- (Elementary treatment and application only) Lorentz transformation equations-length contraction-time dilation-addition of velocities-Momentum and relativistic mass- Mass –Energy equation, rest mass & momentum of a particle.

REFERENCE BOOKS:

1. BSc Physics, Vol.1 -Telugu Academy, Hyderabad
2. Physics for Biology and Premedical Students –D.N. Burns & SGG Mac Donald
3. Unified Physics Vol.I Mechanics,Waves and Oscillations – Jai Prakash Nath&Co.Ltd., Meerut.
4. Properties of Matter - D.S. Mathur, S.Chand& Co, New Delhi ,11thEdn., 2000
5. Properties of Matter - Brijlal&Subrmanyam ,S.Chand&Co. 1982

Practical paper 1: Mechanics & Properties of Matter

Work load: 30 hrs per semester **2 hrs/week**

Minimum of 6 experiments to be done and recorded

1. Viscosity of liquid by the flow method (Poiseuille's method)
2. Young's modulus of the material of a bar (scale) by uniform bending
3. Young's modulus of the material a bar (scale) by non- uniform bending
4. Surface tension of a liquid by capillary rise method
5. Determination of radius of capillary tube by Hg thread method
6. Viscosity of liquid by Searle'sviscometer method
7. Bifilar suspension –moment of inertia of a regular rectangular body.
8. Determination of moment of inertia using Fly-wheel
9. Determination of the height of a building using a sextant.
10. Rigidity modulus of material of a wire-dynamic method (torsional pendulum)

Suggested student activities

Student seminars, group discussions, assignments, field trips, study project and experimentation using virtual lab

Examples

Seminars - A topic from any of the Units is given to the student and asked to give a brief seminar presentation.

Group discussion - A topic from one of the units is given to a group of students and asked to discuss and debate on it.

Assignment - Few problems may be given to the students from the different units and asked them to solve.

Field trip - Visit to Satish Dhawan Space Centre, Sriharikota / Thermal and hydroelectric power stations / Science Centres, any other such visit etc.
Study project - Web based study of different satellites and applications.

Domain skills:
Logical derivation, experimentation, problem solving, data collection and analysis, measurement skills

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Paper II: Waves & Oscillations
(For Non-Maths Combinations)
II SEMESTER

Work load:60 hrs per semester **4 hrs/week**

UNIT-I(15 hrs)

1. Oscillatory Motion

Simple harmonic motion-Equation of motion and solution-Simple harmonic motion from the standpoint of energy-The rotor diagram representation of simple harmonic motion-Compound pendulum-determination of g and k, torsional pendulum-determination of n, Combination of Simple harmonic motions along a line and perpendicular to each other-Lissajous figures-

UNIT-II(14 hrs)

2. Damped Oscillators

Damped vibrations - Explanation and examples - Forced vibrations – Explanation and examples, Resonance, examples -Sharpness of resonance Q-factor, Volume Resonator, Determination of frequency of a given tuning fork.

UNIT-III(11 hrs)

3. Wave Motion

Progressive waves-Equation of a progressive wave-sinusoidal waves-Velocity of waves in elastic media-Standing waves-Transverse vibrations of stretched strings, overtones and harmonics. Sonometer verification of laws of transverse vibrations in a stretched string, beats (qualitative analysis Only).

UNIT-IV(10 hrs)

4. Acoustics

Classification of sound, Characteristics of musical sound, Acoustics of Buildings, Reverberation, Sabine's formula (without derivation) Absorption coefficient, Factors affecting acoustics of buildings, Intensity of sound, Sound distribution in an auditorium.

UNIT-V(10 hrs)

5. Ultrasonics

Ultrasonics, properties of ultrasonic waves, production of ultrasonics by piezoelectric and magnetostriction methods, detection of ultrasonics, Applications of ultrasonic waves.

REFERENCE BOOKS

1. BSc Physics, Vol.1 -Telugu Academy, Hyderabad
2. Physics for Biology and Premedical Students –D.N. Burns & SGG Mac Donald
3. Unified Physics Vol.I, Mechanics,Waves and Oscillations – Jai Prakash Nath&Co.Ltd., Meerut.
4. Waves and Oscillations. S. Badami, V. Balasubramanian and K. Rama Reddy Orient Longman.
5. Waves and Oscillations. N. Subramaniyam and BrijlalVikas Publishing House Private Limited.
6. Acoustics – Waves and Oscillations, S.N.Sen, Wiley Estern Ltd.

Practical Paper II: Waves & Oscillations

Work load: 30 hrs per semester **2 hrs/week**

Minimum of 6 experiments to be done and recorded

1. Volume resonator experiment
2. Determination of 'g' by compound/bar pendulum
3. Simple pendulum normal distribution of errors-estimation of time period and the error of the mean by statistical analysis
4. Determination of the force constant of a spring by static and dynamic method.
5. Determination of the elastic constants of the material of a flat spiral spring.
6. Coupled oscillators
7. Verification of laws of vibrations of stretched string –sonometer
8. Determination of frequency of a bar –Melde's experiment.
9. Study of a damped oscillation using the torsional pendulum immersed in liquid-decay constant and damping correction of the amplitude.
10. Formation of Lissajous figures using CRO.

Suggested student activities

Student seminars, group discussions, assignments, field trips, study project and experimentation using virtual lab

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Assignment - Few problems may be given to the students from the different units and asked them to solve.

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Domain skills:
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Paper III: Optics
(For Non- Maths Combinations)
III SEMESTER

Work load: 60 hrs per semester **4 hrs/week**

UNIT –I(10 hrs)

1. Geometric optics

Aberrations in lenses-Chromatic Aberration-Achromatic Combination of lenses-Monochromatic defects-Spherical aberration-Astigmatism-Coma-Curvature and Distortion-Minimizing aberration.

UNIT-II(13 hrs)

2. Interference

The superstition principle, Condition for Interference, Classification of Interferences methods-Young's double slit experiment-Theory. Interference with white light and appearance of Young's interference fringes-Intensity in interference pattern-Optical Path length, Lloyd's single mirror-Phase change on reflection, Interference due to plane parallel wedge shaped films, Colours in thin films-Newton rings, Determination of wavelength of light. Michelson's interferometer.

UNIT-III(12 hrs)

3. Diffraction

The Fresnel and Fraunhoffer diffraction phenomena-Fraunhoffer diffraction of single Slit normal incidence and oblique incidence – Resolving power –limits of resolution for telescopes and microscope- Fraunhoffer diffraction by double slit-Intensity-pattern-Diffraction grating- Wavelength determination (Normal incidence and Minimum deviation).

UNIT-IV(13hrs)

4. Polarization

Types of Polarized light-Polarization by reflection, Brewster's law-Dichroism the Polaroid-double refraction- the calcite crystal-the principal plane-O and E rays-the Nicol Prism, Polariserand Analyser, Law of Malus –the quarter wave plate and halfwave plate Plane, Circularly, elliptically polarized light-Production and analysis -Optical activity-Specific rotatory power –Polarimeter.

UNIT V: (12 hrs)

5. Holography & Fiber Optics

Holography: Basic principle of holography-Gabor hologram and its limitations, applications of holography. Introduction- different types of fibres, rays and modes in an optical fibre, fibre material, principles of fiber communication (qualitative treatment only), applications.

REFERENCE BOOKS

1. BSc Physics, Vol.2, Telugu Academy, Hyderabad
2. Physics for Biology and Premedical Students –D.N. Burns & SGG Mac Donald
3. Unified Physics Vol.II, Optics and Thermodynamics,*Jai Prakash Nath&Co.Ltd., Meerut*.
4. Optics, Ajoy Ghatak, Tata Mc Graw-Hill.
5. Fundamentals of Optics, H.R. Gulati and D.R. Khanna, 1991, R. Chand Publication
6. Introduction of Lasers – Avadhanulu, S.Chand& Co.
7. Principles of Optics- BK Mathur, Gopala Printing Press, 1995

Practical Paper III: Optics

Work load: 30 hrs **2 hrs/week**

Minimum of 6 experiments to be done and recorded

1. Determination of radius of curvature of a given convex lens-Newton's rings.
2. Resolving power of grating.
3. Study of optical rotation –polarimeter.
4. Dispersive power of a prism.
5. Determination of wavelength of light using diffraction grating- minimum deviation method.
6. Determination of wavelength of light using diffraction grating-normal incidence method.
7. Resolving power of a telescope.
8. Refractive index of a liquid-hallow prism
9. Determination of thickness of a thin fiber by wedge method
10. Determination of refractive index of liquid-Boy's method.

Suggested student activities

Student seminars, group discussions, assignments, field trips, study project and experimentation using virtual lab

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Domain skills:

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Paper IV: Thermodynamics &Radiation Physics
(For Non- Mathematics Combinations)
IV SEMESTER

Work load:60 hrs per semester **4 hrs/week**

UNIT-I(12 hrs)

1. Kinetic theory of Gases

Zeroth law of thermodynamics,Measurment of temperature- resistance thermometry, thermoelectric theromometers-kinetic theory of gases- assumptions-pressure of an ideal gas-molecular interpretation of temperature- Maxwell's law of distribution of molecular speeds (no derivation)-experimental verification.

UNIT-II(12 hrs)

2. Thermodynamics

The first law of thermodynamics- work done in isothermal and adiabatic changes -Reversible and irreversible process-Carnot's cycle-Carnot's theorem - Second law of thermodynamics, Kelvin's and Claussius statements -Entropy, physical significance-Change in entropy in reversible and irreversible processes-Entropy and disorder-Entropy of universe.

UNIT-III(12 hrs)

3. Low temperature Physics

Introduction-Joule Kelvin effect-porous plug experiment. Joule's expansion-Distinction between adiabatic and Joule Thomson expansion-Liquefaction of helium Kapitza's method-Adiabatic demagnetization-Production of low temperatures-Principle of refrigeration. applications of substances at low-temperature.

UNIT-IV(12 hrs)

4. Measurement, laws and theories of radiation

Black body-Ferry's black body-distribution of energy in the spectrum of Black body- Wein's law- Planck's radiation formula (no derivation)-Measurement of radiation-Types of pyrometers-Disappearing filament optical pyrometer-experimental determination-Angstrom Pyroheliometer-determination of solar constant, effective temperature of Sun.

UNIT-V(12 hrs)

5. Thermoelectricity

Seebeck effect variation of thermo – emf with temperature.Thermo electric series - Measurement of thermoemf using potentiometer,Law of intermediate metals and intermediate temperatures - Peltier effect, Demonstration Peltier coefficient. Thomson effect demonstration Thomson coefficient, Thermoelectric diagrams and their uses, Thermoelectric power. Application of Thermoelectric effects.

REFERENCE BOOKS

1. BSc Physics, Vol.2, Telugu Academy, Hyderabad
2. Physics for Biology and Premedical Students –D.N. Burns & SGG Mac Donald
3. Unified Physics Vol.II, Optics and Thermodynamics,Jai Prakash Nath&Co.Ltd., Meerut.
4. Heat and Thermodynamics, N.Subramanyam and L.Brijlal, S.Chand& Co.
5. Electricity and Magnetism, N.Subramanyam and L.Brijlal, S.Chand& Co.
6. University Physics, HD Young, MW Zemansky,FW Sears, Narosa Publishers, New Delhi

Practical Paper IV: Thermodynamics& Radiation Physics

Work load: 30 hrs **2 hrs/week**

Minimum of 6 experiments to be done and recorded

1. Specific heat of a liquid –Joule's calorimeter –Barton's radiation correction
2. Thermal conductivity of bad conductor-Lee's method
3. Thermal conductivity of rubber.
4. Measurement of Stefan's constant.
5. Specific heat of a liquid by applying Newton's law of cooling correction.
6. Heating efficiency of electrical kettle with varying voltages.
7. Thermoemf- thermo couple potentiometer
8. Thermal behavior of an electric bulb (filament/torch light bulb)
9. Measurement of Stefan's constant- emissive method
10. Study of variation of resistance with temperature - thermistor.

Suggested student activities

Student seminars, group discussions, assignments, field trips, study project and experimentation using virtual lab

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Study project - Web based study of different satellites and applications.

Domain skills:

Logical derivation, experimentation, problem solving, data collection and analysis, measurement skills

***** Documental evidence is to be maintained for the above activities.**

Paper V : Electricity, Magnetism& Electronics
(For Non-Maths Combinations)
V Semester

Work load: 60 hrs per semester **4 hrs/week**

UNIT-1(15 hrs)

1. Electric field and potential

Coulomb's law – electric field and intensity of electric field –intensity of electric field due to i) a point charge–electric dipole and dipole moment. Electric lines of force, Electric flux.Gauss's law statement and its proof- applications of Gauss Law to (1) Uniformly charged sphere (2) an infinite conducting sheet of charge (No Derivation- qualitative ideas only). Electrical potential – equi-potential surfaces- potential due to i) a point charge, ii)charged spherical shell.Equi-potential surfaces with examples.

UNIT-II(10 hrs)

2. Capacitance and dielectrics

Derivation of expression for capacity due to i) a parallel plate capacitor with and without dielectric, ii) a spherical capacitor. Energy stored in a capacitor, electric capacitance. Electric dipole moment Di-electrics with examples, effect of electric field-electric displacement D, electric polarization P, permeability &susceptibility (Definitions only) – relation between D,E and P.Dipolemoment of heart.

UNIT-III (10 hrs)

3. Current electricity

Current and current density, drift velocity expression, Kirchhoff's laws –statement and explanation and application to Wheatstone bridge, sensitivity of Wheatstone bridge, Carey-Foster's bridge- experimentalmeasurement of temperature coefficient of resistance- strain gauge-piezoelectric transducers (applications only)

UNIT-IV (15 hrs)

5. Electromagnetism

Magnetic induction B, magnetic flux – Biot –Savart's law, magnetic induction due to (i) a long straight conductor carrying current (ii) on the axis of a circular coil carrying current (iii) solenoid, (No derivation-qualitative treatment only) Ampere's law – derivation of expression for the force on (i) charged particles and (ii) current carrying conductor in the magnetic field, Hall effect and its importance-electromagnetic pumping.

Faraday's law of electromagnetic induction, Lenz's law - Construction, theory and working of a Moving Coil Ballistic Galvanometer,application of B.G. damping correction, Self induction, Mutual induction and their units- Electromagnetic measurement of blood flow.

UNIT-V(12 hrs)

6. Basic Electronics

PN junction diode, Zener diode and its V-I characteristics, half and full wave rectifiers(semiconductor type) (working qualitative ideas only).Bridge type full wave rectifier.Action of filters- Land π type.PNP and NPN transistors and charactrestics,Configurations Transistor configurations – CE transistor characteristics – h-parameters – Transistor as an amplifier.

Number system, conversion of binary to decimal and vice versa, De Morgans's theorems statements - logic gates – verification of truth tables, NAND and NOR gates as universal gates, Half and Full adders.

REFERENCE BOOKS

1. B.Sc., Physics, Vol.3, Telugu Academy, Hyderabad
2. Modern Physics by R. Murugeshan and Kiruthiga Siva Prasath – S. Chand & Co.
3. Electricity and Magnetism, Brijlal and Subramanyam. RatanPrakashanMandir.
4. Physics for Biology & Premedical Students –DN Burns & SG MacDonald, Addison Wiley.
5. Principles of Electronics, V.K. Mehta, S.Chand & Co.,
6. Digital Principles and Applications, A.P. Malvino and D.P.Leach, Mc GrawHill Edition.

Practical Paper V: Electricity, Magnetism& Electronics

Work load: 30 hrs **2 hrs/week**

Minimum of 6 experiments to be done and recorded

1. Figure of merit of a moving coil galvonometer.
2. LCR circuit series/parallel resonance, Q factor.
3. Determination of ac-frequency –sonometer.
4. Verification of Kirchoff's laws and maximum power transfer theorem.
5. Field along the axis of a circular coil carrying current.
6. PN Junction Diode Characteristics
7. Zener Diode Characteristics
8. Transistor CE Characteristics- Determination of hybrid parameters
9. Logic Gates- OR, AND,NOT and NAND gates. Verification of Truth Tables.
10. Verification of De Morgan's Theorems.

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Domain skills:

Logical derivation, experimentation, problem solving, data collection and analysis, measurement skills

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Paper VI: Modern Physics& Medical Physics
(For Non-Maths Combinations)
V Semester

Work load: 60 hrs per semester **4 hrs/week**

UNIT-1(10 hrs)

1. Spectroscopy

Introduction - Zeeman effect - Experimental verification – Paschen Back effect – Stark effect – Explanations (elementary ideas only) - Raman effect, hypothesis, classical and quantum theory of Raman effect. Experimental arrangement for Raman effect and its application.

UNIT-II (12 hrs)

2. Fundamentals of quantum mechanics

Photoelectric effect – Explanation through demonstration, Einstein's Photoelectric equation – its verification by Millikan's experiment –theory of Compton effect (no derivation) and its experimental verification –Bohr's theory of Hydrogen atom – Derivation of expression for energy levels and spectral series of Hydrogen atom, atomic excitation, Frank Hertz experiment.

UNIT-III (10 hrs)

3. Matter Waves and uncertainty principle

Dual nature of radiation- de Broglie's theory of matter waves, expression for wavelength, properties of matter waves, Davisson and Germer experiment on electron diffraction – Discussion of results, Wave velocity and group velocity.

Heisenberg's uncertainty principle for position and momentum (x and p), energy and time (E and t).Experimental illustrations of uncertainty principal, Complementary principle of Bohr.

UNIT-IV: (12 hrs)

4. Radioactivity and radiation protection

The nature of radioactive emissions, the law of Radioactive decay, derivation, decay constant, Half life and mean life periods - derivations, units of radio activity, Carbon and Uranium dating (explanation) - Age of earth and rocks, Radioactive isotopes as tracers, radio cardiography. Principles of radiation protection– protective materials-radiation effects – somatic, genetic stochastic & deterministic effect, Natural radioactivity, Biological effects of radiation, Radiation monitors**.**

UNIT-V (16 hrs)

6. Crystal Structure

Amorphous and crystalline materials, unit cell, Miller indices, reciprocal lattice, types of lattices, diffraction of X-rays by crystals, Bragg's law, experimental techniques, Laue's method and powder diffraction method.

7. Superconductivity:

Introduction - experimental facts, critical temperature - critical field - Meissner effect – Isotope effect - Type I and type II superconductors - BCS theory (elementary ideas only) - applications of superconductors.

REFERENCE BOOKS

1. B.Sc Physics, Vol.4, Telugu Academy, Hyderabad.
2. Molecular Structure and Spectroscopy by G. Aruldhas. Prentice Hall of India, New Delhi.
3. Physics for Biology & Premedical Students –D.N. Burns & SG Mac Donald, Addison Wiley.
4. Modern Physics by R. Murugeshan and Kiruthiga Siva Prasath. S. Chand & Co.
5. Medical Physics, J.R. Cameron and J.G.Skofronick, Wiley (1978)
6. Basic Radiological Physics Dr. K. Thayalan - Jayapee Brothers Medical Publishing Pvt. Ltd. New Delhi (2003)
7. Physics of Radiation Therapy : F M Khan - Williams and Wilkins, Third edition (2003)
8. Physics of the human body, Irving P. Herman, Springer (2007).
9. The Physics of Radiology-H E Johns and Cunningham.

Practical Paper VI: Modern Physics& Medical Physics

Work load: 30 hrs **2 hrs/week**

Minimum of 6 experiments to be done and recorded

1. e/m of an electron by Thomson method.
2. Determination of Planck's Constant (photocell).
3. Verification of inverse square law of light using photovoltaic cell.
4. Study of absorption of α-rays.
5. Study of absorption of β-rays.
6. Determination of Range of β-particles.
7. Determination of M & H.
8. Analysis of powder X-ray diffraction pattern to determine properties of crystals.
9. Energy gap of a semiconductor using junction diode.
10. Energy gap of a semiconductor using thermister.

Suggested student activities
Student seminars, group discussions, assignments, field trips, study project and experimentation using virtual lab

Examples
Seminars - A topic from any of the Units is given to the student and asked to give a brief seminar presentation.
Group discussion - A topic from one of the units is given to a group of students and asked to discuss and debate on it.
Assignment - Few problems may be given to the students from the different units and asked them to solve.
Field trip - Visit to Satish Dhawan Space Centre, Sriharikota / Thermal and hydroelectric power stations / Science Centres, any other such visit etc.
Study project - Web based study of different satellites and applications.

Domain skills:
Logical derivation, experimentation, problem solving, data collection and analysis, measurement skills

***** Documental evidence is to be maintained for the above activities.**

Note: For all the above 8 practical papers the book "B.Sc Practical Physics" by C.L.Arora Published by S.Chand& Co, New – Delhi may be followed.

NOTE: Problems should be solved at the end of every chapter of all units.

Elective VII (A): (Electronics)

Semester –VI

Elective Paper –VII-(A) :Analog and Digital Electronics

No. of Hours per week: 04 **Total Lectures:60**

Unit-I (14 Hours)

9. FET-Construction, Working, characteristics and uses; MOSFET-enhancement MOSFET, depletion MOSFET, construction and working , drain characteristics of MOSFET, applications of MOSFET

10. Photo electric devices: Structure and operation, characteristics, spectral response and application of LDR, LEDand LCD

Unit-II (10Hours)

11. Operational Amplifiers: Characteristics of ideal and practical Op-Amp (IC 741), Basic differential amplifiers, Op-Amp supply voltage, IC identification, Internal blocks of Op-Amp, its parameter off set voltages and currents, CMRR, slew rate, concept of virtualground.

Unit-III (10 Hours)

12. Applications of Op-Amp: Op-Amp as voltage amplifier, Inverting amplifier, Non-inverting amplifier, voltage follower, summing amplifier, difference amplifier, comparator, integrator, differentiator.

Unit-IV(14 Hours)

13. Data processing circuits: Multiplexers, De-multiplexers, encoders, decoders, Characteristics for Digital ICs -RTL, DTL, TTL, ECL CMOS (NAND & NOR Gates).

14. IC 555 Timer -Its pin diagram,internal architecture, Application as astablemultivibrator and mono stable multivibrator.

Unit-V (12 Hours)

15. Sequential digital circuits:Flip-flops, RS, Clocked SR, JK, D, T, Master-Slave, Flip- flop, Conversion of Flip flops.

16. Code Converters: Design of code converter, BCD to 7 segment, binary/BCD to gray, gray to binary/BCD,design of counters using state machine.

Reference Books

1. Digital Electronics by G.K.Kharate Oxford University Press
2. Unified Electronics by Agarwal and Agarwal.
3. Op- Amp and Linear ICs by Ramakanth A Gayekwad, 4th edition PHI
4. Digital Principles and Applications by Malvino and Leach, TMH, 1996, 4th edition.
5. Digital Circuit design by Morris Mano,PHI
6. Switching Theory and Logic design by A.AnandKumar ,PHI
7. operations amplifier by SV Subramanyam.

Elective Paper-VII-A : Practical: Analog and Digital Electronics
2hrs/Week

Minimum of 6 experiments to be done and recorded

1) Characteristics of FET
2) Characteristics of MOSFET
3) Characteristics of LDR
4) Characteristics of Op-amp.(IC741)
5)Op-Amp as amplifier/inverting amplifier
6) Op-Amp as integrator/differentiator
7) Op-Amp as summing amplifier/difference amplifier
8) IC 555 as astable multivibrator
9) IC 555 as monostable amplifier
10) Master slave flip-flop
11) JK flip-flop

Semester –VI
Cluster Electives VIII-A
Cluster Elective Paper –VIII-A-1: Introduction to Microprocessors and Microcontrollers

No. of Hours per week: 04 **Total Lectures:60**

Unit – I (10Hours)
1. Introduction to microcontrollers:General purpose of computer systems,architecture of embedded system, classification, applications and purposes, challenges and designs, operational and non operational quality attributes, elemental description of embedded processors and micro controllers

Unit –II (10Hours)
2. Microprocessors:Organisation of microprocessorbased system, 8085 microprocessor,its pin diagram and architecture, concept of data bus, and address bus, 8085 programming, instruction classification, stacks and its implementation, hardware and software interrupts.

Unit– III (15Hours)
3. 8051 microcontroller:Introduction , block diagram, assembly language programming, programme counter, ROM memory, data types and directives, flag bits PSW register, jump, loop and call constructions
4. 8051 I/O Programming: Introduction to I/O port programming, pin out diagram, I/O port pin programming, bit manipulation, addressing modes, accessing memory, arithmetic and logic instructions.

Unit – IV (13 Hours)
5. Timers:Programming of 8051 timers, counter programming, interrupts, externalhardware interrupts**,** serial communication interrupts, interrupt priority.
6. Embedded system programming:Structure of programming, infinite loop, compiling, linking locating, down loading and debugging.

Unit –V (12Hours)
7. Embedded system design and development:Embedded system development environment, file type generated after cross compilation, dissembler, decompiler, simulator, emulator and debugging.
8. Embedded product life cycle:Embedded product development life cycle, trends in embedded industry.

Reference Books
1)Embedded Systems.. Architecture,programming and design, R Kamal, 2008, TMH
2) The 8051 micro controller and embedded systems using Assembly and C, M.A.Mazidi, J.G.Mazidi and R.D.McKinlay, second Ed., 2007 pearson Education India
3) Introduction to embedded systems K.V. Shibu, 1st edition, 2009 McGraw Hill
4) Micro Controllers in practice, I Susnea and Mitescu,2005,springer

Cluster Elective Paper-VIII-A-1: Practical: Introduction to Microprocessors and Microcontrollers 2hrs/Week

Minimum of 6 experiments to be done and recorded

1. To find that the given numbers is prime or not.
2. To find the factorial of a number.
3. Write a program to make the two numbers equal by increasing the smallest number and decreasing the largest number.
4. Use one of the four ports of 8051 for O/P interfaced to eight LED's. Simulate binary counter (8 bit) on LED's.
5. Program to glow first four LED then next four using TIMER application.
6. Program to rotate the contents of the accumulator first right and then left.
7. Program to run a countdown from 9-0 in the seven segment LED display.
8. To interface seven segment LED display with 8051 microcontroller and display 'HELP' in the seven segment LED display.
9. To toggle '1234' as '1324' in the seven segment LED.
10. Interface stepper motor with 8051 and write a program to move the motor through a given angle in clock wise or counter clockwise direction.
11. Application of embedded systems: Temperature measurement, some information on LCD display, interfacing a keyboard.

Semester –VI

Cluster Elective Paper –VIII-A-2 : Computational Methods and Programming

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I (12hrs)

1. Fundamentals of C language: C character set-Identifiers and Keywords-Constants -Variables-Data types-Declarations of variables-Declaration of storage class-Defining symbolic constants-Assignment statement.
2. Operators: Arithmetic operators-Relational operators-Logic operators-Assignment operators-Increment and decrement operators-Conditional operators.

UNIT-II (12hrs)

3. Expressions and I/O Statements: Arithmetic expressions-Precedence of arithmetic operators-Type converters in expressions-Mathematical (Library) functions - Data input and output-The getchar and putchar functions-Scanf-Printf simple programs.
4. Control statements:If -Else statements -Switch statements - The operators - GO TO - While, Do - While, FOR statements - BREAK and CONTINUE statements.

UNIT-III (12hrs)

5. Arrays: One dimensional and two dimensional arrays - Initialization - Type declaration - Inputting and outputting of data for arrays - Programs of matrices addition, subtraction and multiplication

6. User defined functions: The form of C functions - Return values and their types - Calling a function - Category of functions. Nesting of functions.Recursion.ANSI C functions- Function declaration. Scope and life time of variables in functions.

UNIT-IV (12hrs)

7. Linear and Non - Linear equations: Solution of Algebra and transcendental equations-Bisection, Falsi position and Newton-Rhapson methods-Basic principles-Formulae-algorithms

8. Simultaneous equations: Solutions of simultaneous linear equations-Guass elimination and Gauss Seidel iterative methods-Basic principles-Formulae – Algorithms.

UNIT-V (12hrs)

9. Interpolations: Concept of linear interpolation-Finite differences-Newton's and Lagrange's interpolation formulae-principles and Algorithms

10. Numerical differentiation and integration: Numerical differentiation-algorithm for evaluation of first order derivatives using formulae based on Taylor's series-Numerical integration-Trapezoidal and Simpson's 1/3 rule- Formulae-Algorithms.

Reference books:

1. Introductory methods of Numerical Analysis: Sastry
2. Numerical Methods: Balaguruswamy
3. Programming in ANSI C (TMH) : Balaguruswamy
4. Programming with 'C'- Byron Gottafried, Tata Mc Graw Hill

Cluster Elective Paper-VIII-A-2: Practical: Computational Methods and Programming 2hrs/Week

Minimum of 6 experiments to be done and recorded

10. Write a program that reads an alphabet from keyboard and display in the reverse order.
11. Write a program to read and display multiplication of tables.
12. Write a program for converting centigrade to Fahrenheit temperature and Fahrenheit temperature centigrade.
13. Write a program to find the largest element in an array.
14. Write a program based on percentage calculation, the grade by entering the subject marks. (If percentage > 60 I class, if percentage between 50&60 II class, if percentage between 35&50 III class, if percentage below 35 fail).
15. Write a program for generation of even and odd numbers up to 100 using while, do-while and for loop.
16. Write a program to solve the quadratic equation using Bisection method.
17. Write a program for integration of function using Trapezoidal rule.
18. Write a program for solving the differential equation using Simpson's $1/3^{rd}$ rule.

Semester –VI

Cluster Elective Paper –VIII-A-3 :Electronic Instrumentation

No. of Hours per week: 04 **Total Lectures:60**

Unit – I (12Hours)

1. Basic of measurements:Instruments accuracy , precision , sensitivity , resolution range, errors in measurement, Multimeter , principles of measurement of dc voltage and dc currents, ac current and resistance, specifications of multimeter and their significance.

Unit -11 (10 Hours)

2. Electronic Voltmeter:Advantage over conventional multimeter for voltage measurement with respect to input impedence and sensitivity, principles of voltage measurement (block diagram only), specification of an electronic voltmeter/multimeter and their significance.

Unit– III (14 Hours)

3. CRO :Block diagram of basic CRO, construction of CRT, electron gun, electrostatic focusing and acceleration(only explanation) , time base operation, synchronization, front panel controls, specifications of CRO and their significance.

Applications CRO: Measurement of voltage ,dc and ac frequency , time period, special features of dual trace, digital storage oscilloscope, block diagram and principle of working.

Unit – IV (12 Hours)

4. Digital Multimeter:Block diagram,working, frequency and period measurement using universal counter, frequency counter ,accuracy and resolution.

5. Digital instruments:Principle and working of digitalinstruments, characteristics of a digital meter, working principle of digital voltmeter.

Unit – V (12 Hours)

6. Signal generators:Block diagram explanation, specifications of low frequency signal generators, pulse generator, function generator-working, Brief idea for testing, specifications. Distortion factor meter, wave analysis.

7. Bridges:Block diagram, working of basic LCR bridge – specifications – block diagram and working.

Reference Books

4. A text book in electrical technology by B.L.Thereja (S.Chand&Co)
5. Digital circuits and systems by Venugopal 2011 (Tata Mcgraw Hill)
6. Digital Electronics by SubrathaGhoshal 2012 (Cengage Learning)

Cluster Elective Paper-VIII-A-3: Practical: Electronic Instrumentation
2hrs/Week

Minimum of 6 experiments to be done and recorded

1. Study the loading effect of a multimeter by measuring voltage across alow and high resistance.
2. Study the limitations of a multimeter for measuring high frequency voltageand currents.
3. Measurement of voltage, frequency, time period and phase angle using CRO.

4. Measurement of time period and frequency using universal counter/frequency counter.
5. Measurement of rise, fall and delay times using a CRO.
6. Measurement of distortion of a RF signal generator using distortion factor meter.
7. Measurement of R, L and C using a LCR bridge/ universal bridge.

Elective VII-(B): (Materials Science)

Semester –VI
Elective Paper – VII-(B): Materials Science

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I (12 hrs)
1.Materials and Crystal Bonding: Materials, Classification, Crystalline, Amorphous, Glasses; Metals, Alloys, Semiconductors, Polymers, Ceramics, Plastics, Bio-materials, Composites, Bulk and nanomaterials. Review of atomic structure – Interatomic forces – Different types of chemical bonds – Ioniccovalent bond or homopolar bond – Metallic bond – Dispersion bond – Dipole bond – Hydrogenbond – Binding energy of a crystal.

UNIT-II (12 hrs)
2. Defects and Diffusion in Materials: Introduction – Types of defects - Point defects- Line defects- Surface defects- Volume defects- Production and removal ofdefects- Deformation- irradiation- quenching- annealing- recovery - recrystallization andgrain growth. Diffusion in solids- Fick's laws of diffusion.

UNIT-III(12 hrs)
3. Mechanical Behavior of Materials: Different mechanical properties of engineering materials – Creep – Fracture – Technologicalproperties – Factors affecting mechanical properties of a material – Heat treatment - Cold andhot working – Types of mechanical tests – Metal forming process – Powder – Misaligning – Deformation of metals.

UNIT-IV (12 hrs)
4. Magnetic Materials:Dia-, Para-, Ferri- and Ferromagnetic materials, Classical Langevin theory of dia magnetism, Quantum mechanical treatment of paramagnetism. Curie's law, Weiss's theory of ferromagnetism, Ferromagnetic domains.Discussion of B-H Curve.Hysteresis and energy Loss.

UNIT-V (12 hrs)
5. Dielectric Materials:Dielectric constant, dielectric strength and dielectric loss, polarizability, mechanism of polarization,factors affecting polarization, polarization curve and hysteresis loop, types of dielectric materials, applications; ferroelectric, piezoelectric and pyroelectric materials, Clausius -Mosotti equation.

Reference books
1. Materials Science by M.Arumugam, Anuradha Publishers. 1990, Kumbakonam.

2.Materials Science and Engineering V.Raghavan, Printice Hall India Ed. V 2004. New Delhi.
3. Elementary Solid State Physics, 1/e M. Ali Omar, 1999, Pearson India
4. Solid State Physics, M.A. Wahab, 2011, Narosa Publications

Elective Paper-VII-B: Practical: Materials Science
2hrs/Week

Minimum of 6 experiments to be done and recorded
1. Measurement of susceptibility of paramagnetic solution (Quinck`s Tube Method)
2. Measurement of magnetic susceptibility of solids.
3. Determination of coupling coefficient of a piezoelectric crystal.
4. Measurement of the dielectric constant of a dielectric Materials
5. Study the complex dielectric constant and plasma frequency of metal using surface plasmon resonance (SPR)
7. Study the hysteresis loop of a Ferroelectric Crystal.
8. Study the B-H curve of 'Fe' using solenoid and determine energy loss from hysteresis.

Semester –VI
Cluster Electives VIII-B
Cluster Elective Paper –VIII-B-1 :Fundamentals of Nanoscience

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I (12hrs)
1. Background and history: Emergence of Nanoscience with special reference to Feynman and Drexler; Role of particle size; Spatial and temporal scale; Concept of confinement, strong and weak confinement with suitable example; Development of quantum structures, Basic concept of quantum well, quantum wire and quantum dot.
Finite size Zero, One and Two Dimensional Nanostructures, Concept of Surface and Interfacial Energies. Physics of the solid state – size dependence of properties, crystal structures, Lattice vibrations, Energy bands:- Insulators Semiconductors and conductors.

UNIT-II (12hrs)
2. Classification of Nanomaterials: Inorganic nanomaterials: carbon nanotubes and cones, Organic nanomaterials: dendrimers, micelles, liposomes, block copolymers; Bionanomaterials: Biomimtric, bioceramic and nanotherapeutics; Nanomaterials for molecular electronics and optoelectronics.

UNITS-III (12hrs)
3. Macromolecules: Classification of polymers, chemistry of polymerization, chain polymerization, step polymerization, coordination polymerization. Molecular weight of polymers-number average and weight average molecular weight, degree of polymerization, determination of molecular weight of polymers by viscometry, Osmometry and light scattering methods.Kinetics of free radical polymerization, derivation of rate law.Preparation and application of polyethylene, PVC, Teflon.

UNIT-IV (12hrs)

4. Molecular & Nanoelectronics: Semiconductors, Transition from crystal technology to nanotechnology. Tiny motors, Gyroscopes and accelerometers. Nano particle embedded wrinkle resistant cloth, Transparent Zinc Oxide sun screens.Bio-systems, Nanoscale processes in environment. Nanoscale structures, Novel phenomena and Quantum control and quantum computing. Single electron transistors, Quantum dots, Quantum wires.

UNIT-V (12hrs)

5. Biomaterials: Implant materials: Stainless steels and its alloys, Ti and Ti based alloys, Ceramic implant materials; Hydroxyapatite glass ceramics, Carbon Implant materials, Polymeric Implant materials, Soft tissue replacement implants, Sutures, Surgical tapes and adhesives, heart valve implants, Artificial organs, Hard Tissue replacement Implants, Internal Fracture Fixation Devices, Wires, Pins, and Screws, Fracture Plates.

Reference Books

1. T. Pradeep: Textbook of Nanoscience and Nanotechnology Chapter (McGraw-Hill Professional, 2012), Access Engineering.
2. C. N. R. Rao, A. Mu¨ller, A. K. Cheetham, "The Chemistry of Nanomaterials :Synthesis, Properties and Applications", Wiley-VCH, 2006.
3. C. Breachignac P. Houdy M. Lahmani, "Nanomaterials and Nanochemistry", Springer, 2006.
4. Guozhong Cao, "Nanostructures and Nanomaterials: Synthesis, Properties, and Applications", World Scientific Publishing Private, Ltd., 2011.
5. Zhong Lin Wang, "Characterization of Nanophase Materials", Wiley-VCH, 2004.
6. Carl C. Koch, "Nanostructured Materials: Processing, Properties and Potential Applications", William Andrew Publishing Norwich, 2006.

Elective Paper- VIII-B-1: Practical: Fundamentals of Nanoscience
2hrs/Week

Minimum of 6 experiments to be done and recorded

1. Determination of the Band Gap of Semiconductor Nanoparticles.
2. Surface Enhanced Raman Scattering Activity of Silver Nanoparticles
3. Conversion of Gold Nanorods into Gold Nanoparticles
4. Bimetallic Nanoparticles
5. Processing and Development of Nanoparticle gas sensor
6. Magnetic separation/identification studies of nanoparticles
7. Harvesting light using nano-solar cells
8. Nano-Forensic analysis to identify, individualize and evaluate evidence using nanophase materials
9. Comparison of the performance of nanoparticles based conductive adhesives and conventional non conductive adhesives.
10. Electrodeposition and corrosion behavior of nanostructured composite film
11. Photocatalytic activity of nanomaterials

Semester –VI

Cluster Elective Paper –VIII-B-2 :Synthesis and Characterization of Nanomaterials

No. of Hours per week: 04 **Total Lectures:60**

Unit-I (12 hrs)

1. Nanomaterials synthesis: Synthesis and nanofabrication, Bottom-Up and Top-Down approach with examples. Chemical precipitation methods, sol-gel method, chemical reduction, hydrothermal, process. Physical Mehtods- ball milling, Physical Vapour deposition (PVD), Sputtering, ChemicalVapor deposition (CVD), pray pyrolysis, Biological methods- Synthesis using micro organisms and bacteria, Synthesis using plant extract, use of proteins and DNA templates.

Unit-II (12 hrs)

2. Classification of materials: Types of materials, Metals, Ceramics (Sand glasses) polymers, composites, semiconductors.Metals and alloys- Phase diagrams of single component, binary and ternary systems, diffusion, nucleation and growth. Diffusional and diffusionless transformations.Mechanical properties.Metallic glasses. Preparation, structure and properties like electrical, magnetic, thermal and mechanical, applications.

UNITS-III (12 hrs)

3. Glasses: The glass transition - theories for the glass transition, Factors that determine the glass-transition temperature. Glass forming systems and ease of glass formation, preparation of glass materials.Applications of Glasses: Introduction: Electronic applications, Electrochemical applications, optical applications, Magnetic applications.

UNITS-IV (12 hrs)

4. Liquid Crystals: Mesomorphism of anisotropic systems, Different liquid crystalline phase and phase transitions, Thermal and electrical properties of liquid crystals, Types Liquid Crystals displays, few applications of liquid crystals.

UNITS-V (12 hrs)

5. Characterization Methods: XRD, SEM, TEM, AFM, XPS and PL characterization techniques for nano materials.Electrical and mechanical properties, Optical properties by IR and Raman Spectroscopy.

References books

1. Encyclopedia of Nanotechnology by M.Balakrishna Rao and K.Krishna Reddy, Vol.I to X, Campus books.
2. Nano: The Essentials-Understanding Nanoscinece & Nanotechnology by T.Pradeep; Tata Mc. Graw Hill
3. Nanotechnology in Microelectronics & Optoelectronics, J.M Martine Duart, R.J Martin Palma, F. Agullo Rueda, Elsevier
4. Nanoelectronic Circuit Design, N.K Jha, D Chen, Springer

5. Handbook of Nanophysics- Nanoelectronics & Nanophotonics, K.D Sattler, CRC Press
6. Organic Electronics-Sensors & Biotechnology- R. Shinar & J. Shinar, McGraw-Hill

Cluster Elective Paper-VIII-B-2: Practical: Synthesis and Characterization of Nanomaterials
2hrs/Week

Minimum of 6 experiments to be done and recorded
1. Synthesis of nanocrystalline films of II-VI compounds doped with rare earths by chemical process.
2. Synthesis of Alkaline earth aluminates in nanocrystalline form by combustion synthesis.
3. Preparation of surface conducting glass plate by spray pyrolysis method
4. Preparation of surface conducting glass plate by chemical route
5. Fabrication of micro fluidic nanofilter by polymerisation reaction
6. Absorption studies on the nanocrystalline films and determination of absorption coefficient.
7. Determination of band gap from the absorption spectra using Tauc's plots.
8. Study of Hall effect in semiconductors and its application in nanotechnology.
9. Measurement of electrical conductivity of semiconductor film by Four Probe method and study of temperature variation of electrical conductivity.

Semester –VI
Cluster Elective Paper –VIII-B-3 :Applications of Nanomaterials and Devices

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I (12 hrs)
1. Optical properties: Coulomb interaction in nanostructures. Concept of dielectric constant for nanostructures and charging of nanostructure.Quasi-particles and excitons. Excitons in direct and indirect band gap semiconductor nanocrystals. Quantitative treatment of quasi-particles and excitons, charging effects. Radiative processes: General formalization-absorption, emission and luminescence. Optical properties of heterostrctures and nanostructures.

UNIT-II (12 hrs)
2. Electrical transport:
Carrier transport in nanostrcutures.Hall effect, etermination of carrier mobility and carrier concentration; Coulomb blockade effect, thermionic emission, tunneling and hoping conductivity. Defects and impurities: Deep level and surface defects.

UNIT-III (12 hrs)
3. Applications: Applications of nanoparticles, quantum dots, nanowires and thin films for photonic devices (LED, solar cells). Single electron transfer devices (no derivation). CNT based transistors. Nanomaterial Devices: Quantum dots heterostructures lasers, optical switching and optical data storage. Magnetic quantum well; magnetic dots - magnetic data storage.Micro Electromechanical Systems (MEMS), Nano Electromechanical Systems (NEMS).

UNIT-IV(12 hrs)

4. Nanoelectronics: Introduction, Electronic structure of Nanocrystals,Tuning the Band gap of Nanoscale semiconductors, Excitons, Quantumdot, Single electron devices, Nanostructured ferromagnetism,Effect of bulk nanostructuring of magnetic properties, Dynamics of nanomagnets, Nanocarbon ferromagnets, Giant and colossal magneto-resistance, Introduction of spintronics, Spintronics devices and applications.

UNIT-V (12 hrs)

5. Nanobiotechnology and Medical application: Introduction, Biological building blocks- size of building blocks and nanostructures, Peptide nanowires and protein nanoparticles, DNA double nanowires, Nanomaterials in drug delivery and therapy, Nanomedicine, Targeted gold nanoparticles for imaging and therapy.

Reference books:

1.C.P. Poole, Jr. Frank J. Owens, Introduction to Nanotechnology (Wiley India Pvt. Ltd.).
2.S.K. Kulkarni, Nanotechnology: Principles & Practices (Capital Publishing Company).
3. K.K. Chattopadhyay and A.N. Banerjee, Introduction to Nanoscience & Technology (PHI Learning Private Limited).
4. Richard Booker, Earl Boysen, Nanotechnology (John Wiley and Sons).

Elective Paper- VIII-B-3: Practical: Applications of Nanomaterials and Devices
2hrs/Week

Minimum of 6 experiments to be done and recorded

1. Synthesis of metal nanoparticles by chemical route.
2. Synthesis of semiconductor nanoparticles.
3. Surface Plasmon study of metal nanoparticles by UV-Visible spectrophotometer.
4. XRD pattern of nanomaterials and estimation of particle size.
5. To study the effect of size on color of nanomaterials.
6. Prepare a disc of ceramic of a compound using ball milling, pressing and sintering, and study its XRD.
7. Fabricate a thin film of nanoparticles by spin coating (or chemical route) and study transmittance spectra in UV-Visible region.
8. Fabricate a pn-diode by diffusing Al over the surface of n-type Si and study its I-V characteristics.

Elective VII-(C) :(Renewable Energy)

Semester –VI
Elective Paper –VII-(C) :Renewable Energy

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I (12 hrs)

1. Introduction to Energy: Definition and units of energy, power, Forms of energy, Conservation of energy, second law of thermodynamics, Energy flow diagram to the earth. Origin and time scale of fossil fuels, Conventional energy sources, Role of energy in economic development and social transformation.

2. Environmental Effects: Environmental degradation due to energy production and utilization, air and water pollution, depletion of ozone layer, global warming, biological damage due to environmental degradation. Effect of pollution due to thermal power station, nuclear power generation, hydroelectric power stations on ecology and environment.

UNIT-II (12 hrs)

3. Global Energy Scenario: Energy consumption in various sectors, projected energy consumption for the next century, exponential increase in energy consumption, energy resources, coal, oil, natural gas, nuclear and hydroelectric power, impact of exponential rise in energy usage on global economy.

4. Indian Energy Scene: Energy resources available in India, urban and rural energy consumption, energy consumption pattern and its variation as a function of time, nuclear energy - promise and future, energy as a factor limiting growth, need for use of new and renewable energy sources.

UNIT-III (12 hrs)

5.Solar energy: Solar energy, Spectral distribution of radiation, Flat plate collector, solar water heating system, Applications, Solar cooker. Solar cell, Types of solar cells, Solar module and array, Components of PV system, Applications of solar PV systems.

6. Wind Energy: Introduction, Principle of wind energy conversion, Components of wind turbines, Operation and characteristics of a wind turbine, Advantages and disadvantages of wind mills, Applications of wind energy.

UNIT-IV (12 hrs)

7. Ocean Energy: Introduction, Principle of ocean thermal energy conversion, Tidal power generation, Tidal energy technologies, Energy from waves, Wave energy conversion, Wave energy technologies, advantages and disadvantages.

8. Hydrogen Energy: History of hydrogen energy - Hydrogen production methods - Electrolysis of water, Hydrogen storage options – Compressed and liquefied gas tanks, Metal hydrides; Hydrogen safety - Problems of hydrogen transport and distribution - Uses of hydrogen as fuel.

UNIT-V (12 hrs)

9. Bio-Energy

Energy from biomass – Sources of biomass – Different species – Conversion of biomass into fuels – Energy through fermentation – Pyrolysis, gasification and combustion – Aerobic and anaerobic bio-conversion – Properties of biomass – Biogas plants – Types of plants – Design and operation – Properties and characteristics of biogas.

References:

1. Solar Energy Principles, Thermal Collection &Storage, S.P.Sukhatme: Tata McGraw Hill Pub., New Delhi.
2. Non-Conventional Energy Sources, G.D.Rai, New Delhi.
3. Renewable Energy, power for a sustainable future, Godfrey Boyle, 2004,
4. The Generation of electricity by wind, E.W. Golding.
5. Hydrogen and Fuel Cells: A comprehensive guide, Rebecca Busby, Pennwell corporation (2005)
6. Hydrogen and Fuel Cells: Emerging Technologies and Applications, B.Sorensen, Academic Press (2012).
7. Non-Conventional Energy Resources by B.H. Khan, Tata McGraw Hill Pub., 2009.
8. Fundamentals of Renewable Energy Resources byG.N.Tiwari, M.K.Ghosal, Narosa Pub., 2007.

Elective Paper-VII-C: Practical: Renewable Energy
2hrs/Week

Minimum of 6 experiments to be done and recorded

1. Preparation of copper oxide selective surface by chemical conversion method.
2. Performance testing of solar cooker.
3. Determination of solar constant using pyrheliometer.
4. Measurement of I-V characteristics of solar cell.
5. Study the effect of input light intensity on the performance of solar cell.
6. Study the characteristics of wind.

Semester –VI
Cluster Electives VIII-C
Cluster Elective Paper –VIII-C-1 :Solar Thermal and Photovoltaic Aspects

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I (12 hrs)

1. Basics of Solar Radiation: Structure of Sun, Spectral distribution of extra terrestrial radiation, Solar constant, Concept of Zenith angle and air mass, Definition of declination, hour angle, solar and surface azimuth angles; Direct, diffuse and total solar radiation, Solar intensity measurement – Thermoelectric pyranometer and pyrheliometer.

2. Radiative Properties and Characteristics of Materials: Reflection, absorption and transmission of solar radiation throughsingle and multi covers; Kirchoff's law – Relation

between absorptance, emittance and reflectance; Selective Surfaces - preparation and characterization, Types and applications; Anti-reflective coating.

UNIT-II (14 hrs)

3. Flat Plate Collectors (FPC) : Description of flat plate collector, Liquid heating type FPC, Energy balance equation,Efficiency, Temperature distribution in FPC, Definitions of fin efficiency and collector efficiency, Evacuated tubular collectors.

4. Concentrating Collectors: Classification, design and performance parameters; Definitions of aperture, rim-angle, concentration ratio and acceptance angle; Tracking systems; Parabolic trough concentrators; Concentrators with point focus.

Unit-III (14 hrs)

5. Solar photovoltaic (PV) cell: Physics of solar cell –Type of interfaces, homo, hetero andschottky interfaces, Photovoltaic Effect, Equivalent circuit of solar cell, Solar cell output parameters, Series and shunt resistances and its effect on cell efficiency; Variation of efficiency with band-gap and temperature.

6. Solar cell fabrication: Production of single crystal Silicon: Czokralski (CZ) and Float Zone (FZ) methods, Silicon wafer fabrication, Wafer to cell formation, Thin film solar cells, Advantages, CdTe/CdS cell formation, Multi-junction solar cell; Basic concept of Dye-sensitized solar cell, Quantum dot solar cell.

UNIT-IV (8 hrs)

Solar PV systems: Solar cell module assembly – Steps involved in the fabrication of solar module, Module performance, I-V characteristics, Modules in series and parallel, Module protection – use of Bypass and Blocking diodes, Solar PV system and its components, PV array, inverter, battery and load.

UNIT-V (12 hrs)

Solar thermal applications: Solar hot water system (SHWS), Types of SHWS, Standard method of testing the efficiency of SHWS; Passive space heating and cooling concepts, Solar desalinator and drier, Solar thermal power generation.

Solar PV applications: SPV systems; Stand alone, hybrid and grid connected systems, System installation, operation and maintenances; Field experience; PV market analysis and economics of SPV systems.

Reference Books:

1. Solar Energy Utilization, G. D. Rai, Khanna Publishers
2. Solar Energy- Fundamentals, design, modeling and applications, G.N. Tiwari, Narosa Pub., 2005.
3. Solar Energy-Principles of thermal energy collection & storage, S.P. Sukhatme, Tata Mc-Graw Hill Publishers, 1999.
4. Solar Photovoltaics- Fundamentals, technologies and applications, Chetan Singh Solanki, PHI Learning Pvt. Ltd.,
5. Science and Technology of Photovoltaics, P. Jayarama Reddy, BS Publications, 2004.

Cluster Elective Paper- VIII-C-1: Practical: Solar Thermal and Photovoltaic Aspects
2hrs/Week

Minimum of 6 experiments to be done and recorded

1. Measurement of direct solar radiation using pyrheliometer.
2. Measurement of global and diffuse solar radiation using pyranometer.
3. Measurement of emissivity, reflectivity and transsivity.
4. Measurement of efficiency of solar flat plate collector.
5. Performance testing of solar air dryer unit.
6. Effect of tilt angle on the efficiency of solar photovoltaic panel.
7. Study on solar photovoltaic panel in series and parallel combination.

Semester - VI
Cluster Elective Paper –VIII-C-2 :Wind, Hydro and Ocean Energies

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I

1. Introduction: Wind generation, meteorology of wind, world distribution of wind, wind speed variation with height, wind speed statistics, Wind energy conversion principles; General introduction; Types and classification of WECS; Power, torque and speed characteristics.

2. Wind Measurements:Eolian features, biological indicators, rotational anemometers, other anemometers, wind measurements withballoons.

UNIT-II

3. Wind Energy Conversion System:Aerodynamic design principles; Aerodynamic theories; Axial momentum, blade element andcombine theory; Rotor characteristics; Maximum power coefficient; Prandlt's tip losscorrection.

4. Design of Wind Turbine: Wind turbine design considerations; Methodology; Theoretical simulation of wind turbinecharacteristics; Test methods.

UNIT-III

5. Wind Energy Application: Wind pumps: Performance analysis, design concept and testing; Principle of wind energy generation; Standalone, grid connected and hybrid applications of wind energy conversion systems, Economics of wind energyutilization; Wind energy in India; Environmental Impacts of Wind farms.

UNIT-IV

6. Small Hydropower Systems: Overview of micro, mini and small hydro systems; Hydrology; Elements of pumps andturbine; Selection and design criteria of pumps and turbines; Site selection;Speed and voltage regulation; Investment issues load management and tariff collection; potential of small hydro power in India.Wind and hydro based stand-alone hybrid power systems.

UNIT-V

7.Ocean Thermal, Tidal and Wave Energy Systems:Ocean Thermal - Introduction, Technology process, Working principle, Resource and site requirements, Location of OCET system, Electricity generation methods from OCET,Advantages and disadvantages, Applications of OTEC,

8. Tidal Energy - Introduction, Origin and nature of tidal energy, Merits and limitations, Tidal energy technology,Tidal range power, Basic modes of operation of tidal systems.Wave Energy – Introduction, Basics of wave motion, Power in waves, Wave energy conversion devices, Advantages anddisadvantages, Applications of wave energy.

Reference Books:

1. Dan Charis, Mick Sagrillo, LanWoofenden, "Power from the Wind", New Society Pub., 2009.
2. Erich Hau, "Wind Turbines-Fundaments, Technologies, Applications, Economics", 2ndEdition, Springer Verlag, BerlinHeidelberg, NY, 2006.
3. Joshue Earnest, Tore Wizelius, Wind Power and Project Developmen", PHI Pub., 2011.
4. T. Burton, D. Sharpe, N. Jenkins, E. Bossanyi, Wind Energy Handbook, John Wiley Pub., 2001.
5. Paul Gipe, "Wind Energy Basics", Chelsea Green Publications, 1999.
6. Khan, B.H., "Non-Conventional Energy Resources", TMH, 2nd Edition, New Delhi, 2009.
7. Tiwari, G.N., and Ghosal, M.K, Renewable Energy Resources – Basic Principles and applications, Narosa Publishing House,2007.

Cluster Elective Paper- VIII-C-2: Practical: Wind, Hydro and Ocean Energies
2hrs/Week

Minimum of 6 experiments to be done and recorded

1. Estimation of wind speed using anemometer.
2. Determination of characteristics of a wind generator
3. Study the effect of number and size of blades of a wind turbine on electric power output.
4. Performance evaluation of vertical and horizontal axes wind turbine rotors.
5. Study the effect of density of water on the output power of hydroelectric generator.
6. Study the effect of wave amplitude and frequency on the wave energy generated.

Semester - VI

Cluster Elective Paper –VIII-C-3 :Energy Storage Devices

No. of Hours per week: 04 **Total Lectures:60**

UNIT-I (12 hr)

1. Energy Storage: Need of energy storage; Different modes of energy storage, Flywheel storage, Electrical and magnetic energy storage: Capacitors,electromagnets; Chemical Energy storage: Thermo-chemical, photo-chemical, bio-chemical,electro-chemical, fossil fuels and synthetic fuels. Hydrogen for energy storage.

UNIT-II (12 hrs)

2. Electrochemical Energy Storage Systems: Batteries: Primary, Secondary, Lithium, Solid-state and molten solvent batteries; Leadacid batteries; Nickel Cadmium Batteries; Advanced Batteries. Role of carbon nano-tubes inelectrodes.

UNIT-III (12 hrs)

3. Magnetic and Electric Energy Storage Systems: Superconducting Magnet Energy Storage(SMES) systems; Capacitor and battery:Comparison and application; Super capacitor: Electrochemical Double Layer Capacitor(EDLC), principle of working, structure, performance and application.

UNIT-IV (12 hrs)

4. Fuel Cell: Fuel cell definition, difference between batteries and fuel cells, fuel cell components, principle and working of fuel cell, performance characteristics,efficiency, fuel cell stack, fuel cell power plant: fuel processor, fuel cell powersection, power conditioner, Advantages and disadvantages.

UNIT-V (12 hrs)

5. Types of Fuel Cells: Alkaline fuel cell, polymer electrolyte fuel cell, phosphoric acid fuel cell,molten carbonate fuel cell; solid oxide fuel cell,proton exchange membrane fuel cell, problems with fuel cells, applications of fuel cells.

REFERENCE BOOKS

1. J. Jensen and B. Squrensen, Fundamentals of Energy Storage, John Wiley, NY, 1984.
2. M. Barak, Electrochemical Power Sources: Primary and Secondary Batteries by, P. Peregrinus,IEE,1980.
3.P.D.Dunn, Renewable Energies, Peter Peregrinus Ltd, London, 1986.
4. B.Viswanathan and M. A. Scibioh, Fuel Cells-Principles and Applications, University Press, 2006.
5. Hart, A.B and G.J.Womack, Fuel Cells: Theory and Application, Prentice Hall, NewYork, 1989.

Cluster Elective Paper –VIII-C-3: Practical: Energy Storage Devices
2hrs/Week

Minimum of 6 experiments to be done and recorded

1. Study of charge and discharge characteristics of storage battery.
2. Study of charging and discharging behavior of a capacitor.
3. Determination of efficiency of DC-AC inverter and DC-DC converters
4. Study of charging characteristics of a Ni-Cd battery using solar photovoltaic panel.
5. Performance estimation of a fuel cell.
6. Study of effect of temperature on the performance of fuel cell.

Andhra Pradesh State Council of Higher Education

B.Sc. Chemistry Syllabus under CBCS

w.e.f. 2015-16 (revised in April 2016)

Structure of Chemistry Syllabus Under CBCS

YEAR	SEMESTER	PAPER	TITLE	MARKS	CREDITS
I	I	I	Inorganic and Organic Chemistry	100	03
			Practical – I	50	02
	II	II	Physical and General Chemistry	100	03
			Practical – II	50	02
II	III	III	Inorganic and organic Chemistry	100	03
			Practical – III	50	02
	IV	IV	Spectroscopy and Physical Chemistry	100	03
			Practical – IV	50	02
III	V	V	Inorganic ,Organic and Physical Chemistry	100	03
			Practical – V	50	02
		VI	Inorganic ,Organic and Physical Chemistry	100	03
			Practical – VI	50	02
	* Any one Paper from VII A, B and C ** Any one cluster from VIII, A, B and C VI	VII (A)*	Elective	100	03
			Practical - VII A	50	02
		VII (B)*	Elective	100	03
			Practical - VII B	50	02
		VII (C)*	Elective	100	03
			Practical - VII C	50	02
		VIII (A)**	**Cluster Electives - I :** VIII-A-1 VIII-A-2 VIII-A-3	100 100 100 50 50 50	03 03 03 02 02 02
		VIII (B)**	**Cluster Electives - II ::** VIII-B-1 VIII- B-2 VIII-B-3	100 100 100 50 50 50	03 03 03 02 02 02
		VIII (C)**	**Cluster Electives - III ::** VIII-C-1 VIII-C-2 VIII-C-3	100 100 100 50 50 50	03 03 03 02 02 02

SEMESTER – I

Paper I - Inorganic & Organic Chemistry 60hrs (4h/w)

INORGANIC CHEMISTRY **30 hrs (2h / w)**

UNIT –I

p-block elements –I **15h**

Group-13: Synthesis and structure of diborane and higher boranes (B_4H_{10} and B_5H_9**),** boron-nitrogen compounds ($B_3N_3H_6$ and BN)

Group - 14: Preparation and applications of silanes and silicones.

Group - 15: Preparation and reactions of hydrazine, hydroxylamine.

UNIT-II

1. **p-block elements -II** **8h**

Group - 16: Classifications of oxides based on (i) Chemical behaviour and (ii) Oxygen content.

Group-17: Inter halogen compounds and pseudo halogens.

2. Organometallic Chemistry **7h**

Definition - classification of Organometallic compounds - nomenclature, preparation, properties and applications of alkyls of Li and Mg.

ORGANIC CHEMISTRY **30hrs (2h /w)**

UNIT-III

Structural theory in Organic Chemistry **10 h**

Types of bond fission and organic reagents (Electrophilic, Nucleophilic, and free radical reagents including neutral molecules like H_2O,NH_3& $AlCl_3$).

Bond polarization : Factors influencing the polarization of covalent bonds, electro negativity - inductive effect. Application of inductive effect (a) Basicity of amines (b) Acidity of carboxylic acids (c) Stability of carbonium ions. Resonance or Mesomeric effect, application to (a) acidity of phenol, and (b) acidity of carboxylic acids. Hyper conjugation and its application to stability of carbonium ions, Free radicals and alkenes, carbanions, carbenes and nitrenes.

Types of Organic reactions : Addition - electrophilic, nucleophilic and free radical. Substitution - electrophilic, nucleophilic and free radical. Elimination- Examples.

UNIT-IV

l. **Acyclic Hydrocarbons** **6 h**

Alkenes - Preparation of alkenes. Properties: Addition of hydrogen - heat of hydrogenation and stability of alkenes. Addition of halogen and its mechanism. Addition of HX, Markonikov's rule, addition of H_2O, HOX, H_2SO_4 with mechanism and addition of HBr in the presence of peroxide (anti - Markonikov's addition). Dienes - Types of dienes, reactions of conjugated dienes - 1,2 and 1,4 addition of HBr to 1,3 - butadiene and Diel's - Alder reaction.

Alkynes - Preparation by dehydrohalogenation of dihalides, dehalogenation of tetrahalides, Properties; Acidity of acetylenic hydrogen (formation of Metal acetylides). Preparation of higher acetylenes, Metal ammonia reductions, Physical properties. Chemical reactivity - electrophilic addition of X_2, HX, H_2O (Tautomerism), Oxidation with $KMnO_4$, OsO_4, reduction and Polymerisation reaction of acetylene.

2. **Alicyclic hydrocarbons (Cycloalkanes)** **4 h**

Nomenclature, Preparation by Freunds method, Wislicenus method. Properties - reactivity of cyclopropane and cyclobutane by comparing with alkanes, Stability of cycloalkanes - Baeyer's strain theory, Sachse and Mohr predictions and Pitzer's strain theory. Conformational structures of cyclobutane, cyclopentane, cyclohexane.

UNIT-V

Benzene and its reactivity **10h**

Concept of resonance, resonance energy. Heat of hydrogenation, heat of combustion of Benzene, mention of C-C bond lengths and orbital picture of Benzene. Concept of aromaticity - aromaticity (definition), Huckel's rule - application to Benzenoid (Benzene, Naphthalene) and Non - Benzenoid compounds (cyclopropenyl cation, cyclopentadienyl anion and tropylium cation)

Reactions - General mechanism of electrophilic substitution, mechanism of nitration, Friedel Craft's alkylation and acylation. Orientation of aromatic substitution - Definition of ortho, para and meta directing groups. Ring activating and deactivating groups with examples (Electronic interpretation of various groups like NO_2 and Phenolic). Orientation of (i) Amino, methoxy and methyl groups (ii) Carboxy, nitro, nitrile, carbonyl and sulphonic acid groups (iii) Halogens

(Explanation by taking minimum of one example from each type)

List of Reference Books

1. Inorganic Chemistry by J.E.Huheey
2. Basic Inorganic Chemistry by Cotton and Wilkinson
3.A textbook of qualitative inorganic analysis by A.I. Vogel
4. Organic Chemistry by Morrisson and Boyd
5. A Text Book of Organic chemistry by I L Finar Vol I
6. Concise Inorganic Chemistry by J.D.Lee

LABORATORY COURSE-I **30** hrs (2 h / w)

Practical-I Simple Salt Analysis

(At the end of Semester-I)

Qualitative inorganic analysis

Analysis of simple salt containing one anion and cation from the following

Anions: Carbonate, sulphate, chloride, bromide, acetate, nitrate, borate, phosphate.

cations: Lead, copper, iron, aluminum, zinc, manganese, nickel, calcium, strontium, barium, potassium and ammonium.

SEMESTER - II

Paper II (Physical & General Chemistry) 60 hrs. (4h/w)

PHYSICAL CHEMISTRY 30 hrs (2h / w)

UNIT-I

Solidstate l0h

Symmetry in crystals. Law of constancy of interfacial angles. The law of rationality of indices. The law of symmetry. Definition of lattice point, space lattice, unit cell. Bravis lattices and crystal systems. X-ray diffraction and crystal structure. Bragg's law. Defects in crystals. Stoichiometric and non-stoichiometric defects.

UNIT-II

1.Gaseous state 6 h

Compression factors, deviation of real gases from ideal behavior. Vander Waal's equation of state. P-V Isotherms of real gases, Andrew's isotherms of carbon dioxide, continuity of state. Critical phenomena. The vander Waal's equation and the critical state. Law of corresponding states.Relationship between critical constants and vander Waal's constants. Joule Thomson effect.

2.Liquid state 4 h

Structural differences between solids, liquids and gases. Liquid crystals, the mesomorphic state. Classification of liquid crystals into Smectic and Nematic. Differences between liquid crystal and solid/liquid. Application of liquid crystals as LCD devices.

UNIT-III

Solutions l0h

Liquid-liquid - ideal solutions, Raoult's law. Ideally dilute solutions, Henry's law. Non-ideal solutions. Vapour pressure - composition and vapour pressure- temperature curves. Azeotropes-HCl-H_2O, ethanol-water systems and fractional distillation. Partially miscible liquids-phenol-water, trimethylamine-water, nicotine-water systems. Effect of impurity on consulate temperature. Immiscible liquids and steam distillation.

Nernst distribution law. Calculation of the partition coefficient. Applications of distribution law.

GENERAL CHEMISTRY 30 hrs (2h / w)

UNIT-IV

l.Surface chemistry 8 h

Definition of colloids. Solids in liquids(sols), preparation, purification, properties - kinetic, optical, electrical. Stability of colloids, Hardy-Schulze law, protective colloid.

Liquids in liquids (emulsions) preparation, properties, uses. Liquids in solids (gels) preparation, uses.

Adsorption: Physical adsorption, chemisorption. Freundlisch, Langmuir adsorption isotherms. Applications of adsorption

2.Chemical Bonding **7h**

Valence bond theory, hybridization, VB theory as applied to ClF_3, $Ni(CO)_4$, Molecular orbital theory - LCAO method, construction of M.O. diagrams for homo-nuclear and hetero-nuclear diatomic molecules (N_2, O_2, CO and NO).

UNIT-V

Stereochemistry of carbon compounds **15 h**

Molecular representations- Wedge, Fischer, Newman and Saw-Horse formulae.

Optical isomerism: Optical activity- wave nature of light, plane polarised light, optical rotation and specific rotation.

Chiral molecules- definition and criteria(Symmetry elements)- Definition of enantiomers and diastereomers – Explanation of optical isomerism with examples Glyceraldehyde, Lactic acid, Alanine, Tartaric acid, 2,3-dibromopentane.

D,L and R,S configuration methods and E,Z- configuration with examples.

List of Reference Books

1. Principles of physical chemistry by Prutton and Marron
2. Solid State Chemistry and its applications by Anthony R. West
3. Text book of physical chemistry by K L Kapoor
4. Text book of physical chemistry by S Glasstone
5. Stereochemistry of Organic compounds by E L Eliel
6. Advanced Organic Chemistry by F A Carey and R J Sundberg
7. Stereochemistry by P.S.Kalsi
8. Stereochemistry of Organic compounds by D. Nasipuri
9. Advanced physical chemistry by Bahl and Tuli
10. Advanced Inorganic Chemistry Vol-I by Satyaprakash, Tuli, Basu and Madan

LABORATORY COURSE -II **30** hrs (2 h / w)

Practical-II Analysis of Mixture Salt

(At the end of Semester-II)

Qualitative inorganic analysis

Analysis of mixture salt containing two anions and two cations (From two different groups) from the following:

Anions: Carbonate, sulphate, chloride, bromide, acetate, nitrate, borate, phosphate.

Cations: Lead, copper, iron, aluminum, zinc, manganese, calcium, strontium, barium, potassium and ammonium.

SEMESTER - III

Paper III (INORGANIC & ORGANIC CHEMISTRY) 60 hrs (4 h / w)

INORGANIC CHEMISTRY 30 hrs (2h / w)

UNIT –I

1. Chemistry of d-block elements: 9h

Characteristics of d-block elements with special reference to electronic configuration, variable valence, magnetic properties, catalytic properties and ability to form complexes. Stability of various oxidation states

2. Theories of bonding in metals:

6h

Metallic properties and its limitations, Valence bond theory, Free electron theory, Explanation of thermal and electrical conductivity of metals, limitations, Band theory, formation of bands, explanation of conductors, semiconductors and insulators.

UNIT – II

3.Metal carbonyls : 7h

EAN rule, classification of metal carbonyls, structures and shapes of metal carbonyls of V, Cr, Mn, Fe, Co and Ni.

4. Chemistry of f-block elements: 8h

Chemistry of lanthanides - electronic structure, oxidation states, lanthanide contraction, consequences of lanthanide contraction, magnetic properties. Chemistry of actinides - electronic configuration, oxidation states, actinide contraction, comparison of lanthanides and actinides.

ORGANIC CHEMISTRY 30 h (2h/w)

UNIT – III

1. Halogen compounds 5 h

Nomenclature and classification of alkyl (into primary, secondary, tertiary), aryl, aryl alkyl, allyl, vinyl, benzyl halides.

Nucleophilic aliphatic substitution reaction- classification into SN^1 and SN^2 – reaction mechanism with examples – Ethyl chloride, t-butyl chloride and optically active alkyl halide 2-bromobutane.

2. **Hydroxy compounds** **5 h**

Nomenclature and classification of hydroxy compounds.
Alcohols: Preparation with hydroboration reaction, Grignard synthesis of alcohols. Phenols: Preparation i) from diazonium salt, ii) from aryl sulphonates, iii) from cumene. Physical properties- Hydrogen bonding (intermolecular and intramolecular). Effect of hydrogen bonding on boiling point and solubility in water.
Identification of alcohols by oxidation with $KMnO_4$, Ceric ammonium nitrate, Luca's reagent and phenols by reaction with $FeCl_3$.
Chemical properties:

a) Dehydration of alcohols.
b) Oxidation of alcohols by CrO_3, $KMnO_4$.
c) Special reaction of phenols: Bromination, Kolbe-Schmidt reaction, Riemer-Tiemann reaction, Fries rearrangement, azocoupling, Pinacol-Pinacolone rearrangement.

UNIT-IV

Carbonyl compounds **10 h**

Nomenclature of aliphatic and aromatic carbonyl compounds, structure of the carbonyl group. Synthesis of aldehydes from acid chlorides, synthesis of aldehydes and ketones using 1,3-dithianes, synthesis of ketones from nitriles and from carboxylic acids. Physical properties: Reactivity of carbonyl group in aldehydes and ketones.
Nucleophilic addition reaction with a) $NaHSO_3$, b) HCN, c) RMgX, d) NH_2OH, e)$PhNHNH_2$, f) 2,4 DNPH, g) Alcohols-formation of hemiacetal and acetal. Base catalysed reactions: a) Aldol, b) Cannizzaro's reaction, c) Perkin reaction, d) Benzoin condensation, e) Haloform reaction, f) Knoevenagel reaction. Oxidation of aldehydes-Baeyer-Villiger oxidation of ketones.Reduction: Clemmensen reduction, Wolf-Kishner reduction, MPV reduction, reduction with $LiAlH_4$ and $NaBH_4$. Analysis of aldehydes and ketones with a) 2,4-DNPH test, b) Tollen's test, c) Fehling test, d) Schiff's test e) Haloform test (with equation)

UNIT-V

1. Carboxylic acids and derivatives **6 h**

Nomenclature, classification and structure of carboxylic acids. Methods of preparation by a) Hydrolysis of nitriles, amides b) Hydrolysis of esters by acids and bases with mechanism c) Carbonation of Grignard reagents. Special methods of preparation of aromatic acids by a) Oxidation of side chain. b) Hydrolysis by benzotrichlorides. c) Kolbe reaction. **Physical properties**: Hydrogen bonding, dimeric association, acidity-strength of acids with examples of trimethyl acetic acid and trichloroacetic acid. Relative differences in the acidities of aromatic and aliphatic acids. **Chemical properties**: Reactions involving H, OH and COOH groups- salt formation, anhydride formation, acid chloride formation, amide formation and esterification (mechanism). Degradation of carboxylic acids by Huns-Diecker reaction, decarboxylation by Schimdt reaction, Arndt-Eistert synthesis, halogenation by Hell- Volhard- Zelinsky reaction.

2. Active methylene compounds **4 h**

Acetoacetic ester: keto-enol tautomerism, preparation by Claisen condensation, Acid hydrolysis and ketonic hydrolysis. Preparation of a) monocarboxylic acids. b) Dicarboxylic acids. c) Reaction with urea

Malonic ester: preparation from acetic acid. **Synthetic applications**: Preparation of a) monocarboxylic acids (propionic acid and n-butyric acid). b) Dicarboxylic acids (succinic acid and adipic acid) c) α,β-unsaturated carboxylic acids (crotonic acid).
d) Reaction with urea.

List of Reference Books

1. Selected topics in inorganic chemistry by W.D.Malik, G..D.Tuli,R.D.Madan
2. Inorganic Chemistry J E Huheey, E A Keiter and R L Keiter
3. A Text Book of Organic Chemistry by Bahl and Arun bahl
4. A Text Book of Organic chemistry by I L Finar Vol I
5. Organic chemistry by Bruice
6. Organic chemistry by Clayden
7. Advanced Inorganic chemistry by Gurudeep Raj
8. Basic Inorganic Chemistry by Cotton and Wilkinson
9. Concise Inorganic Chemistry by J.D.Lee

LABORATORY COURSE -III **30 hrs. (2 h / w)**

Practical Paper-III Titrimetric analysis and **Organic Functional Group Reactions**
(At the end of Semester-III)

Titrimetric analysis: **25M**

1. Determination of Fe (II) using $KMnO_4$ with oxalic acid as primary standard.
2. Determination of Cu(II) using $Na_2S_2O_3$ with $K_2Cr_2O_7$ as primary standard.

Organic Functional Group Reactions **25M**

3. Reactions of the following functional groups present in organic compounds (at least four) Alcohols, Phenols, Aldehydes, Ketones, Carboxylic acids and Amides

SEMESTER IV
Paper IV (SPECTROSCOPY & PHYSICAL CHEMISTRY)
60 hrs (4 h / w)

SPECTROSCOPY 30 hrs (2h / w)

UNIT-I 6h

General features of absorption - Beer-Lambert's law and its limitations, transmittance, Absorbance, and molar absorptivity. Single and double beam spectrophotometers. Application of Beer-Lambert law for quantitative analysis of 1. Chromium in $K_2Cr_2O_7$
2. Manganese in Manganous sulphate

Electronic spectroscopy: 8h

Interaction of electromagnetic radiation with molecules and types of molecular spectra. Energy levels of molecular orbitals (σ, π, n). Selection rules for electronic spectra. Types of electronic transitions in molecules effect of conjugation. Concept of chromophore and auxochrome.

UNIT-II

Infra red spectroscopy 8h

Different Regions in Infrared radiations. Modes of vibrations in diatomic and polyatomic molecules. Characteristic absorption bands of various functional groups. Interpretation of spectra-Alkanes, Aromatic, Alcohols carbonyls, and amines with one example to each.

Proton magnetic resonance spectroscopy (^{1}H-NMR) 8h

Principles of nuclear magnetic resonance, equivalent and non-equivalent protons, position of signals. Chemical shift, NMR splitting of signals - spin-spin coupling, coupling constants. Applications of NMR with suitable examples - ethyl bromide, ethanol, acetaldehyde, 1,1,2-tribromo ethane, ethyl acetate, toluene and acetophenone.

PHYSICAL CHEMISTRY 30 hrs (2h / w)

UNIT-III

Dilute solutions 10h

Colligative properties. Raoult's law, relative lowering of vapour pressure, its relation to molecular weight of non-volatile solute. Elevation of boiling point and depression of freezing point. Derivation of relation between molecular weight and elevation in boiling point and depression in freezing point. Experimental methods of determination. Osmosis, osmotic pressure, experimental determination. Theory of dilute solutions. Determination of molecular weight of non-volatile solute from osmotic pressure. Abnormal Colligative properties- Van't Hoff factor.

UNIT-IV

Electrochemistry-I **10h**

Specific conductance, equivalent conductance. Variation of equivalent conductance with dilution. Migration of ions, Kohlrausch's law. Arrhenius theory of electrolyte dissociation and its limitations. Ostwald's dilution law. Debye-Huckel-Onsagar's equation for strong electrolytes (elementary treatment only). Definition of transport number, determination by Hittorfs method. Application of conductivity measurements- conductometric titrations.

UNIT-V

1. Electrochemistry-II **4h**

Single electrode potential, sign convention, Reversible and irreversible cells Nernst Equation- Reference electrode, Standard Hydrogen electrode, calomel electrode, Indicator electrode, metal – metal ion electrode, Inert electrode, Determination of EMF of cell, Applications of EMF measurements - Potentiometric titrations.

2.Phase rule **6h**

Concept of phase, components, degrees of freedom. Thermodynamic Derivation of Gibbs phase rule. Phase equilibrium of one component system - water system. Phase equilibrium of two- component system, solid-liquid equilibrium. Simple eutectic diagram of Pb-Ag system, simple eutectic diagram, desilverisation of lead., NaCl-Water system, Freezing mixtures.

List of Reference Books

1. Spectroscopy by William Kemp

2. Spectroscopy by Pavia

3. Organic Spectroscopy by J. R. Dyer

4. Modern Electrochemistry by J.O. M. Bockris and A.K.N.Reddy

5. Advanced Physical Chemistry by Atkins

6.Introduction to Electrochemistry by S. Glasstone

7.Elementary organic spectroscopy by Y.R. Sharma

8. Spectroscopy by P.S.Kalsi

LABORATORY COURSE – IV
Practical Paper - IV Physical Chemisry and IR Spectral Analysis
(at the end of semester IV)

30 hrs (2 h / W)

Physical Chemistry **25M**

1.Critical Solution Temperature- Phenol-Water system

2. Effect of NaCl on critical solution temperature (Phenol-Water system)

3.Determination of concentration of HCl conductometrically using standard NaOH solution.

4.Determination of concentration of acetic acid conductometrically using standard NaOH Solution.

IR Spectral Analysis **25 M**

5. IR Spectral Analysis of the following functional groups with examples

a) Hydroxyl groups

b) Carbonyl groups

c) Amino groups

d) Aromatic groups

SEMESTER-V

Paper - V (INORGANIC, PHYSICAL & ORGANIC CHEMISTRY)
45 hrs (3 h / w)

INORGANIC CHEMISTRY

UNIT – I

Coordination Chemistry: 8h

IUPAC nomenclature - bonding theories - Review of Werner's theory and Sidgwick's concept of coordination - Valence bond theory - geometries of coordination numbers 4-tetrahedral and square planar and 6-octahedral and its limitations, crystal filed theory - splitting of d-orbitals in octahedral, tetrahedral and square-planar complexes - low spin and high spin complexes - factors affecting crystal-field splitting energy, merits and demerits of crystal-field theory. Isomerism in coordination compounds - structural isomerism and stereo isomerism, stereochemistry of complexes with 4 and 6 coordination numbers.

UNIT-II

1. Spectral and magnetic properties of metal complexes: 4h

Types of magnetic behavior, spin-only formula, calculation of magnetic moments, experimental determination of magnetic susceptibility-Gouymethod.

2. Stability of metal complexes: 3h

Thermodynamic stability and kinetic stability, factors affecting the stability of metal complexes, chelate effect, determination of composition of complex by Job's method and mole ratio method.

ORGANIC CHEMISTRY

UNIT- III

Nitro hydrocarbons: **3h**

Nomenclature and classification-nitro hydrocarbons, structure -Tautomerism of nitroalkanes leading to aci and keto form, Preparation of Nitroalkanes, reactivity - halogenation, reaction with HONO (Nitrous acid),Nef reaction and Mannich reaction leading to Micheal addition and reduction.

UNIT – IV

Nitrogen compounds: 12h

Amines (Aliphatic and Aromatic): Nomenclature, Classification into 1°, 2°, 3° Amines and Quarternary ammonium compounds. Preparative methods –

1. Ammonolysis of alkyl halides 2. Gabriel synthesis 3. Hoffman's bromamide reaction (mechanism).

Reduction of Amides and Schmidt reaction. Physical properties and basic character - Comparative basic strength of Ammonia, methyl amine, dimethyl amine, trimethyl amine and aniline - comparative basic strength of aniline, N-methylaniline and N,N-dimethyl aniline (in aqueous and non-aqueous medium), steric effects and substituent effects.

Chemical properties: a) Alkylation b) Acylation c) Carbylamine reaction d) Hinsberg separation e) Reaction with Nitrous acid of 1°, 2°, 3° (Aliphatic and aromatic amines). Electrophillic substitution of Aromatic amines – Bromination and Nitration. Oxidation of aryl and Tertiary amines, Diazotization.

PHYSICAL CHEMISTRY

UNIT- V

Thermodynamics **15h**

The first law of thermodynamics-statement, definition of internal energy and enthalpy. Heat capacities and their relationship. Joule-Thomson effect- coefficient. Calculation of w, for the expansion of perfect gas under isothermal and adiabatic conditions for reversible processes. State function. Temperature dependence of enthalpy of formation-Kirchoff s equation. Second law of thermodynamics. Different Statements of the law. Carnot cycle and its efficiency. Carnot theorem. Concept of entropy, entropy as a state function, entropy changes in reversible and irreversible processes. Entropy changes in spontaneous and equilibrium processes.

List of Reference Books

1. Concise coordination chemistry by Gopalan and Ramalingam
2. Coordination Chemistry by Basalo and Johnson
3. Organic Chemistry by G.Mare loudan, Purdue Univ
4. Advanced Physical Chemistry by
5.Text book of physical chemistry by S Glasstone
6.Concise Inorganic Chemistry by J.D.Lee
7. Advanced Inorganic Chemistry Vol-I by Satyaprakash, Tuli, Basu and Madan
8. A Text Book of Organic Chemistry by Bahl and Arun bahl
9.A Text Book of Organic chemistry by I L Finar Vol I
10.Advanced physical chemistry by Gurudeep Raj

SEMESTER-V

Paper - VI (INORGANIC, ORGANIC & PHYSICAL CHEMISTRY)

45 hrs (3 h / w)

INORGANIC CHEMISTRY

UNIT-I

1. Reactivity of metal complexes: 4h

Labile and inert complexes, ligand substitution reactions - SN^1 and SN^2,substitution reactions of square planar complexes - Trans effect and applications of trans effect.

2.Bioinorganic chemistry: 4h

Essential elements, biological significance of Na, K, Mg, Ca, Fe, Co, Ni, Cu, Zn and Cl^-.
Metalloporphyrins – Structure and functions of hemoglobin, Myoglobin and Chlorophyll.

PHYSICAL CHEMISTRY

UNIT-II

1. Chemical kinetics 8h

Rate of reaction - Definition of order and molecularity. Derivation of rate constants for first, second, third and zero order reactions and examples. Derivation for time half change. Methods to determine the order of reactions. Effect of temperature on rate of reaction, Arrhenius equation, concept of activation energy.

2. Photochemistry 5h

Difference between thermal and photochemical processes. Laws of photochemistry-Grothus-Draper's law and Stark-Einstein's law of photochemical equivalence. Quantum yield-Photochemical reaction mechanism- hydrogen- chlorine, hydrogen- bromine reaction. Qualitative description of fluorescence, phosphorescence, Photosensitized reactions- energy transfer processes (simple example)

ORGANIC CHEMISTRY

UNIT- III

Heterocyclic Compounds 7h

Introduction and definition: Simple five membered ring compounds with one hetero atom Ex. Furan. Thiophene and pyrrole - Aromatic character – Preparation from 1,4,-dicarbonyl compounds, Paul-Knorr synthesis.

Properties : Acidic character of pyrrole - electrophillic substitution at 2 or 5 position, Halogenation, Nitration and Sulphonation under mild conditions - Diels Alder reaction in furan.

Pyridine – Structure - Basicity - Aromaticity - Comparison with pyrrole - one method of preparation and properties - Reactivity towards Nucleophilic substitution reaction.

UNIT-IV

Carbohydrates **8h**

Monosaccharides: (+) Glucose (aldo hexose) - Evidence for cyclic structure of glucose (some negative aldehydes tests and mutarotation) - Proof for the ring size (methylation, hydrolysis and oxidation reactions) - Pyranose structure (Haworth formula and chair conformational formula).

(-) Fructose (ketohexose) - Evidence of 2 - ketohexose structure (formation of pentaacetate, formation of cyanohydrin its hydrolysis and reduction by HI). Cyclic structure for fructose (Furanose structure and Haworth formula) - osazone formation from glucose and fructose – Definition of anomers with examples.

Interconversion of Monosaccharides: Aldopentose to Aldohexose (Arabinose to D- Glucose, D-Mannose) (Kiliani - Fischer method). Epimers, Epimerisation - Lobry de bruyn van Ekenstein rearrangement. Aldohexose to Aldopentose (D-Glucose to D- Arabinose) by Ruff degradation. Aldohexose to Ketohexose [(+) Glucose to (-) Fructose] and Ketohexose to Aldohexose (Fructose to Glucose)

UNIT- V

Amino acids and proteins **7h**

Introduction: Definition of Amino acids, classification of Amino acids into alpha, beta, and gamma amino acids. Natural and essential amino acids - definition and examples, classification of alpha amino acids into acidic, basic and neutral amino acids with examples. Methods of synthesis: General methods of synthesis of alpha amino acids (specific examples - Glycine, Alanine, valine and leucine) by following methods: a) from halogenated carboxylic acid b) Malonic ester synthesis c) strecker's synthesis.

Physical properties: Zwitter ion structure - salt like character - solubility, melting points, amphoteric character, definition of isoelectric point.

Chemical properties: General reactions due to amino and carboxyl groups - lactams from gamma and delta amino acids by heating peptide bond (amide linkage). Structure and nomenclature of peptides and proteins.

List of Reference Books

1. Concise coordination chemistry by Gopalan and Ramalingam
2. Coordination Chemistry by Basalo and Johnson
3. Organic Chemistry by G.Mare loudan, Purdue Univ
4. Advanced Physical Chemistry by Atkins
5. Text book of physical chemistry by S Glasstone
7. Instrumentation and Techniques by Chatwal and Anand
8. Essentials of nano chemistry by pradeep
9. A Textbook of Physical Chemistry by Puri and Sharma
10. Advanced physical chemistry by Gurudeep Raj

LABORATORY COURSE – V
Practical Paper – V Organic Chemistry
(at the end of semester V) **30 hrs (2 h / W)**

Organic Qualitative Analysis: **50M**

Analysis of an organic compound through systematic qualitative procedure for functional group identification including the determination of melting point and boiling point with suitable derivatives.

Alcohols, Phenols, Aldehydes, Ketones, Carboxylic acids, Aromatic Primary Amines, Amides and Simple sugars.

LABORATORY COURSE – VI
Practical Paper – VI Physical Chemistry
(at the end of semester V) **30 hrs (2 h/W)**

1. Determination of rate constant for acid catalyzed ester hydrolysis.

2. Determination of molecular status and partition coefficient of benzoicacid in Benzene and water.

3. Determination of Surface tension of liquid

4. Determination of Viscosity of liquid.

5. Adsorption of acetic acid on animal charcoal, verification of Freundlisch isotherm.

SEMESTER-VI - Electives

ELECTIVE Paper – VII-(A) : ANALYTICAL METHODS IN CHEMISTRY **45hrs (3h / w)**

UNIT-I

Quantitative analysis: **10h**

a) Importance in various fields of science, steps involved in chemical analysis**.** Principles of volumetric analysis :. Theories of acid-base, redox, complexometric, iodometric and precipitation titrations - choice of indicators for these titrations.

b) Principles of gravimetric analysis: precipitation, coagulation, peptization, coprecipitation, post precipitation, digestion, filtration and washing of precipitate, drying and ignition.

UNIT-II

Treatment of analytical data: **7h**

Types of errors, significant figures and its importance, accuracy - methods of expressing accuracy, error analysis and minimization of errors, precision - methods of expressing precision, standard deviation and confidence limit.

UNIT-III

SEPARATION TECHNIQUES IN CHEMICAL ANALYSIS: **8h**

SOLVENT EXTRACTION : Introduction,principle,techniques,factors affecting solvent extraction, Batch extraction, continuous extraction and counter current extraction. Synergism., Application - Determination of Iron (III)

ION EXCHANGE :Introduction,action of ion exchange resins,separation of inorganic mixtuers,applications, Solvent extraction: Principle and process,

UNIT – IV **10h**

Chromatography: Classification of chromatography methods, principles of differential migration adsorption phenomenon, Nature of adsorbents, solvent systems, R_f values, factors effecting R_f values.

Paper Chromatography: Principles, R_f values, experimental procedures, choice of paper and solvent systems, developments of chromatogram - ascending, descending and radial. Two dimensional chromatography, applications.

UNIT -V **10h**

Thin layer Chromatography (TLC): Advantages. Principles, factors effecting R_f values. Experimental procedures. Adsorbents and solvents. Preparation of plates. Development of the chromatogram. Detection of the spots. Applications.

Column Chromatography: Principles, experimental procedures, Stationary and mobile Phases, Separation technique. Applications

HPLC : Basic principles and applications.

List of Reference Books

1. Analytical Chemistry by Skoog and Miller
2. A textbook of qualitative inorganic analysis by A.I. Vogel
3. Nanochemistry by Geoffrey Ozin and Andre Arsenault
4. Stereochemistry by D. Nasipuri
5. Organic Chemistry by Clayden

LABORATORY COURSE – VI

Practical Paper – VII-(A) (at the end of semester VI) 30hrs (2 h / W)

50M

1. Identification of aminoacids by paper chromatography.
2. Determination of Zn using EDTA
3. Determination of Mg using EDTA

SEMESTER-VI

ELECTIVE PAPER – VII-(B) : ENVIRONMENTAL CHEMISTRY

45 hrs (3 h / w)

UNIT-I

Introduction **9h**

Concept of Environmental chemistry-Scope and importance of environment in now adays – Nomenclature of environmental chemistry – Segments of environment - Natural resources – Renewable Resources – Solar and biomass energy and Nonrenewable resources – Thermal power and atomic energy – Reactions of atmospheric oxygen and Hydological cycle.

UNIT-II

Air Pollution **9h**

Definition – Sources of air pollution – Classification of air pollution – Acid rain – Photochemical smog – Green house effect – Formation and depletion of ozone – Bhopal gas disaster – Controlling methods of air pollution.

UNIT-III

Water pollution **9h**

Unique physical and chemical properties of water – water quality and criteria for finding of water quality – Dissolved oxygen – BOD, COD, Suspended solids, total dissolved solids, alkalinity – Hardness of water – Methods to convert temporary hard water into soft water – Methods to convert permanent hard water into soft water – eutrophication and its effects – principal wastage treatment – Industrial waste water treatment.

UNIT-IV

Chemical Toxicology **9h**

Toxic chemicals in the environment – effects of toxic chemicals – cyanide and its toxic effects – pesticides and its biochemical effects – toxicity of lead, mercury, arsenic and cadmium.

UNIT-V

Ecosystem and biodiversity

9h

Ecosystem

Concepts – structure – Functions and types of ecosystem – Abiotic and biotic components – Energy flow and Energy dynamics of ecosystem – Food chains – Food web – Tropic levels – Biogeochemical cycles (carbon, nitrogen and phosporus)

Biodiversity

Definition – level and types of biodiversity – concept - significance – magnitude and distribution of biodiversity – trends - biogeographical classification of india – biodiversity at national, global and regional level.

List of Reference books

1. Fundamentals of ecology by M.C.Dash

2. A Text book of Environmental chemistry by W. Moore and F.A. Moore

3. Environmental Chemistry by Samir k. Banerji

LABORATORY COURSE – VI

Practical Paper – Elective VII B (at the end of semester VI) 30 hrs (2 h / W)

1.Determination of carbonate and bicarbonate in water samples (acidity and alkalinity)

2. Determination of hardness of water using EDTA

   a) Permanent hardness

   b) Temporary hardness

3. Determination of Acidity

4. Determination of Alkalinity

5. Determination of chlorides in water samples

SEMESTER-VI

ELECTIVE PAPER – VII-(C) GREEN CHEMISTRY

45 hrs (3 h / w)

UNIT-I **10h**

Green Chemistry: Introduction- Definition of green Chemistry, need of green chemistry, basic principles of green chemistry. Green synthesis- Evalution of the type of the reaction i) Rearrangements (100% atom economic), ii) Addition reaction (100% atom economic). Organic reactions by Sonication method: apparatus required examples of sonochemical reactions (Heck, Hundsdiecker and Wittig reactions).

UNIT-II **10h**

Selection of solvent: i) Aqueous phase reactions ii) Reactions in ionic liquids, Heckreaction, Suzuki reactions, epoxidation. iii) Solid supported synthesis

Super critical CO_2: Preparation, properties and applications, (decaffeination, dry cleaning)

UNIT-III **10h**

Microwave and Ultrasound assisted green synthesis: Apparatus required, examples of MAOS (synthesis of fused anthro quinones, Leukart reductive amination of ketones) - Advantages and disadvantages of MAOS. Aldol condensation-Cannizzaro reaction-Diels-Alder reactions-Strecker's synthesis

UNIT-IV **5h**

Green catalysis: Heterogeneous catalysis, use of zeolites, silica, alumina, supported catalysis- biocatalysis: Enzymes, microbes Phase transfer catalysis (micellar/surfactant)

UNIT V **10h**

Examples of green synthesis / reactions and some real world cases: 1. Green synthesis of the following compounds: adipic acid , catechol , disodium imino di acetate (alternative Strecker's synthesis) 2. Microwave assisted reaction in water – Hoffmann elimination – methyl benzoate to benzoic acid – oxidation of toluene and alcohols – microwave assisted reactions in organic solvents. Diels-Alder reactions and decarboxylation reaction. 3. Ultrasound assisted reactions – sonochemical Simmons –Smith reaction(ultrasonic alternative to iodine)

Reference books:

1. Green Chemistry Theory and Practice. P.T.Anatas and J.C. Warner
2. Green Chemistry V.K. Ahluwalia Narosa, New Delhi.
3. Real world cases in Green Chemistry M.C. Cann and M.E. Connelly
4. Green Chemistry: Introductory Text M.Lancaster: Royal Society of Chemistry (London)
5. Green Chemistry: Introductory Text, M.Lancaster
6. Principles and practice of heterogeneous catalysis, Thomas J.M.,Thomas M.J., John Wiley
7. Green Chemistry: Environmental friendly alternatives R S Sanghli and M.M Srivastava, Narosa Publications

LABORATORY COURSE – VII

Practical Paper – Elective VII C (at the end of semester VI) 30 hrs (2 h/W)

1**.** Determination of specific reaction rate of hydrolysis for methyl acetate catalysed by hydrogen ion at room temperature**.**

2.Determination of molecular status and partition coefficient of benzoicacidin Benzene and water.

3. Surface tension and viscosity of liquids.

4**.** Adsorption of acetic acid on animal charcoal, verification of Freundlisch isotherm.

CLUSTER ELECTIVES: Cluster Elective – I
Analytical and Physical
SEMESTER-VI
PAPER – VIII-A-1: POLYMER CHEMISTRY

45 hrs (3 h / w)

UNIT-I **12h**

Introduction of polymers:

Basic definitions, degree of polymerization ,classification of polymers- Natural and Synthetic polymers, Organic and Inorganic polymers, Thermoplastic and Thermosetting polymers, Plastics, Elastomers , Fibers and Resins, Linear ,Branched and Cross Linked polymers, Addition polymers and Condensation Polymers, mechanism of polymerization. Free radical, ionic and Zeigler – Natta polymerization.

UNIT-II **10h**

Techniques of Polymerization : Bulk polymerization , solution polymerization , suspension and Emulsion polymerization.

Molecular weights of polymers: Number average and weight average molecular weights Determination of molecular weight of polymers by Viscometry , Osmometry and light scattering methods.

UNIT-III **6h**

Kinetics of Free radical polymerization, Glass Transition temperature(Tg) and Determination of Tg:

Free volume theory, WLF equation, factors affecting glass transition temperature (Tg).

UNIT-IV **9h**

Polymer additives:

Introduction to plastic additives – fillers, Plasticizers and Softeners , Lubricants and Flow Promoters, Anti aging additives , Flame Retardants , Colourants , Blowing agents , Cross linking agents ,Photo stabilizers , Nucleating agents.

UNIT-V **8h**

Polymers and their applications:

Preparation and industrial applications of Polyethylene, Polyvinyl chloride, Teflon, Polyacrylonitrile, Terelene , Nylon6.6 silicones.

Reference Books:

1. Seymour, R.B. & Carraher, C.E. *Polymer Chemistry: An Introduction*, Marcel Dekker, Inc. New York, 1981.
2. Odian, G. *Principles of Polymerization*, 4th Ed. Wiley, 2004.
3. Billmeyer, F.W. *Textbook of Polymer Science*, 2nd Ed. Wiley Interscience, 1971.
4. Ghosh, P. *Polymer Science & Technology*, Tata McGraw-Hill Education, 1991.34
5. Lenz, R.W. *Organic Chemistry of Synthetic High Polymers.* Interscience Publishers, NewYork, 1967.

SEMESTER-VI

PAPER – VIII-A-2: INSTRUMENTAL METHODS OF ANALYSIS

45 hrs (3 h / w)

UNIT – I

Introduction to spectroscopic methods of analysis: 4 h

Recap of the spectroscopic methods covered in detail in the core chemistry syllabus: Treatment of analytical data, including error analysis. Classification of analytical methods and the types of instrumental methods. Consideration of electromagnetic radiation.

UNIT – II

Molecular spectroscopy: 8h

Infrared spectroscopy:

Interactions with molecules: absorption and scattering. Means of excitation (light sources), separation of spectrum (wavelength dispersion, time resolution), detection of the signal (heat, differential detection), interpretation of spectrum (qualitative, mixtures, resolution), advantages of Fourier Transform (FTIR). Samples and results expected. Applications: Issues of quality assurance and quality control, Special problems for portable instrumentation and rapid detection.

UNIT – III 10h

UV-Visible/ Near IR – emission, absorption, fluorescence and photoaccoustic. Excitation sources (lasers, time resolution), wavelength dispersion (gratings, prisms, interference filters,laser, placement of sample relative to dispersion, resolution), Detection of signal (photocells, photomultipliers, diode arrays, sensitivity and S/N), Single and Double Beam instruments, Interpretation (quantification, mixtures, absorption vs. fluorescence and the use of time, photoaccoustic, fluorescent tags).

UNIT – IV

Separation techniques

Chromatography: Gas chromatography, liquid chromatography, supercritical fluids, Importance of column technology (packing, capillaries), Separation based on increasing number of factors (volatility, solubility, interactions with stationary phase, size, electrical field), Detection: simple vs. specific (gas and liquid), Detection as a means of further analysis (use of tags and coupling to IR and MS), Electrophoresis (plates and capillary) and use with DNA analysis. 46 *Immunoassays and DNA techniques* **8h**

Mass spectroscopy*:* Making the gaseous molecule into an ion (electron impact, chemical ionization), Making liquids and solids into ions (electrospray, electrical discharge, laser desorption, fast atom bombardment), Separation of ions on basis of mass to charge ratio, Magnetic, Time of flight, Electric quadrupole. Resolution, time and multiple separations, Detection and interpretation (how this is linked to excitation). **8h**

UNIT – V

Elemental analysis: **10h**

Mass spectrometry (electrical discharges).

Atomic spectroscopy: Atomic absorption, Atomic emission, and Atomic fluorescence. Excitation and getting sample into gas phase (flames, electrical discharges, plasmas), Wavelength separation and resolution (dependence on technique), Detection of radiation (simultaneous/scanning, signal noise), Interpretation (errors due to molecular and ionic species, matrix effects, other interferences).

NMR spectroscopy: **P**rinciple, Instrumentation, Factors affecting chemical shift, Spin coupling, Applications. **4h**

Electroanalytical Methods: Potentiometry & Voltammetry **4h**

Radiochemical Methods **4h**

X-ray analysis and electron spectroscopy (surface analysis)

Reference books:

1. Skoog, D.A. Holler F.J. & Nieman, T.A. *Principles of Instrumental Analysis*, Cengage Learning India Ed.
2. Willard, H.H., Merritt, L.L., Dean, J. & Settoe, F.A. *Instrumental Methods of Analysis*, 7th Ed. Wadsworth Publishing Company Ltd., Belmont, California, USA, 1988.
3. P.W. Atkins: Physical Chemistry.
4. G.W. Castellan: Physical Chemistry.
5. C.N. Banwell: Fundamentals of Molecular Spectroscopy.
6. Brian Smith: Infrared Spectral Interpretations: A Systematic Approach.
7. W.J. Moore: Physical Chemistry

SEMESTER-VI

PAPER – VIII-A-3 : ANALYSIS OF DRUGS, FOODS , DAIRY PRODUCTS & BIO-CHEMICAL ANALYSIS

45 hrs (3 h / w)

UNIT- I

Analysis of the following drugs and pharmaceuticals preparations:
(Knowledge of molecular formula, structure and analysis)
Analysis of anlgesics and antipyretics like aspirin and paracetamol
Analysis of antimalerials like choloroquine .
Analysis of drugs in the treatment of infections and infestations :Amoxycillin., chloramphenicol, metronidazole, penicillin, tetracycline, cephalexin(cefalexin).
Anti tuberculous drug- isoniazid.

UNIT - II

Analysis of the following drugs and pharmaceuticals preparations:
(Knowledge of molecular formula, structure and analysis)
Analysis of antihistamine drugs and sedatives like: allegra, zyrtec(citirizine), alprazolam, trazodone, lorazepem, ambien(zolpidem), diazepam,

UNIT - III

Analysis of anti epileptic and anti convulsant drugs like phenobarbital and phenacemide.
Analysis of drugs used in case of cardiovascular drugs:atenolol, norvasc(amlodipine),
Analysis of lipitor(atorvastatin) a drug for the preventin of productin of cholesterol.
Analysis of diuretics like: furosemide (Lasix), triamterene
Analysis of prevacid(lansoprazole) a drug used for the prevention of production of acids in stomach.

UNIT - IV

Analysis of Milk and milk products: Acidity, total solids, fat, total nitrogen, protenines,lactose, phosphate activity, casein, choride. Analysis of food materials- Preservatives: Sodium carbonate, sodium benzoate sorbic acid Coloring matters, - Briliant blue FCF, fast green FCF, tertrazine, erytrhosine , sunset yellow FCF.
Flavoring agents - Vanilla , diacetyl, isoamyl acetate, limonene, ethylpropionate , allyl hexanoate and Adulterants in rice and wheat, wheat floo0r, sago,coconut oil, coffee powder, tea powder, milk..

UNIT - V

Clinical analysis of blood:Composition of blood,clinical analysis,trace elements in the body.Estimation of blood chlolesterol,glucose,enzymes,RBC & WBC ,Blood gas analyser.

REFERENCE BOOKS :

1.F.J.Welcher-Standard methods of analysis,
2.A.I.Vogel-A text book of quantitative Inorganic analysis-ELBS,
3.F.D.Snell & F.M.Biffen-Commercial methods of analysis-D.B.Taraporavala & sons,
4.J.J.Elving and I.M.Kolthoff- Chemical analysis - A series of monographs on analytical chemistry and its applications -- Inter Science- Vol I to VII.,

5.Aanalytical Agricultrual Chemistry by S.L.Chopra & J.S.Kanwar -- Kalyani Publishers

6. Quantitative analysis of drugs in pharmaceutical formulations by P.D.Sethi, CBS Publishers and Distributors, New Delhi
7. G.Ingram- Methods of organic elemental micro analysis- Chapman and Hall.,
8. H.Wincciam and Bobbles (Henry J)- Instrumental methods of analysis of food additives.,
9. H.Edward-The Chemical analysis of foods;practical treatise on the examination of food stuffs and the detection of adulterants,
10. The quantitative analysis of drugs- D.C.Garratt-Chapman & Hall.,
11. A text book of pharmaceutical analysis by K.A.Connors-Wiley-International.,
12. Comprehensive medicinal chemistry-Ed Corwin Hansch Vol 5,Pergamon Press.,

I. LABORATORY COURSE – VIII

Practical Paper – VIII-A-1: (at the end of semester VI) 30 hrs (2 h / W)

1. Preparation of Aspirin
2. Preparation of Paracetamol
3. Preparation of Acetanilide
4. Preparation of Barbutiric Acid
5. Preparation of Phenyl Azo β-naphthol

II. LABORATORY COURSE – VIII

Practical Paper – VIII-A-2 (at the end of semester VI)

30 hrs (2 h / W)

1.Green procedure for organic qualitative analysis: Detection of N, S andhalogens

2.Acetylation of 1^0 amine by green method: Preparation of acetanilide

3. Rearrangement reaction in green conditions: Benzil-Benzilic acid rearrangement

4. Electrophilic aromatic substitution reaction: Nitration of phenol

5. Radical coupling reaction: Preparation of 1,1-bis -2-naphthol

6. Green oxidation reaction: Synthesis of adipic acid

7. Green procedure for Diels Alder reaction between furan and maleic anhydride

List of Reference Books

1. Green Chemistry Theory and Practice. P.T.Anatas and J.C. Warner
2. Green Chemistry V.K. Ahluwalia Narosa, New Delhi.
3. Real world cases in Green Chemistry M.C. Cann and M.E. Connelly
4. Green Chemistry: Introductory Text M.Lancaster: Royal Society of Chemistry (London)
5. Green Chemistry: Introductory Text, M.Lancaster
6. Principles and practice of heterogeneous catalysis, Thomas J.M.,Thomas M.J., John Wiley
7. Green Chemistry: Environmental friendly alternatives R S Sanghli and M.M Srivastava, Narosa Publications

VII-A-3 Practical:- Project Work

Cluster Elective –II

Fuels and Industrial Inorganic materials

PAPER – VIII-B-1 : FUEL CHEMISTRY AND BATTERIES

45 hrs (3 h / w)

UNIT –I **12h**

Review of energy sources (renewable and non-renewable) – classification of fuels and their calorific value. Coal: Uses of Coal (fuel and non fuel) in various industries , its composition , carbonization of coal - coal gas , producer gas and water gas – composition and uses – fractionation of coal tar – uses of coal tar based chemicals , requisites of a good metallurgical coke , coal gasification (Hydro gasification and catalytic gasification) coal liquefaction and solvent refining.

UNIT-II **6h**

Petroleum and petrol chemical industry:

Composition of crude petroleum , refining and different types of petroleum products and their applications.

UNIT-III **10h**

Fractional distillation (principle and process) , cracking (Thermal and catalytic cracking). Reforming petroleum and non petroleum fuels (LPG , CNG , LNG , biogas) ,fuels derived from biomass , fuel from waste , synthetic fuels (gaseous and liquids) , clear fuels , petro chemicals : vinyl acetate , propylene oxide , isoprene , butadiene , toluene and its derivative xylene.

UNIT-IV **10h**

Lubricants:

Classification of lubricants , lubricating oils(conducting and non conducting) , solid and semi solid lubricants , synthetic lubricants. Properties of lubricants (viscosity index , cloud point , pore point) and their determination.

UNIT-V **7h**

Batteries:

Primary and secondary batteries, battery components and their role, Characteristics of Battery. Working of following batteries: Pb acid, Li-Battery, Solid state electrolyte battery. Fuel cells, Solar cell and polymer cell.

Reference books:

1. E.Stochi : Industrial chemistry , Vol-1,Ellis Horwood Ltd.UK
2. P.C.Jain , M.Jain: Engineering chemistry, Dhanpat Rai &sons , Delhi.
3. B.K.Sharma: Industrial Chemistry , Goel Publishing house , Meerut.

SEMESTER-VI

PAPER – VIII-B-2: INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE

45 hrs (3 h / w)

UNIT - I

Recapitulation of *s*- and *p*-Block Elements **8h**

Periodicity in *s*- and *p*-block elements with respect to electronic configuration, atomic and ionic size, ionization enthalpy, electronegativity (Pauling, Mulliken, and Alfred - Rochow scales). Allotropy in C, S, and P. Oxidation states with reference to elements in unusual and rare oxidation states like carbides and nitrides), inert pair effect, diagonal relationship and anomalous behaviour of first member of each group.

UNIT – II **15h**

Silicate Industries

Glass: Glassy state and its properties, classification (silicate and non-silicate glasses). Manufacture and processing of glass. Composition and properties of the following types of glasses: Soda lime glass, lead glass, armoured glass, safety glass, borosilicate glass, fluorosilicate, coloured glass, photosensitive glass.

Ceramics: Important clays and feldspar, ceramic, their types and manufacture. High technology ceramics and their applications, superconducting and semiconducting oxides, fullerenes carbon nanotubes and carbon fibre.

Cements: Classification of cement, ingredients and their role, Manufacture of cement and the setting process, quick setting cements.

UNIT – III **8h**

Fertilizers:

Different types of fertilizers. Manufacture of the following fertilizers: Urea, ammonium nitrate, calcium ammonium nitrate, ammonium phosphates; polyphosphate, superphosphate, compound and mixed fertilizers, potassium chloride, potassium sulphate.

UNIT – IV **8h**

Surface Coatings:

Objectives of coatings surfaces, preliminary treatment of surface, classification of surface coatings. Paints and pigments-formulation, composition and related properties. Oil paint, Vehicle, modified oils, Pigments, toners and lakes pigments, Fillers, Thinners, Enamels, emulsifying agents. Special paints (Heat retardant, Fire retardant, Eco-friendly paint, Plastic paint), Dyes, Wax polishing, Water and Oil paints, additives, Metallic coatings (electrolytic and electroless), metal spraying and anodizing.

UNIT – V **6h**

Alloys:

Classification of alloys, ferrous and non-ferrous alloys, Specific properties of elements in alloys. Manufacture of Steel (removal of silicon decarbonization, demanganization, desulphurization dephosphorisation) and surface treatment (argon treatment, heat treatment, nitriding, carburizing). Composition and properties of different types of steels.

Chemical explosives:
Origin of explosive properties in organic compounds, preparation and explosive properties of lead azide, PETN, cyclonite (RDX). Introduction to rocket propellants.

Reference Books:

1. E. Stocchi: *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK.
2. R. M. Felder, R. W. Rousseau: *Elementary Principles of Chemical Processes*, Wiley Publishers, New Delhi.
3. W. D. Kingery, H. K. Bowen, D. R. Uhlmann: *Introduction to Ceramics*, Wiley Publishers, New Delhi.
4. J. A. Kent: Riegel's *Handbook of Industrial Chemistry*, CBS Publishers, New Delhi.
5. P. C. Jain & M. Jain: *Engineering Chemistry*, Dhanpat Rai & Sons, Delhi.
6. R. Gopalan, D. Venkappayya, S. Nagarajan: *Engineering Chemistry*, Vikas Publications, New Delhi.
7. B. K. Sharma: *Engineering Chemistry*, Goel Publishing House, Meerut

SEMESTER-VI

PAPER – VIII-B-3 : ANALYSIS OF APPLIED INDUSTRIAL PRODUCTS

45 hrs (3 h / w)

UNIT-I

Analysis of soaps: moisture and volatile matter,cobined alkali,total fatty matter, free alkali, total fatty acid, sodium silicate and chlorides.

Analysis of paints :Vehicle and pigments ,Barium Sulphate ,total lead, lead chromate,iron pigments, zinc chromate

UNIT- II

Analysis of oils:saponification value,iodine value,acid value,ester value, bromine value, acetyl value.

Analysis of industrial solvents like benzene,acetone,methanol and acetic acid., Determination of methoxyl and N-methyl groups.,

UNIT-III

Analysis of fertilizers: urea,NPK fertilizer,super phosphate,

Analysis of DDT,BHC,endrin,endosulfone,malathion,parathion.,

Analysis of starch,sugars,cellulose and paper,

UNIT -IV

Gas analysis: carbon dioxide, carbon monoxide, oxygen, hydrogen, saturated hydro carbon, unsaturated hydrocarbons, nitrogen, octane number, cetane number

Analysis of Fuel gases like: water gas,producer gas,kerosene (oil) gas.

Ultimate analysis :carbon, hydrogen,nitrogen,oxygen,phosphorus and sulfur.,

UNIT - V

Analysis of Complex materials:

Analysis of cement- loss on ignition, insoluble residu, total silica, sesqui oxides, lime, magnesia, ferric oxide, sulphuric anhydrid.

Analysis of glasses - Determinaiton of silica, sulphuur, barium, arsinic, antimony, total R_2O_3, calcium, magnesium, total alkalies,aluminium,chloride,floride

SUGGESTED BOOKS:

1.F.J.Welcher-Standard methods of analysis,

2.A.I.Vogel-A text book of quantitative Inorganic analysis-ELBS,

3.H.H.Willard and H.Deal- Advanced quantitative analysis- Van Nostrand Co,

4.F.D.Snell & F.M.Biffen-Commercial methods of analysis-D.B.Taraporavala & sons,

5.J.J.Elving and I.M.Kolthoff- Chemical analysis - A series of monographs on analytical chemistry and its applications -- Inter Science- Vol I to VII.,

6.G.Z.Weig - Analytical methods for pesticides,plant growth regulators and food additives - Vols I to VII,

7.Aanalytical Agricultrual Chemistry by S.L.Chopra & J.S.Kanwar -- Kalyani Publishers

8.Mannual of soil, plant, water and fertilizer analysis, R.M.Upadhyay and N.L Sharma,Kalyani Publishers

I. LABORATORY COURSE – VIII

Practical Paper – VIII-B-1: (at the end of semester VI) 30 hrs (2 h / W)

1. Preparation of Aspirin
2. Preparation of Paracetamol
3. Preparation of Acetanilide
4. Preparation of Barbutiric Acid
5. Preparation of Phenyl Azo β-naphthol

II. LABORATORY COURSE – VIII

Practical Paper – VIII-B-2: (at the end of semester VI)

30 hrs (2 h / W)

1.Green procedure for organic qualitative analysis: Detection of N, S andhalogens

2.Acetylation of 1^0 amine by green method: Preparation of acetanilide

3. Rearrangement reaction in green conditions: Benzil-Benzilic acid rearrangement

4. Electrophilic aromatic substitution reaction: Nitration of phenol

5. Radical coupling reaction: Preparation of 1,1-bis -2-naphthol

6. Green oxidation reaction: Synthesis of adipic acid

7. Green procedure for Diels Alder reaction between furan and maleic anhydride

List of Reference Books

1. Green Chemistry Theory and Practice. P.T.Anatas and J.C. Warner
2. Green Chemistry V.K. Ahluwalia Narosa, New Delhi.
3. Real world cases in Green Chemistry M.C. Cann and M.E. Connelly
4. Green Chemistry: Introductory Text M.Lancaster: Royal Society of Chemistry (London)
5. Green Chemistry: Introductory Text, M.Lancaster
6. Principles and practice of heterogeneous catalysis, Thomas J.M.,Thomas M.J., John Wiley
7. Green Chemistry: Environmental friendly alternatives R S Sanghli and M.M Srivastava, Narosa Publications

VII-A-3 Practical:- Project Work / Intern Ship

Cluster Elective –III
ORGANIC
PAPER – VIII-C-1 : ORGANIC SPECTROSCOPIC TECHNIQUES
45 hrs (3 h / w)

UNIT-I **10h**

NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY

Nuclear spin, Principles of NMR-Classical and Quantum Mechanical methods, Magnetic moment and Spin angular momentum. Larmour Frequency. Instrumentation. Relaxation-spin-spin & spin lattice relaxation. Shielding constants, Chemical shifts, Shielding and Deshielding mechanism-Factors influencing Chemical shift. Spin-Spin interactions-AX, AX_2 and AB types. Vicinal, Geminal and Long range coupling- Factors influencing coupling constants.

UNIT – II **5h**

Spin decoupling, Spin tickling, Deuterium exchange, Chemical shift reagents and Nuclear overhauser effect. Applications in Medical diagnostics, Reaction kinetics and Mechanically induced dynamic nuclear polarization. FT NMR and its Advantages.

UNIT-III **10h**

UV & VISIBLE SPECTROSCOPY

Electronic spectra of diatomic molecules. The Born-oppenheimer approximation. Vibrational coarse structure: Bond association and Bond sequence. Intensity of Vibrational-electronic spectra: The Franck-Condon principle. Rotational fine structure of electronic vibration transitions. Electronic structure of diatomic molecules.

Types of transitions, Chromophores, Conjugated dienes, trienes and polyenes, unsaturated carbonyl compounds-Woodward – Fieser rules.

UNIT-IV **5h**

Electronic spectra of polyatomic molecules. Chemical analysis by Electronic Spectroscopy – Beer-Lambert's Law. Deviation from Beer's law. Quantitative determination of metal ions (Mn^{+2}, Fe^{+2}, NO_2^-, Pb^{+2}). Simultaneous determination of Chromium and Manganese in a mixture.

UNIT-V **15h**

Electron Spin Resonance Spectroscopy

Basic Principles, Theory of ESR, Comparison of NMR & ESR. Instrumentaion, Factors affecting the 'g' value, determination of 'g' value. Isotropic and Anisotropic constants. Splitting hyper fine splitting coupling constants. Line width, Zero field splitting and Kramer degeneracy. Crystal field splitting, Crystal field effects.

Applications:- Detection of free radicals; ESR spectra of (a) Methyl radical ($CH_3^{\cdot}$), (b) Benzene anion ($C_6H_6^{-}$) (c) Isoquinine (d) $[Cu(H_2O)_6]^{+2}$ (e) $[Fe(CN)_5NO]^{-3}$ (f)

REFERENCE BOOKS:

1. Electron Spin Resonance Elementary Theory and Practical Applications- John E. Wertz and James R. Bolton, Chapman and Hall, 1986.
2. Spectroscopic Identification of organic compounds – Silverstein, Basseler and Morril.
3. Organic Spectroscopy- William Kemp.
4. Fundamentals of Molecular Spectroscopy- C.N.Banwell and E.A. Mc cash 4th Edition, Tata Mc Graw Hill Publishing Co., Ltd. 1994.
5. Physical Methods in Inorganic Chemistry – R.S.Drago, Saunders Publications.
6. Application of MÖssbauer Spectroscopy – Green Mood.
7. NMR, NQR, EPR and MÖssbauer Spectroscopy in inorganic chemistry – R.V Parish, Ellis, Harwood.
8. Instrumental Methods of Chemical Analysis- H.Kaur, Pragathi Prakashan, 2003.
9. Instrumental Methods of Analysis, 7th Edition – Willard, Merrit, Dean, Settle, CBS Publications, 1986.
10. Molecular Structure and Spectroscopy – G. Aruldhas, Prentice Hall of India Pvt.Ltd, New Delhi, 2001.
11. MÖssbauer Spectroscopy – N.N. Green Wood and T.C. Gibb, Chapman, and Hall, Landon 1971.
12. Coordination Chemistry: Experimental Methods- K. Burger, London Butter Worths, 1973.
13. Analytical spectroscopy – Kamlesh Bansal, Campus books, 2008.
14. Structural Inorganic Chemistry MÖssbauer Spectroscopy – Bhide.
15. Principle of MÖssbauer Spectroscopy – T.C. Gibb, Chapman, and Hall, Landon 1976.

Cluster Elective –III

ORGANIC

PAPER – VIII-C-2 : ADVANCED ORGANIC REACTIONS

45 hrs (3 h / w)

UNIT – I

ORGANIC PHOTOCHEMISTRY

Organic photochemistry : Molecular orbitals, carbonyl chromophore–triplet states, Jablonski diagram, inter–system crossing. Energy transfer. Energies properties and reaction of singlet and triplet states of and transitions.

Photochemical reactions : (a) Photoreduction, mechanism, influence of temperature, solvent, nature of hydrogen donors, structure of substrates on the course of photo reduction,.

UNIT – II

ORGNAIC PHOTOCHEMISTRY

Norrisch cleavages, type I : Mechanism, acyclic cyclicdiones, influence of sensitizer, photo Fries rearrangement. Norrisch type II cleavage : Mechanism and stereochemistry, type II reactions of esters : 1: 2 diketones, photo decarboxylation., Di - π methane rearrangement, Photochemistry – of conjugated dienes, Decomposition of nitrites – Barton reaction.

UNIT – III

PROTECTING GROUPS AND ORGANIC REACTIONS

Principles of (1) Protection of alcohols – ether formation including silyl ethers – ester formation, (2) Protection of diols – acetal,ketal and carbonate formation, (3) Protection of carboxylic acids – ester formation, benzyl and t–butyl esters, (4) Protection of amines – acetylation, benzoylation, benzyloxy carbonyl, triphenyl methyl groups and fmoc, (5) Protection of carbonyl groups – acetal, ketal, 1,2–glycols and 1,2–dithioglycols formation.

UNIT – IV

Synthetic reactions : Mannich reaction – Mannich bases – Robinson annulations. The Shapiro reaction, Stork–enamine reaction. Use of dithioacetals – Umpolung, phase transfercatalysis – mechanisms and use of benzyl trialkyl ammonium halides. Witting reaction.

UNIT –V : NEW SYNTHETIC REACTIONS

Baylis–Hillman reaction, RCM olefm metathesis, Grubb catalyst, Mukayama aldol reaction, Mitsunobu reaction, McMurrey reaction, Julia–Lythgoe olefination, and Peterson's stereoselective olefination, Heck reaction, Suziki coupling, Stille coupling and Sonogishira coupling, Buchwald–Hartwig coupling. Ugi reaction, Click reaction.

Recommended Books

1. Molecular reactions and Photochemistry by Charles Dupey and O.L. Chapman.
2. Molecular Photochemistry by Turru.
3. Importance of antibonding orbitals by Jaffe and Orchin.
4. Text Book of Organic Chemistry by Cram,. Hammand and Henrickson.
5. Some modern methods of organic synthesis by W. Carruthers.
6. Guide Book to Organic Synthesis by R.K. Meckie, D.M. Smith and R.A. Atken.
7. Organic Synthesis by O.House.
8. Organic synthesis by Michael B. Smith.
9. Organic Chemistry Claydon and others 2005.
10. Name Reactions by Jie Jack Li
11. Reagents in Organic synthesis by B.P. Mundy and others.
12. Tandem Organic Reactions by Tse–Lok Ho.

Cluster Elective –III
ORGANIC
PAPER – VIII-C-3 : PHARMACEUTICAL AND MEDICINAL CHEMISTRY
45 hrs (3 h / w)

UNIT-I **8h**

Pharmaceutical chemistry Terminology: Pharmacy, Pharmacology, Pharmacophore, Pharmacodynamics, Pharmacokinetics (ADME, Receptors - brief treartment) Metabolites and Anti metabolites.

UNIT-II

Drugs: **8h**

Nomenclature: Chemical name, Generic name and trade names with examples Classification: Classification based on structures and therapeutic activity with one example each, Administration of drugs

UNIT-III

Synthesis and therapeutic activity of the compounds: **12h**

a. Chemotheraputic Drugs

l.Sulphadrugs(Sulphamethoxazole) 2.Antibiotics - β-Lactam Antibiotics, Macrolide Antibiotics, 3. Anti malarial Drugs(chloroquine)

b. Psycho therapeutic Drugs:

1.Anti pyretics(Paracetamol) 2.Hypnotics, 3.Tranquilizers(Diazepam) 4.Levodopa

UNIT-IV

Pharmacodynamic Drugs: **8h**

1. Antiasthma Drugs (Solbutamol) 3. Antianginals (Glycerol Trinitrate)
4. Diuretics(Frusemide)

UNIT-V

HIV-AIDS: **9h**

Immunity - CD-4cells, CD-8cells, Retro virus, Replication in human body, Investigation available, prevention of AIDS, Drugs available - examples with structures: PIS: Indivanir (crixivan), Nelfinavir(Viracept).

List of Reference Books:

1.Medicinal Chemistry by Dr. B.V.Ramana

2.Synthetic Drugs by O.D.Tyagi & M.Yadav

3.Medicinal Chemistry by Ashutoshkar

4.Medicinal Chemistry by P.Parimoo

5.Pharmacology& Pharmacotherapeutics R.S Satoshkar & S.D.Bhandenkar

6.Medicinal Chemistry by Kadametal P-I & P.II

7.European Pharmacopoeia

MODEL PAPER

THREE YEAR B.Sc, DEGREE EXAMINATION
FIRST YEAR EXAMINATIONS
SEMESTER I
Paper –I: INORGANIC & ORGANIC CHEMISTRY - I

Time: 3 hours **Maximum Marks: 75**

PART- A

Answer any **FIVE** of the following questions
Each carries **FIVE** marks **5x5 = 25 Marks**

1. Define the electron deficient molecules and draw the structure of Borazole and Diborane.
2. Classify the Oxides based on the oxygen content with one example to each.
3. How the following are synthesized from Organo Lithium Compounds.

a) Acetic acid b) Ethyl alcohol

4. Define the Carbonium ion and explain the stability with no bond resonance.
5. Define the Markonikov's rule and explain the addition of 1- Propene with HBr.
6. Explain the acidity of the Acetylinic hydrogen with example.
7. Draw the conformational structures of Cyclohexane.
8. Define aromaticity and apply the Huckel's rule to benzene and naphthalene.

PART- B

Answer **ALL** the questions
Each carries **TEN** marks **5x10 = 50 Marks**

9. (a) Write note on Preparation, Structure and Properties of Silicones.

(OR)

(b) Explain the Preparation and Oxidation- Reduction reactions of Hydroxylamine.

10.(a) Give an account on different types of interhalogen compounds.

(OR)

(b) How the following are prepared from the Methyl Magnesium bromide and methyl lithium
1) Formaldehyde 2) Acetaldehyde3) Acetone 4) t- butyl alcohol

11. (a) Describe different types of Organic Reactions with one example to each.

(OR)

(b) Write notes on the following
1) Mesomeric effect 2) Hyper conjugation 3) Inductive effect

12.(a) Explain the addition of these reagents to alkenes with mechanism.
1) H_2O 2) HOX 3) H_2SO_4

(OR)

(b)Explain Baeyer's bond angle strain theory.

13. (a) Describe the Molecular Orbital structure of Benzene.

(OR)

(b) Explain the orientation in benzene with respect to alkyl and nitro groups.

Structure of Computer Science/Information Technology (IT) Syllabus

Semester	Paper	Subject	Hrs.	Credits	IA	ES	Total
FIRST YEAR							
SEMESTER I	I	Computer Fundamentals and Photoshop	4	3	25	75	100
		Photo Shop Lab	2	2	0	50	50
SEMESTER II	II	Programming in C	4	3	25	75	100
		Programming in C Lab	2	2	0	50	50
SECOND YEAR							
SEMESTER III	III	Object Oriented Programming Using Java	4	3	25	75	100
		Object Oriented Programming Using Java Lab	2	2	0	50	50
SEMESTER IV	IV	Data Structures	4	3	25	75	100
		Data Structures using Java Lab	2	2	0	50	50
THIRD YEAR							
SEMESTER V	V	DBMS	3	3	25	75	100
		DBMS Lab	2	2	0	50	50
	VI	Software Engineering	3	3	25	75	100
		Software Engineering Lab	2	2	0	50	50
SEMESTER VI	VII (A/B/ C)	**Elective-I** A. Operating Systems B. Computer Networks C. Web Technologies	3	3	25	75	100
		Lab for Elective –I	2	2	0	50	50
	VIII Cluster-A-1,2,3 or Cluster-B-1,2,3	**Elective-II(cluster A)**					
		1.Foundations of Data Science 2.Big Data Technology 3.Computing for Data Analytics	3	3	25	75	100
		Project Work	2	2	20	30	50
		Elective-II(cluster B)					
		1. Distributed Systems 2. Cloud Computing 3. Grid computing	3	3	25	75	100
		Project Work	2	2	20	30	50

Structure of Computer Science/Information Technology (IT) Syllabus
I YEAR 1 SEMESTER

Computer Fundamentals & Photoshop

Course Outcome
To explore basic knowledge on computers and Photoshop's beauty from the practical to the painterly artistic and to understand how Photoshop will help you create your own successful images

UNIT-I:
Introduction to computers, characteristics and limitations of computer, Block diagram of computer, types of computers, uses of computers, computer generations. Number systems :binary, hexa and octal numbering system

UNIT-II:
Input and output devices: Keyboard and mouse, inputting data in other ways, Types of Software: system software, Application software, commercial, open source, domain and free ware software, Memories: primary, secondary and cache memory. Windows basics: desktop, start menu, icons.

Unit –III
Introduction to Adobe photoshop, Getting started with photoshop, creating and saving a document in photoshop, page layout and back ground, photoshop program window-title bar,menu bar,option bar,image window,image title bar,status bar,ruler,paletts,tool box,screen modes,saving files,reverting files,closing files.

Unit –IV
Images: working with images, image size and resolution ,image editing,colour modes and adjustments , Zooming & Panning an Image,, , Rulers, Guides & Grids- Cropping & Straightening an Image,image backgrounds ,making selections.
Working with tool box: working with pen tool, save and load selection-working with erasers-working with text and brushes-Colour manipulations: colour modes- Levels – Curves - Seeing Colour accurately - Patch tool – Cropping-Reading your palettes - Dust and scratches- Advanced Retouching- smoothing skin

Unit-V
Layers: Working with layers- layer styles- opacity-adjustment layers
Filters: The filter menu, Working with filters- Editing your photo shoot, presentation –how to create adds ,artstic filter,blur filter,brush store filter,distort filters,noice filters,pixelate filters,light effects,difference clouds,sharpen filters,printing.

Structure of Computer Science/Information Technology (IT) Syllabus

Reference Books:

1. Fundamentals of Computers by Reema Thareja from Oxford University Press
2. Adobe Photoshop Class Room in a Book by Adobe Creative Team.
3. Photoshop: Beginner's Guide for Photoshop - Digital Photography, Photo Editing, Color Grading & Graphic...19 February 2016 by David Maxwell

Student Activity:

1. **Design a poster for technical paper presentation.**
2. **Create a digital scrap book.**

Photo Shop Lab

1. Create your Visiting card
2. Create Cover page for any text book
3. Create a Paper add for advertising of any commercial agency
4. Design a Passport photo
5. Create a Pamphlet for any program to be conducted by an organixation
6. Create Broacher for you college
7. Create Titles for any forthcoming film
8. Custom shapes creation
9. Create a Web template for your college
10. Convert color photo to black and white photo
11. Enhance and reduce the given Image size
12. Background changes
13. Design Box package cover
14. Design Texture and patterns
15. Filter effects & Eraser effects

Structure of Computer Science/Information Technology (IT) Syllabus
I YEAR II SEMESTER

Paper-II : PROGRAMMING IN C

Course Objectives

1. Learn how to solve common types of computing problems.
2. Learn data types and control structures of C
3. Learn to map problems to programming features of C.
4. Learn to write good portable C programs.

Course Outcomes

Upon successful completion of the course, a student will be able to:

1. Appreciate and understand the working of a digital computer
2. Analyze a given problem and develop an algorithm to solve the problem
3. Improve upon a solution to a problem
4. Use the 'C' language constructs in the right way
5. Design, develop and test programs written in 'C'

UNIT I

Introduction to Algorithms and Programming Languages: Algorithm – Key features of Algorithms – Some more Algorithms – Flow Charts – Pseudo code – Programming Languages – Generation of Programming Languages – Structured Programming Language- Design and Implementation of Correct, Efficient and Maintainable Programs.

Introduction to C: Introduction – Structure of C Program – Writing the first C Program – File used in C Program – Compiling and Executing C Programs – Using Comments – Keywords – Identifiers – Basic Data Types in C – Variables – Constants – I/O Statements in C- Operators in C- Programming Examples – Type Conversion and Type Casting

UNIT II

Decision Control and Looping Statements: Introduction to Decision Control Statements – Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – Goto Statement

Functions: Introduction – using functions – Function declaration/ prototype – Function definition – function call – return statement – Passing parameters – Scope of variables – Storage Classes – Recursive functions – Type of recursion – Towers of Hanoi – Recursion vs Iteration

UNIT III

Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array – Calculating the length of the Array – Operations on Array – one dimensional array for inter-function communication – Two dimensional Arrays –Operations on Two Dimensional Arrays - Two Dimensional Arrays for inter-function communication – Multidimensional Arrays – Sparse Matrices

Strings: Introduction –Suppressive Input – String Taxonomy – String Operations – Miscellaneous String and Character functions

UNIT IV

Pointers: Understanding Computer Memory – Introduction to Pointers – declaring Pointer Variables – Pointer Expressions and Pointer Arithmetic – Null Pointers – Generic Pointers - Passing Arguments to Functions using Pointer – Pointer and Arrays – Passing Array to Function – Difference between Array Name and Pointer – Pointers and Strings – Array of pointers – Pointer and 2D Arrays – Pointer and 3D Arrays – Function Pointers – Array 0f Function Pointer – Pointers to Pointers – Memory Allocation in C Programs – Memory Usage – Dynamic Memory Allocation – Drawbacks of Pointers

Structure, Union, and Enumerated Data Types: Introduction – Nested Structures – Arrays of Structures – Structures and Functions – Self referential Structures – Union – Arrays of Unions Variables – Unions inside Structures – Enumerated Data Types

UNIT V

Files: Introduction to Files – Using Files in C – Reading Data from Files – Writing Data from Files – Detecting the End-of-file – Error Handling during File Operations – Accepting Command Line Arguments – Functions for Selecting a Record Randomly - Remove() – Renaming a File – Creating a Temporary File

REFERENCE BOOKS

1. Introduction to C programming by REEMA THAREJA from OXFORD UNIVERSITY PRESS
2. E Balagurusamy: ―COMPUTING FUNDAMENTALS & C PROGRAMMING – Tata McGraw-Hill, Second Reprint 2008, ISBN 978-0-07-066909-3.
3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publ, 2002.
4. Henry Mullish & Huubert L.Cooper: The Spirit of C An Introduction to modern Programming, Jaico Pub. House,1996.

Student Activity:

1. **Write a program for preparing the attendance particulars of students of your college at the end of semester according to following guidelines**
   a. **Above 75 % promoted**
   b. **Above 65% condoned**
   c. **Below 65% detained**
2. **Write a program for creating timetable or your class taking work load of faculty into consideration.**

Structure of Computer Science/Information Technology (IT) Syllabus
PROGRAMMING IN C LAB

1. Find out the given number is perfect number or not using c program.
2. Write a C program to check whether the given number is Armstrong or not.
3. Write a C program to find the sum of individual digits of a positive integer.
4. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to print the Fibonacci series
5. Write a C program to generate the first n terms of the Fibonacci sequence.
6. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
7. Write a C program to find both the largest and smallest number in a list of integers.
8. Write a C program that uses functions to perform the following:
    a. Addition of Two Matrices
    b. Multiplication of Two Matrices
9. Write a program to perform various string operations
10. Write C program that implements searching of given item in a given list
11. Write a C program to sort a given list of integers in ascending order

Structure of Computer Science/Information Technology (IT) Syllabus
II YEAR III SEMESTER

Paper-III : OBJECT ORIENTED PROGRAMMING USING JAVA

Course Objectives

As the business environment becomes more sophisticated, the software development (software engineering is about managing complexity) is becoming increasingly complex. As of the best programming paradigm which helps to eliminate complexity of large projects, Object Oriented Programming (OOP) has become the predominant technique for writing software in the past decade. Many other important software development techniques are based upon the fundamental ideas captured by object-oriented programming.

Course Outcomes

At the end of this course student will:

1. Understand the concept and underlying principles of Object-Oriented Programming
2. Understand how object-oriented concepts are incorporated into the Java programming language
3. Develop problem-solving and programming skills using OOP concept
4. Understand the benefits of a well structured program
5. Develop the ability to solve real-world problems through software development in high-level programming language like Java
6. Develop efficient Java applets and applications using OOP concept
7. Become familiar with the fundamentals and acquire programming skills in the Java language.

UNIT-1

FUNDAMENTALS OF OBJECT – ORIENTED PROGRAMMING : Introduction, Object Oriented paradigm, Basic Concepts of OOP, Benefits of OOP, Applications of OOP, Java features: **OVERVIEW OF JAVA LANGUAGE**: Introduction, Simple Java program structure, Java tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command line arguments. **CONSTANTS, VARIABLES & DATA TYPES:** Introduction, Constants, Variables, Data Types, Declaration of Variables, Giving Value to Variables, Scope of variables, Symbolic Constants, Type casting, Getting Value of Variables, Standard Default values; **OPERATORS & EXPRESSIONS**.

UNIT-II

DECISION MAKING & BRANCHING: Introduction, Decision making with if statement, Simple if statement, if. Else statement, Nesting of if. else statements, the else if ladder, the switch statement, the conditional operator. **LOOPING**: Introduction, The While statement, the do-while statement, the for statement, Jumps in loops.

Structure of Computer Science/Information Technology (IT) Syllabus

CLASSES, OBJECTS & METHODS: Introduction, Defining a class, Adding variables, Adding methods, Creating objects, Accessing class members, Constructors, Method overloading, Static members, Nesting of methods;

UNIT-III

INHERITANCE: Extending a class, Overloading methods, Final variables and methods, Final classes, Abstract methods and classes;

ARRAYS, STRINGS AND VECTORS: Arrays, One-dimensional arrays, Creating an array, Two – dimensional arrays, Strings, Vectors, Wrapper classes;

INTERFACES: MULTIPLE INHERITANCE: Introduction, Defining interfaces, Extending interfaces, Implementing interfaces, Assessing interface variables;

UNIT-IV

MULTITHREADED PROGRAMMING: Introduction, Creating Threads, Extending the Threads, Stopping and Blocking a Thread, Lifecycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the 'Runnable' Interface.

MANAGING ERRORS AND EXCEPTIONS: Types of errors : Compile-time errors, Run-time errors, Exceptions, Exception handling, Multiple Catch Statements, Using finally statement,

UNIT-V

APPLET PROGRAMMING: local and remote applets, Applets and Applications, Building Applet code, Applet Life cycle: Initialization state, Running state, Idle or stopped state, Dead state, Display state.

PACKAGES: Introduction, Java API Packages, Using System Packages, Naming conventions, Creating Packages, Accessing a Package, using a Package.

MANAGING INPUT/OUTPUT FILES IN JAVA: Introduction, Concept of Streams, Stream classes, Byte Stream Classes, Input Stream Classes, Output Stream Classes, Character Stream classes: Reader stream classes, Writer Stream classes, Using Streams, Reading and writing files.

Reference Books:

1. E.Balaguruswamy, Programming with JAVA, A primer, 3e, TATA McGraw-Hill Company.

2. John R. Hubbard, Programming with Java, Second Edition, Schaum's outline Series, TATA McGraw-Hill Company.
3. Deitel &Deitel. Java TM: How to Program, PHI (2007)
4. Java Programming: From Problem Analysis to Program Design- D.S Mallik
5. Object Oriented Programming Through Java by P. Radha Krishna, Universities Press (2008)

Student Activity:

1. Create a front end using JAVA for the student database created

2. Learn the difference between ODBC and JDBC

OBJECT ORIENTED PROGRAMMING USING JAVA LAB

1. Write a program to perform various String Operations
2. Write a program on class and object in java
3. Write a program to illustrate Function Overloading & Function Overriding methods in Java
4. Write a program to illustrate the implementation of abstract class
5. Write a program to implement Exception handling
6. Write a program to create packages in Java
7. Write a program on interface in java
8. Write a program to Create Multiple Threads in Java
9. Write a program to Write Applets to draw the various polygons
10. Write a program which illustrates the implementation of multiple Inheritance using interfaces in Java
11. Write a program to assign priorities to threads in java

Structure of Computer Science/Information Technology (IT) Syllabus
II YEAR IV SEMESTER

Paper-IV : DATA STRUCTURES

Course Objectives

To introduce the fundamental concept of data structures and to emphasize the importance of data structures in developing and implementing efficient algorithms..

Course Outcomes

After completing this course satisfactorily, a student will be able to:

1. Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms
2. Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs.
3. Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs
4. Demonstrate different methods for traversing trees
5. Compare alternative implementations of data structures with respect to performance
6. Compare and contrast the benefits of dynamic and static data structures implementations
7. Describe the concept of recursion, give examples of its use, describe how it can be implemented using a stack .
8. Discuss the computational efficiency of the principal algorithms for sorting, searching, and hashing.

UNIT I

Concept of Abstract Data Types (ADTs)- Data Types, Data Structures, Storage Structures, and File Structures, Primitive and Non-primitive Data Structures, Linear and Non-linear Data Structures.

Linear Lists – ADT, Array and Linked representations, Pointers.

Arrays – ADT, Mappings, Representations, Sparse Matrices, Sets – ADT, Operations

Linked Lists: Single Linked List, Double Linked List, Circular Linked List , applications

UNIT II

Stacks: Definition, ADT, Array and Linked representations, Implementations and Applications

Queues: Definition, ADT, Array and Linked representations, Circular Queues, Dequeues, Priority Queues, Implementations and Applications.

UNIT III

Trees: Binary Tree, Definition, Properties, ADT, Array and Linked representations, Implementations and Applications. Binary Search Trees (BST) – Definition, ADT, Operations and Implementations, BST Applications. Threaded Binary Trees, Heap trees.

UNIT IV

Graphs – Graph and its Representation, Graph Traversals, Connected Components, Basic Searching Techniques, Minimal Spanning Trees

UNIT- V

Sorting and Searching: Selection, Insertion, Bubble, Merge, Quick, Heap sort, Sequential and Binary Searching.

REFERENCE BOOKS

1. D S Malik, Data Structures Using C++, Thomson, India Edition 2006.
2. Sahni S, Data Structures, Algorithms and Applications in C++, McGraw-Hill, 2002.
3. SamantaD, Classic Data Structures, Prentice-Hall of India, 2001.
4. Heilman G I,. Data Structures and Algorithms with Object-Oriented Programming, Tata McGraw-l lill. 2002. (Chapters I and 14).
5. Tremblay P, and Sorenson P G, Introduction to Data Structures with Applications, Tata McGraw-Hill,

Student activity:

1. **Create a visible stack using C-graphics**
2. **Create a visible Queue using C-graphics**

DATA STRUCTURES USING JAVA LAB

1. Write a Program to implement the Linked List operations
2. Write a Program to implement the Stack operations using an array.
3. Write Programs to implement the Queue operations using an array.
4. Write Programs to implement the Stack operations using a singly linked list.
5. Write Programs to implement the Queue operations using a singly linked list.
6. Write a program for arithmetic expression evaluation
7. Write a program to implement Double Ended Queue using a doubly linked list.
8. Write a program to search an item in a given list using Linear Search and Binary Search
9. Write a program for Quick Sort
10. Write a program for Merge Sort
11. Write a program on Binary Search Tree operations(insertion, deletion and traversals)
12. Write a program for Graph traversals

Structure of Computer Science/Information Technology (IT) Syllabus
III YEAR V SEMESTER

Paper-V: Data Base Management System

Course Objective:

Design & develop database for large volumes & varieties of data with optimized data processing techniques.

Course Outcomes

On completing the subject, students will be able to:
1. Design and model of data in database.
2. Store, Retrieve data in database.

UNIT I

Overview of Database Management System: Introduction, file-based system, Drawbacks of file-Based System ,Data and information, Database, Database management System, Objectives of DBMS, Evaluation of Database management System, Classification of Database Management System, DBMS Approach, advantages of DBMS, Anis/spark Data Model, data models, Components and Interfaces of Database Management System. Database Architecture, Situations where DBMS is not Necessary, DBMS Vendors and Their Products.

UNIT II

Entity-Relationship Model: Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification, reducing ER diagram to tables, enhanced entity-relationship model (EER model), generalization and specialization, **IS A** relationship and attribute inheritance, multiple inheritance, constraints on specialization and generalization, aggregation and composition, entity clusters, connection types, advantages of ER modeling.

UNIT III

Relational Model: Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra, relational calculus, tuple relational calculus,domain relational Calculus (DRC). QBE

UNIT IV

Structured Query Language: Introduction, History of SQL Standard, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate functions, Data Manipulation Language, Table Modification Commands, Table Truncation, Imposition of Constraints, Join Operation, Set Operation,
View, Sub Query, Embedded SQL,

UNIT V

PL/SQL: Introduction, Shortcoming in SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control, Cursors, Steps to create a Cursors, Procedure, Function, Packages, Exceptions Handling, Database Triggers, Types of Triggers.

Reference Books

1. "Database System Concepts" by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010, 9780073523323
2. "Database Management Systems" by Raghu Ramakrishnan, McGrawhill, 2002,
3. Fundamentals of Relational Database Management Systems by S. Sumathi, S. Esakkirajan, Springer Publications
4. "An Introduction to Database Systems" by Bipin C Desai
5. "Principles of Database Systems" by J. D. Ullman
6. "Fundamentals of Database Systems" by R. Elmasri and S. Navathe

Student Activity:
1. Create your college database for placement purpose.
2. Create faculty database of your college with their academic performance scores

III YEAR V SEMESTER

DATABASE MANAGEMENT SYSTEMS LAB

1. Draw ER diagrams for train services in a railway station
2. Draw ER diagram for hospital administration
3. Creation of college database and establish relationships between tables
4. Write a view to extract details from two or more tables
5. Write a stored procedure to process students results
6. Write a program to demonstrate a function
7. Write a program to demonstrate blocks, cursors & database triggers.
8. Write a program to demonstrate Joins
9. Write a program d
10. Write a program to demonstrate of Aggregate functions
11. Creation of Reports based on different queries
12. Usage of file locking table locking, facilities in applications.

III YEAR V SEMESTER
Paper VI : Software Engineering

Course Objectives

The Objective of the course is to assist the student in understanding the basic theory of software engineering, and to apply these basic theoretical principles to a group software development project.

Course outcomes

1. Ability to gather and specify requirements of the software projects.
2. Ability to analyze software requirements with existing tools
3. Able to differentiate different testing methodologies
4. Able to understand and apply the basic project management practices in real life projects
5. Ability to work in a team as well as independently on software projects

UNIT I

INTRODUCTION: Software Engineering Process paradigms - Project management - Process and Project Metrics – software estimation - Empirical estimation models - Planning - Risk analysis - Software project scheduling.

UNIT II

REQUIREMENTS ANALYSIS : Requirement Engineering Processes – Feasibility Study – Problem of Requirements – Software Requirement Analysis – Analysis Concepts and Principles – Analysis Process – Analysis Model

UNIT III

SOFTWARE DESIGN: Software design - Abstraction - Modularity - Software Architecture - Effective modular design - Cohesion and Coupling - Architectural design and Procedural design - Data flow oriented design.

UNIT IV

USER INTERFACE DESIGN AND REAL TIME SYSTEMS : User interface design - Human factors - Human computer interaction - Human - Computer Interface design - Interface design - Interface standards.

UNIT V

SOFTWARE QUALITY AND TESTING : Software Quality Assurance - Quality metrics - Software Reliability - Software testing - Path testing – Control Structures testing - Black Box testing - Integration, Validation and system testing - Reverse Engineering and Re-engineering.

CASE tools –projects management, tools - analysis and design tools – programming tools - integration and testing tool - Case studies.

REFERENCE BOOKS:

1. Roger Pressman S., "Software Engineering: A Practitioner's Approach", 7th Edition, McGraw Hill, 2010.
2. Software Engineering Principles and Practice by Deepak Jain Oxford University Press
2. Sommerville, "Software Engineering", Eighth Edition, Pearson Education, 2007
3. Pfleeger, "Software Engineering: Theory & Practice", 3rd Edition, Pearson Education, 2009
4. Carlo Ghazi, Mehdi Jazayari, Dino Mandrioli, "Fundamentals of Software Engineering", Pearson Education, 2003

Student Activity:

1. **Visit any financial organization nearby and prepare requirement analysis report**
2. **Visit any industrial organization and prepare risk chart.**

III YEAR V SEMESTER

Software Engineering Lab

1. Studying various phases of Water-Fall Model.
2. Prepare SRS for Banking or On line book store domain problem
3. Using COCOMO model estimate effort for Banking or on line book store domain problem.
4. Calculate effort using FP oriented estimation model
5. Analyze the Risk related to the project and prepare RMMM plan.
6. Develop Time-line chart and project table using PERT or CPM project scheduling methods.
7. Draw E-R diagram, DFD, CFD and STD for the project.
8. Design of the test cases.
9. Prepare FTR. Version control and change control for software configuration item

III YEAR VI SEMESTER

Paper-VII: Elective-A

Operating Systems

Course Objectives

1. To understand the services provided by and the design of an operating system.
2. To understand the structure and organization of the file system.
3. To understand what a process is and how processes are synchronized and scheduled.
4. To understand different approaches to memory management.
5. Students should be able to use system calls for managing processes, memory and the file system.

Course Outcomes

1. Analyze the concepts of processes in operating system and illustration of the scheduling of processor for a given problem instance.
2. Identify the dead lock situation and provide appropriate solution so that protection and security of the operating system is also maintained.
3. Analyze memory management techniques, concepts of virtual memory and disk scheduling.
4. Understand the implementation of file systems and directories along with the interfacing of IO devices with the operating system.

UNIT - I

Operating System Introduction: Operating Systems Objectives and functions, Computer System Architecture, OS Structure, OS Operations, Evolution of Operating Systems - Simple Batch, Multi programmed, time shared, Parallel, Distributed Systems, Real-Time Systems, Operating System services.

UNIT - II

Process and CPU Scheduling - Process concepts - The Process, Process State, Process Control Block, Threads, Process Scheduling - Scheduling Queues, Schedulers, Context Switch, Preemptive Scheduling, Dispatcher, Scheduling Criteria, Scheduling algorithms, Case studies: Linux, Windows.

Process Coordination - Process Synchronization, The Critical section Problem, Synchronization Hardware, Semaphores, and Classic Problems of Synchronization, Monitors, Case Studies: Linux, Windows.

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UNIT - III

Memory Management and Virtual Memory - Logical & physical Address Space, Swapping, Contiguous Allocation, Paging, Structure of Page Table. Segmentation, Segmentation with Paging, Virtual Memory, Demand Paging, Performance of Demanding Paging, Page Replacement Page Replacement Algorithms, Allocation of Frames.

UNIT - IV

File System Interface - The Concept of a File, Access methods, Directory Structure, File System Mounting, File Sharing, Protection, File System Structure,

Mass Storage Structure - Overview of Mass Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling.

UNIT - V

Deadlocks - System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock.

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REFERENCES BOOKS:

1. Operating System Principles, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8th Edition, Wiley Student Edition.
2. Principles of Operating Systems by Naresh Chauhan, OXFORD University Press
3. Operating systems - Internals and Design Principles, W. Stallings, 6th Edition, Pearson.
4. Modern Operating Systems, Andrew S Tanenbaum 3rd Edition PHI.
5. Operating Systems A concept - based Approach, 2nd Edition, D. M. Dhamdhere, TMH.
6. Principles of Operating Systems, B. L. Stuart, Cengage learning, India Edition.
7. Operating Systems, A. S. Godbole, 2nd Edition, TMH

Student Activity:

1. Load any new operating system into your computer.

2. Partition the memory in your system

3. Create a semaphore for process synchronization

III YEAR VI SEMESTER

Paper-VII: Elective-B

COMPUTER NETWORKS

Course Objectives

1. To provide an introduction to the fundamental concepts on data communication and the design of computer networks.
2. To get familiarized with the basic protocols of computer networks.

Course Outcomes

After this course, the student will be able to
1. Identify the different components in a Communication System and their respective roles.
2. Describe the technical issues related to the local Area Networks
3. Identify the common technologies available in establishing LAN infrastructure.

UNIT – I

Introduction: Uses of Computer Networks, Network Hardware, Network Software, Reference Models, Example Networks.

The Physical Layer: The Theoretical Basis for Data Communication, Guided Transmission Media, Wireless transmission, the public switched telephone network

UNIT – II

The Data Link Layer: Data Link Layer Design Issues, Error Detection and Correction, Sliding Window Protocols.

The Medium Access Control Sub-layer: The channel allocation problem, **Multiple Access Protocols**, **Ethernet,** Data Link Layer Switching.

UNIT – III

The Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion control algorithms, Quality of Service.

Internet Working, The Network Layer in the Internet

UNIT – IV:

The Transport Layer: The Transport Service, Elements of Transport Protocols, Congestion Control Algorithms, The Internet Transport Protocols, The Internet Transport Protocols: TCP, Delay Tolerant Networks.

UNIT – V:

The Application Layer: DNS – The Domain Name System, Electronic Mail, The World Wide Web, Real Time Audio & Video, Content Delivery & Peer-to-Peer.

Reference Books:

1. Andrew S. Tanenbaum, "Computer Networks", Fifth Edition, Pearson Education.
2. Bhushan Trivedi, Computer Networks , Oxford University Press
3. James F.Kurose, Keith W.Ross, "Computer Networking", Third Edition, Pearson Education
4. Behrouz A Forouzan, "Data Communications and Networking", Fourth Edition, TMH (2007).
5. Kurose & Ross, "***COMPUTER NETWORKS***" – A Top-down approach featuring the Internet", Pearson Education – Alberto Leon – Garciak.

Student Activity:

1. **Study the functioning of network devices available in your organization .**
2. **Prepare a pictorial chart of LAN connections in your organization**

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III YEAR VI SEMESTER
Paper-VII : Elective-C
Web Technologies

Course Objective

- To provide knowledge on web architecture, web services, client side and server side scripting technologies to focus on the development of web-based information systems and web services.
- To provide skills to design interactive and dynamic web sites.

Course Outcome

1. To understand the web architecture and web services.
2. To practice latest web technologies and tools by conducting experiments.
3. To design interactive web pages using HTML and Style sheets.
4. To study the framework and building blocks of .NET Integrated Development Environment.
5. To provide solutions by identifying and formulating IT related problems.

Unit I

Introduction to XHTML , Cascading Style Sheets (CSS) ,JavaScript: Introduction to Scripting ,Control Statements, Functions ,Arrays ,Objects

Unit II

Dynamic HTML: Object Model and Collections , Dynamic HTML: Event Model

Unit III

XML Representing Web Data, XSL Related Technologies and Case Study

Unit IV

Building Ajax-Enabled Web Applications, Web Servers (IIS and Apache)

Ruby and Ruby on Rails

Unit V

Java Server Faces Web Applications, Web Services

References:

1. Harvey M. Deitel and Paul J. Deitel, **"Internet & World Wide Web How to Program", 4/e,** Pearson Education.

2. Uttam Kumar Roy, Web Technologies from Oxford University Press

3. Jason Cranford Teague "**Visual Quick Start Guide CSS, DHTML & AJAX", 4e**, "Pearson Education.
4. Tom Nerino Doli smith **"JavaScript & AJAX for the web"** Pearson Education 2007.
5. Joshua Elchorn **"Understanding AJAX"** Prentice Hall 2006.
6. Hal Fulton **"The Ruby Way", 2e,** Pearson Education 2007.
7. David A. Black **"Ruby for rails"** Dreamtech Press 2006.
8. Bill Dudney, Johathan lehr, Bill Willies, Lery Mattingly **"Mastering Java Server Faces"** Wiely India 2006.

Student Activities:

1. **Prepare a web site for your college**
2. **Prepare your personal website**

III YEAR VI SEMESTER
(Cluster 1) Paper-VIII: Elective –A-1
Foundations of Data Science

Course Objectives

Modern scientific, engineering, and business applications are increasingly dependent on data, existing traditional data analysis technologies were not designed for the complexity of the modern world. Data Science has emerged as a new, exciting, and fast-paced discipline that explores novel statistical, algorithmic, and implementation challenges that emerge in processing, storing, and extracting knowledge from Big Data**.**

Course Outcomes

1. Able to apply fundamental algorithmic ideas to process data.
2. Learn to apply hypotheses and data into actionable predictions.
3. Document and transfer the results and effectively communicate the findings using visualization techniques**.**

UNIT I

INTRODUCTION TO DATA SCIENCE : Data science process – roles, stages in data science project – working with data from files – working with relational databases – exploring data – managing data – cleaning and sampling for modeling and validation – introduction to NoSQL.

UNIT II

MODELING METHODS : Choosing and evaluating models – mapping problems to machine learning, evaluating clustering models, validating models – cluster analysis – K-means algorithm, Naïve Bayes – Memorization Methods – Linear and logistic regression – unsupervised methods.

UNIT III

INTRODUCTION TO R Language: Reading and getting data into R – ordered and unordered factors – arrays and matrices – lists and data frames – reading data from files – probability distributions – statistical models in R - manipulating objects – data distribution.

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UNIT IV

MAP REDUCE: Introduction – distributed file system – algorithms using map reduce, Matrix-Vector Multiplication by Map Reduce – Hadoop - Understanding the Map Reduce architecture - Writing Hadoop Map Reduce Programs - Loading data into HDFS - Executing the Map phase - Shuffling and sorting - Reducing phase execution.

UNIT V

DELIVERING RESULTS : Documentation and deployment – producing effective presentations– Introduction to graphical analysis – plot() function – displaying multivariate data – matrix plots – multiple plots in one window - exporting graph - using graphics parameters. Case studies.

Reference Books

1.Nina Zumel, John Mount, "Practical Data Science with R", Manning Publications, 2014.
2.Jure Leskovec, Anand Rajaraman, Jeffrey D.Ullman, "Mining of Massive Datasets", Cambridge University Press, 2014.
3.Mark Gardener, "Beginning R - The Statistical Programming Language", John Wiley & Sons, Inc., 2012.
4.W. N. Venables, D. M. Smith and the R Core Team, "An Introduction to R", 2013.
5.Tony Ojeda, Sean Patrick Murphy, Benjamin Bengfort, Abhijit Dasgupta, "Practical Data Science Cookbook", Packt Publishing Ltd., 2014.
6.Nathan Yau, "Visualize This: The FlowingData Guide to Design, Visualization, and Statistics", Wiley, 2011.
7.Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, "Professional Hadoop Solutions", Wiley, ISBN: 9788126551071, 2015.

Student Activity:

1. **Collect data from any real time system and create clusters using any clustering algorithm**
2. **Read the student exam data in R perform statistical analysis on data and print results.**

III YEAR VI SEMESTER
(Cluster 1) Paper-VIII : Elective –A-2

BIG DATA TECHNOLOGY

Course Objective

The Objective of this course is to provide practical foundation level training that enables immediate and effective participation in big data projects. The course provides grounding in basic and advanced methods to big data technology and tools, including MapReduce and Hadoop and its ecosystem.

Course Outcome

1. Learn tips and tricks for Big Data use cases and solutions.

2. Learn to build and maintain reliable, scalable, distributed systems with Apache Hadoop.

3. Able to apply Hadoop ecosystem components.

UNIT I

INTRODUCTION TO BIG DATA: Introduction – distributed file system – Big Data and its importance, Four V's in bigdata, Drivers for Big data, Big data analytics, Big data applications. Algorithms using map reduce, Matrix-Vector Multiplication by Map Reduce.

UNIT II

INTRODUCTION HADOOP : Big Data – Apache Hadoop & Hadoop EcoSystem – Moving Data in and out of Hadoop – Understanding inputs and outputs of MapReduce - Data Serialization.

UNIT- III

HADOOP ARCHITECTURE: Hadoop Architecture, Hadoop Storage: HDFS, Common Hadoop Shell commands , Anatomy of File Write and Read., NameNode, Secondary NameNode, and DataNode, Hadoop MapReduce paradigm, Map and Reduce tasks, Job, Tasktrackers - Cluster Setup – SSH & Hadoop Configuration – HDFS Administering – Monitoring & Maintenance.

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UNIT-IV

HADOOP ECOSYSTEM AND YARN : Hadoop ecosystem components - Schedulers - Fair and Capacity, Hadoop 2.0 New Features- NameNode High Availability, HDFS Federation, MRv2, YARN, Running MRv1 in YARN.

UNIT-V

HIVE AND HIVEQL, HBASE:-Hive Architecture and Installation, Comparison with Traditional Database, HiveQL - Querying Data - Sorting And Aggregating, Map Reduce Scripts, Joins & Subqueries, HBase concepts- Advanced Usage, Schema Design, Advance Indexing - PIG, Zookeeper - how it helps in monitoring a cluster, HBase uses Zookeeper and how to Build Applications with Zookeeper.

Reference Books

1. Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, “Professional Hadoop Solutions”, Wiley, ISBN: 9788126551071, 2015.
2. Chris Eaton, Dirk deroos et al. , “Understanding Big data ”, McGraw Hill, 2012.
3. Tom White, “HADOOP: The definitive Guide” , O Reilly 2012.
4. Vignesh Prajapati, “Big Data Analytics with R and Haoop”, Packet Publishing 2013.
5. Tom Plunkett, Brian Macdonald et al, “Oracle Big Data Handbook”, Oracle Press, 2014.
6. Jy Liebowitz, “Big Data and Business analytics”,CRC press, 2013.

Student Activity:

1. Collect real time data and justify how it has become Big Data

2. Reduce the dimensionality of a big data using your own map reducer

III YEAR VI SEMESTER
(Cluster 1 Paper-VIII : Elective –A-3)

COMPUTING FOR DATA ANALYTICS

Course Objectives

The objective of this course is to teach fundamental concepts and tools needed to understand the emerging role of business analytics in Organizations.

Course Outcomes

1. Learn the Big Data in Technology Perspective.
2. Understanding of the statistical procedures most often used by practicing engineers
3. Understand Forecasting methods and apply for business applications.

UNIT – I

DATA ANALYTICS LIFE CYCLE: Introduction to Big data Business Analytics - State of the practice in analytics role of data scientists - Key roles for successful analytic project - Main phases of life cycle - Developing core deliverables for stakeholders.

UNIT – II

STATISTICS Sampling Techniques : Data classification, Tabulation, Frequency and Graphic representation - Measures of central value - Arithmetic mean, Geometric mean, Harmonic mean, Mode, Median, Quartiles, Deciles, Percentile - Measures of variation – Range, IQR, Quartile deviation, Mean deviation, standard deviation, coefficient variance, skewness, Moments & Kurtosis.

UNIT – III

PROBABILITY AND HYPOTHESIS TESTING: Random variable, distributions, two dimensional R.V, joint probability function, marginal density function. Random vectors - Some special probability distribution - Binomial, Poison, Geometric, uniform, exponential, normal, gamma and Erlang. Multivariate normal distribution - Sampling distribution – Estimation - point, confidence – Test of significance, 1& 2 tailed test, uses of t-distribution, F-distribution, $\chi 2$distribution.

UNIT – IV

PREDICTIVE ANALYTICS: Predictive modeling and Analysis - Regression Analysis, Multicollinearity , Correlation analysis, Rank correlation coefficient, Multiple correlation, Least square, Curve fitting and good ness of fit.

UNIT – V

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TIME SERIES FORECASTING AND DESIGN OF EXPERIMENTS : Forecasting Models for Time series : MA, SES, TS with trend, season - Design of Experiments, one way classification, two way classification, ANOVA, Latin square, Factorial Design.

Reference Books

1. Chris Eaton, Dirk Deroos, Tom Deutsch etal., "Understanding Big Data", McGrawHIll, 2012.
2. Alberto Cordoba , "Understanding the Predictive Analytics Lifecycle", Wiley, 2014.
3. Eric Siegel, Thomas H. Davenport , "Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die", Wiley, 2013.
4. James R Evans, "Business Analytics – Methods, Models and Decisions", Pearson 2013.
5. R. N. Prasad, Seema Acharya, "Fundamentals of Business Analytics", Wiley, 2015.
6. S M Ross, "Introduction to Probability and Statistics for Engineers and Scientists", Academic Foundation, 2011.
7. David Hand, Heiki Mannila, Padhria Smyth, "Principles of Data Mining", PHI 2013.
8. Spyros Makridakis, Steven C Wheelwright, Rob J Hyndman, "Forecasting methods and applications", Wiley 2013(Reprint).

Student Activity:

1. **Collect temperatures of previous months and prepare a logic to estimate the temperature of next one week**
2. **Collect real time data and apply statistical techniques to classify it.**

III YEAR VI SEMESTER
(Cluster 2) Paper-VIII : Elective –B-1

Distributed Systems

Course Objectives

- To expose the fundamentals of distributed computer systems, assuming the availability of facilities for data transmission.
- To discuss multiple levels of distributed algorithms, distributed file systems, distributed databases, security and protection.

Course Outcomes

- Create models for distributed systems.
- Apply different techniques learned in the distributed system.

UNIT I

Introduction to Distributed Computing Systems, System Models, and Issues in Designing a Distributed Operating System, Examples of distributed systems.

UNIT II

Features of Message Passing System, Synchronization and Buffering, Introduction to RPC and its models, Transparency of RPC, Implementation Mechanism, Stub Generation and RPC Messages, Server Management, Call Semantics, Communication Protocols and Client Server Binding.

UNIT III

Introduction, Design and implementation of DSM system, Granularity and Consistency Model, Advantages of DSM, Clock Synchronization, Event Ordering, Mutual exclusion, Deadlock, Election Algorithms.

UNIT IV

Task Assignment Approach, Load Balancing Approach, Load Sharing Approach, Process Migration and Threads.

UNIT V

File Models, File Accessing Models, File Sharing Semantics, File Caching Schemes, File Replication, Atomic Transactions, Cryptography, Authentication, Access control and Digital Signatures.

Reference Books

1.Pradeep. K. Sinha: " Distributed Operating Systems: Concepts and Design " , PHI, 2007.
2 .George Coulouris, Jean Dollimore, Tim Kindberg: " Distributed Systems" , Concept and Design, 3rd Edition, Pearson Education, 2005.

Student Activity

1. Implementation of Distributed Mutual Exclusion Algorithm.
2. Create a Distributed Simulation Environment.

Structure of Computer Science/Information Technology (IT) Syllabus

III YEAR VI SEMESTER
(Cluster 2) Paper-VIII : Elective –B-2

Cloud Computing

Course Objectives:
The student will learn about the cloud environment, building software systems and components that scale to millions of users in modern internet, cloud concepts capabilities across the various cloud service models including Iaas, Paas, Saas, and developing cloud based software applications on top of cloud platforms.

Course Outcomes
1. Compare the strengths and limitations of cloud computing
2. Identify the architecture, infrastructure and delivery models of cloud computing
3. Apply suitable virtualization concept.
4. Choose the appropriate cloud player , Programming Models and approach.
5. Address the core issues of cloud computing such as security, privacy and interoperability
6. Design Cloud Services and Set a private cloud

Unit 1

Cloud Computing Overview – Origins of Cloud computing – Cloud components - Essential characteristics – On-demand self-service , Broad network access , Location independent resource pooling , Rapid elasticity , Measured service

Unit II

Cloud scenarios – Benefits: scalability , simplicity , vendors ,security. Limitations – Sensitive information - Application development – Security concerns - privacy concern with a third party - security level of third party - security benefits Regularity issues: Government policies

Unit III

Cloud architecture: Cloud delivery model – SPI framework , SPI evolution , SPI vs. traditional IT Model
Software as a Service (SaaS): SaaS service providers – Google App Engine, Salesforce.com and google platfrom – Benefits – Operational benefits - Economic benefits – Evaluating SaaS
Platform as a Service (PaaS): PaaS service providers – Right Scale – Salesforce.com – Rackspace – Force.com – Services and Benefits

Unit IV

Infrastructure as a Service (IaaS): IaaS service providers – Amazon EC2 , GoGrid – Microsoft soft implementation and support – Amazon EC service level agreement – Recent developments – Benefits

Cloud deployment model : Public clouds – Private clouds – Community clouds - Hybrid clouds - Advantages of Cloud computing

Unit V

Virtualization: Virtualization and cloud computing - Need of virtualization – cost , administration , fast deployment , reduce infrastructure cost - limitations

Types of hardware virtualization: Full virtualization - partial virtualization - para virtualization

Desktop virtualization: Software virtualization – Memory virtualization - Storage virtualization – Data virtualization – Network virtualization

Microsoft Implementation: Microsoft Hyper V – Vmware features and infrastructure – Virtual Box - Thin client

Reference Books

1. Cloud computing a practical approach - Anthony T.Velte , Toby J. Velte Robert Elsenpeter TATA McGraw- Hill , New Delhi - 2010
2. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online - Michael Miller - Que 2008
3. Cloud Computing, Theory and Practice, Dan C Marinescu, MK Elsevier.
4. Cloud Computing, A Hands on approach, Arshadeep Bahga, Vijay Madisetti, University Press
5. Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya, Christenvecctiola, S Tammarai selvi, TMH

Student Activity:

1. Prepare the list of companies providing cloud services category wise.
2. Create a private cloud using local server

Structure of Computer Science/Information Technology (IT) Syllabus

III YEAR VI SEMESTER
(Cluster 2) Paper-VIII : Elective –B-3

Grid Computing

Course Objectives:
The student will learn about the Grid environment, building software systems and components that scale to millions of users in modern internet, Grid concepts capabilities across the various Grid services..

Course Outcomes
1. Compare the strengths and limitations of Grid computing
2. Identify the architecture, infrastructure and delivery models of Grid computing
3. Apply suitable virtualization concept.
4. Address the core issues of Grid computing such as security, privacy and interoperability

UNIT I

CONCEPTS AND ARCHITECTURE :Introduction-Parallel and Distributed Computing-Cluster Computing-Grid Computing- Anatomy and Physiology of Grid- Web and Grid Services-Grid Standards - OGSA-WSRF - Trends, Challenges and applications.

UNIT II

GRID MONITORING :Grid Monitoring Architecture (GMA) - An Overview of Grid Monitoring Systems- R-GMA –Grid ICE – MDS- Service Level Agreements (SLAs) -Other Monitoring Systems- Ganglia, Grid Mon, Hawkeye and Network Weather Service.

UNIT III

GRID SECURITY AND RESOURCE MANAGEMENT: Grid Security-A Brief Security Primer-PKI-X509 Certificates-Grid Security-Grid Scheduling and Resource Management, Grid way and Grid bus Broker-principles of Local Schedulers- Overview of Condor, SGE, PBS, LSF -Grid Scheduling with QoS.

UNIT IV

DATA MANAGEMENT AND GRID PORTALS :Data Management-Categories and Origins of Structured Data-Data Management Challenges-Architectural Approaches-Collective Data Management Services-Federation Services-Grid Portals-Generations of Grid Portals.

UNIT V

GRID MIDDLEWARE: List of globally available Middleware's - Case Studies-Recent version of Globus Toolkit and gLite - Architecture, Components and Features. Features of Next generation grid.

Reference Books

1. Ian Foster, Carl Kesselman, The Grid 2: Blueprint for a New Computing Infrastructure, Elsevier Series, 2004.
2. Vladimir Silva, Grid Computing for Developers, Charles River Media, January 2006.
3. Parvin Asadzadeh, Rajkumar Buyya, Chun Ling Kei,Deepa Nayar, and Srikumar Venugopal, Global Grids and Software Toolkits: A Study of Four Grid Middleware Technologies, High Performance Computing : Paradigm and Infrastructure, Laurence Yang and Minyi Guo (editor s), Wiley Press, New Jersey, USA, June 2005.
4. Jarek Nabrzyski, Jennifer M. Schopf, Jan Weglarz , Grid Resource Management: State of the Art and Future Trends , (International Series in Operations Research & Management Science), Springer; First edition, 2003

Student Activity:

1. Implement and analyze any one Grid Resource Sharing algorithm.
2. Listout various security issues with Grid

PROJECT & VIVA-VOCE

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

ACHARYA NAGARJUNA UNIVERSITY

III B.Sc CHEMISTRY CLUSTER - ~~PROJECT~~ PROJECT GUIDELINES

Chemistry Paper B-3 or C-3

- As part of curriculum during the last semester, students are required to take up project work for the successful completion of B.Sc course with Chemistry cluster.
- The project will be assessed on the submission of the soft and hard copy of project report, as well as presentation and the viva.
- **Suggested area of study of project work are:**
  a) Water analysis of different samples– any five parameters
  b) Different samples of Soil analysis – any four parameters
  c) Paper Chromatography and TLC – separation of compounds from leaves, flowers and dyes
  d) Any other project suggested by the concerned faculty/project director
- The data collected could be primary i.e., gathered by your own observation.
- Students must ensure that the project undertaken must be an original study.
- **Selection of guide:** A project report can be conducted with the guidance of the Project Guide. A guide has to be competent person possessing vast experience and knowledge.
- It is advisable to prepare the project report under the supervision of a guide as it adds value to the project and also has a weightage in evaluation.

STRUCTUREOF THE PROJECT REPORT:

1)Introduction 2)Background 3)Methodology 4)Conclusions and recommendations 5) Limitations of the study

IMPORTANT GUIDELINES FOR WRITING THE PORJECT:

1) Student should use simple and good English while writing the report. Avoid grammatical errors.
2) The report should be submitted as a MS-word document only
3) The problem and objectives should be specific and clearly stated.
4) Important to include Bibliography
5) The report should also include Certificate from the guide and acknowledgements (if any)
6) The report should be in about 25 pages minimum

4/1/2018

FORMAT OF THE PROJECT REPORT:

Title page: The first page should the following details

Top: The title of the project in block capitals, properly centered

Centre: Full name of the candidate in capitals
Roll No. and H.T. Number
Specialization Name: Chemistry cluster B-3 / C-3
(paper title name)

Bottom: Name of the Institute, Month and year of submission.

Page number shall be mentioned at the bottom of the page and should be submitted one as spiral bound book and the other as soft copy CD.

ATTENDING THE VIVA:

After the submission of final copy of report by the student, he/she has to attend the VIVA at the institute as per the schedule given by the University. Student can present the project report at the Evaluator either orally or in the form of PPT.

REJECTION OF REPORT:

In case of student's project being not approved, he is not eligible to get final certificate. The student then has to rewrite the project based on the remarks of the Evaluator.

MARKS FOR THE PROJECT:

The project work will carry 50 Marks. The minimum for passing will be 50% for the project work.

EVALUATION OF PROJECT:

Student has to submit project report at least 15 days before the commencement of University Practical exams.

The submitted project report will be sent for evaluation. The project report will be evaluated on the following criteria

1. Understanding of the subject and conceptualization of key areas: 5M
2. Innovative techniques/approach to the project undertaken: 5M
3. Report writing, presentation and certification from guide: 10M
4. Presentation: 20M
5. Viva: 10M

Total: 50M

REMUNERATION:

The Evaluator appointed by the University will be paid Rs.100/- per each candidate attending project presentation/viva.

Prepared by: Dr J.Rajendra Kumar, Chairman, UG-BOS in Chemistry
98491 85092

24/1/2018

A.P. State Council of Higher Education

Revised Common Framework of CBCS for Colleges in Andhra Pradesh

w.e.f..2015-16 (Revised in April, 2016)

Table-1: B.A. / B.Com SEMESTER - I

Sno	Course	Total Marks	Mid Sem Exam*	Sem End Exam	Teaching Hours	Credits
1	First Language (Tel/Hin/Urdu/Sans…)	100	25	75	4	3
2	Second Language English	100	25	75	4	3
3	*Foundation Course – 1* Human Values & Professional Ethics	50	0	50	2	2
4	*Foundation Course -2* Environmental Studies	50	0	50	2	2
5	DSC 1 Paper -1 (Core)	100	25	75	5	4
6	DSC 2 Paper -1 (Core)	100	25	75	5	4
7	DSC 3 Paper -1 (Core)	100	25	75	5	4
	Total	600	-	-	27	22

#DSC: Domain (Discipline/Subject) Specific Course (Paper),
Foundation Course: value or skill related

*At the college (The marks split between Formal Test and Co-curricular activities may be decided by the University concerned).

**Syllabus size shall be in accordance with the number of teaching hours

Table-2: B.A. / B.Com SEMESTER - II

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	First Language (Tel/Hin/Urdu/Sans…)	100	25	75	4	3
2	Second Language English	100	25	75	4	3
3	*Foundation course – 3* ICT - I	50	0	50	2	2
4	*Foundation course – 4* CSS – I	50	0	50	2	2
5	DSC 1 Paper -2 (Core)	100	25	75	5	4
6	DSC 2 Paper -2 (Core)	100	25	75	5	4
7	DSC 3 Paper -2 (Core)	100	25	75	5	4
	Total	600	-	-	27	22

Table-3: B.A. / B.Com SEMESTER - III

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	First Language (Tel/Hin/Urdu/Sans…)	100	25	75	4	3
2	Second Language English	100	25	75	4	3
3	*Foundation Course - 5* ICT – 2	50	0	50	2	2
4	*Foundation course - 6* CSS – 2	50	0	50	2	2
5	DSC 1 Paper -3 (Core)	100	25	75	5	4
6	DSC 2 Paper -3 (Core)	100	25	75	5	4
7	DSC 3 Paper -3 (Core)	100	25	75	5	4
	Total	600	-	-	27	22

Table-4: B.A. / B.Com SEMESTER - IV

Sno	Course	Total Marks	Mid Sem Exam*	Sem End Exam	Teaching Hours**	Credits
1	*Foundation Course – 7* CSS – 3	50	0	50	2	2
2	*Foundation Course – 8* Analytical Skills	50	0	50	2	2
3	*Foundation Course – 9* Entrepreneurship	50	0	50	2	2
4	*Foundation course – 10* Leadership Education	50	0	50	2	2
5	DSC 1 Paper -4 (Core)	100	25	75	5	4
6	DSC 2 Paper -4 (Core)	100	25	75	5	4
7	DSC 3 Paper -4 (Core)	100	25	75	5	4
	Total	500	-	-	23	20

*Analytical Skills: To be taught by Maths/Stat Teachers (may be partly by EnglishTeachers)
Entrepreneurship: To be taught by Commerce Teachers
Leadership Education: To be taught by Telugu Teachers

Table-5: B.A. / B.Com SEMESTER - V

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	DSC 1 Paper -5 (Core)	100	25	75	5	4
2	DSC 2 Paper -5 (Core)	100	25	75	5	4
3	DSC 3 Paper -5 (Core)	100	25	75	5	4
4	DSC 1 Paper -6 (Core)	100	25	75	5	4
5	DSC 2 Paper -6 (Core)	100	25	75	5	4
6	DSC 3 Paper -6 (Core)	100	25	75	5	4
	Total	600	-	-	30	24

*Sem-I to V: All core papers in Domain Subjects

Table-6: B.A. / B.Com SEMESTER – VI

Sno	Course	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	Elective -1: DSC 1, Paper -7	100	25	75	5	4
2	Elective -1: DSC 2, Paper -7	100	25	75	5	4
3	Elective -1: DSC 3, Paper -7	100	25	75	5	4
4	Elective -2: DSC 1, Paper -8 (Applied/Inter-domain/Gen Elec)	100	25	75	5	4
5	Elective -2: DSC 2, Paper -8 (Applied/Inter-domain/Gen Elec)	100	25	75	5	4
6	Elective -2: DSC 3, Paper -8 (Applied/Inter-domain/Gen Elec)	100	25	75	5	4
	Total	600	-	-	30	24

*__7th__ paper of each of the domain specific subjects (1st paper of semester VI) will be a domain related Elective. More than one Elective may be offered giving choice to students. The Electives may be of Domain specific applied or advanced (specialization) in nature. The number of Electives may be decided (along with the syllabus) by the University concerned keeping the feasibility of conduct of University examinations in view.
** Applied Elective: It is desirable that around 25% of syllabus is taught by field experts. The college has to make such an arrangement.

*__8th__paper of each of the domain specific subjects (2nd paper of semester VI)will also be an Elective. The Electives may be of Inter-domainClusters**- each Cluster having three papers with or without project work.or General in nature. The number of Clusters may be decided (along with the syllabus) by the University concerned keeping the feasibility of conduct of University examinations in view. It is desirable that around 25% of syllabus is taught by field experts.

***Cluster: In the last semester, for paper-8, each domain subject has one elective totaling three papers for each student. Electives may be given as Clusters of three papers each for each subject. A student can opt for all the threepapers of the same subject (clusteror stream) including or excluding project work for a wider learning experience. The student will not study the other two domain subjects for paper-8.*

Total Credits for BA/B.Com Courses: 134

Andhra Pradesh State Council of Higher Education

Structure of B. A. HISTORY Syllabus under CBCS

Table-1: w.e.f. 2015-16 (Revised in April, 2016)

Semester	*Paper*	***Title***
Semester I (Core)	I	Ancient Indian History & Culture (from earliest times to 600 A.D)
Semester II (Core)	II	Early Medieval Indian History & Culture (600 A.D to 1526 A. D.)
Semester III (Core)	III	Late Medieval & Colonial History of India (1526 to 1857 A. D.)
Semester IV (Core)	IV	Social Reform Movement & Freedom Struggle (1820s to 1947 A.D.)
Semester V (Core)	V	Age of Rationalism And Humanism The World Between 15th& 18th Centuries
Semester V (Core)	VI	History & Culture of Andhra Desa (from 12th to 19th Century A.D.)
Semester VI Elective - 1	VII–A	History of Modern Europe (from 19th Century to 1945 A. D.)
Semester VI Elective – 2	VII–B	History of East Asia (from 19th Century A.D.to 1950 A.D)
Semester VI Elective - 3	VII–C	Contemporary History of The World (1945 to Circa 2000 A. D.)
Semester VI Elective - 4	VII-D	Basics of Journalism
Semester VI Elective - 5	VII-E	Historical Application in Tourism
Semester VI Elective - 6	VII–F	Modern Techniques in Archaeology
Semester VI Cluster Electives Elective - 1	VIII-A-1	Cultural Tourism in Andhra Pradesh
Elective – 2	VIII-A-2	Popular Movements in Andhra Desa (1848 TO 1956 A.D.)
Elective - 3	VIII-A-3	Contemporary History of Andhra Pradesh (1956-2014)

Structure of B.A. HISTORY Syllabus under CBCS

Table-2:

Sl. No	Sem	Paper	Name of Paper	Nature	Hours/ Week	Credits	Marks	
							Mid Sem	Sem End
1	I	I	Ancient Indian History & Culture (From earliest times to 600 A.D)	Core	**5**	**4**	**25**	**75**
2	II	II	Early Medieval Indian History & Culture (600 A.D to 1526 A. D.)	Core	**5**	**4**	**25**	**75**
3	III	III	Late Medieval & Colonial History of India (1526 to 1857 A. D.)	Core	**5**	**4**	**25**	**75**
4	IV	IV	Social Reform Movement & Freedom Struggle (1820s to 1947 A.D.)	Core	**5**	**4**	**25**	**75**
5	V	V	Age of Rationalism and Humanism The World Between 15th& 18th Centuries	Core	**5**	**4**	**25**	**75**
6		VI	History & Culture of Andhra Desa (from 12th to 19th Century A.D.)	Core	**5**	**4**	**25**	**75**
7	VI	VII–(A)	History of Modern Europe (from 19th Century to 1945 A. D.)	El	**5**	**4**	**25**	**75**
		VII-(B)	History of East Asia (from 19th Century A.D.to 1950 A.D)					
		VII–(C)	Contemporary History of The World (1945 to Circa 2000 A. D.)					
		VII–(D)	Basics of Journalism					
		VII–(E)	Historical Application in Tourism					
		VII –(F)	Modern Techniques in Archaeology					
8		VIII–A-1	Cultural Tourism In Andhra Pradesh	Cl El (3)	**5**	**4**	**25**	**75**
		VIII–A-2	Popular Movements In Andhra Desa (1848 TO 1956 A.D.)					
		VIII–A-3	Contemporary History of Andhra Pradesh (1956-2014)					
					TOTAL	**32**	**200**	**600**

B. A. HISTORY

I Year B. A. Programme (UG) Courses – Under CBCS

Semester – I

Paper – I (Core Paper)

ANCIENT INDIAN HISTORY & CULTURE (from earliest times to 600 A.D)

(Indian History and Culture from Earliest Times to 647 A.D)

Unit – 1	Survey of Sources: Literary & Archaeological Sources; Influence of Geography on History; Unity in Diversity; Traces of Stone Age Cultures (Circa 3,50,000 B. C to 3,000 B. C); Indus Valley Civilization (Circa 3000 B. C to 1,500 B. C): Origin, Extent, Salient Features.
Unit – II	Vedic Age & Religious Reform Movements (Circa 1500 B. C to 600 B. C): Society, Polity, Economy, Culture during early and later Vedic period; Jainism and Buddhism: Causes, Doctrines, Spread, Importance and Impact.
Unit - III	Transition from Territorial States to Emergence of Empires (Circa 600to Century to 300 B. C): Rise of Mahajanapadas – Causes for Magadha's Success; Persian and Macedonian Invasions; Mauryan Empire: State, Imperial Administration, Economy, Ashoka'sDhamma, Art & Architecture, Significance & Downfall.
Unit - IV	Conditions during 200 B. C to 300 A. D.: Central Asian Contacts – Kushanas – Aspects of polity, society, Economy, Religion, Art& Architecture; The Age of Satavahanas: Pattern of Administration – Social, Economic, Religious & Cultural Developments; Sangam Age: The Three Early Kingdoms (Chola, Chera& Pandya) – Society, Language & Literature.
Unit – V	India between 300 A. D & 600 A. D.: The Rise and Growth of Guptas: Administration, Society, Economy, Religion, Art, Literature and Science & Technology – Decline.

References:

1	A.L. Basham, The Wonder That Was India
2	D.N.Jha, Ancient India
3	D.D.Kosambi, An Introduction to the Study of Indian History
4	D.P.Chattopadhyay, Science and Society in Ancient India
5	B.N.Mukherjee, The Rise and Fall of the Kushana Empire
6	K.A. NilakanthaShastri, A History of South India
7	R.C.Majumdar, K.K.Dutta&H.C.RoyChowdhuri (ed.), Advanced History of India
8	Kumkum Roy, The Emergence of Monarchy in North India: eighth to fourth centuries BC
9	RomilaThapar (et. al). India: Historical Beginnings and the Concept of the Aryan
10	M.L.K. Murthy, *Pre-and Protohistoric Andhra Pradesh upto 500 B.C.,* New Delhi, 2003

Study Tour: Study tour to local museum or at least to nearby historical sites is to be conducted.

Students should be asked to prepare an inventory of items preserved in the museum and their usage.

Students can be asked to create a calendar charting the dates of key events. This can be

applied to an historical event or the sequence of events.

B. A. HISTORY

I Year B. A. Programme (UG) Courses – Under CBCS

Semester – II

Paper – II (Core Paper)

EARLY MEDIEVAL INDIAN HISTORY & CULTURE (600 A.D to 1526 A. D.)

(Indian History and Culture from 647 to 1526 A.D)

Unit – 1	Harsha & His Times: Administration, Religion – Hiuen Tsang -Polity, Society, Economy and Culture from 7th to 11th Century A. D. under Chalukyas of Badami& Eastern Chalukyas of Vengi.
Unit – II	Age of later Pallavas during 7th& 8th Centuries A. D.: Contribution to Cultural Development & Art & Architecture; The Chola Empire from 9th to 12 Century A. D.: Rise of the Empire, Administration and Cultural Life.
Unit - III	Conditions in India on the eve of Turkish Invasions; Early Invasions: Traces of Arab Invasion, Ghazni&Ghori; Delhi Sultanate (1206 to 1290 A.D.) under Slave Dyanasty.
Unit - IV	Delhi Sultanate (1290 to 1526 A.D.): Khaljis: Expansion & Consolidation, Administrative & Economic Reforms - The Tughlaqs - Decline & Disintegration of the Delhi Sultanate; Administration, Society, Economy, Technology, Religion, Art & Architecture under the Sultanate.
Unit – V	Cultural Development in India between 13th& 15th Centuries A. D.: Impact of Islam on Indian Society and Culture – Bhakti and Sufi Movements – Emergence of Composite Culture.

References:

1	Basham, A.L (ed) A Cultural History of India
2	Champakalakshmi, R Trade, Ideology and Urbanization : South India 300 BC – AD 1300
3	Chandra, S History of Medieval India (800 – 1700)
4	Chattopadyay, B.D The Making of Early Medieval India. (Delhi, 1994)
5	Habib, Irfan, Medieval India: The Study of a Civilization
6	Habibullah, A.B.M, The Foundation of Muslim Rule in India
7	Kumar Sunil, The Emergence of the Sultanate of Delhi
8	Nizami, K.A. Some Aspects of Religion and Politics in India in the 13th c
9	K.A. NilakantaSastri, A History of South India from Prehistoric Times to the Fall of Vijayanagara
10	K.A.NilkantaSastri, The Cholas
11	Shireen Moosvi, The Economy of the Mughal Empire
12	Stein, B Peasant, State & Society in Medieval South India
13	Yazdani, G. (ed) The Early History of the Deccan
14	R.C.Majumdar, The Age of Imperial Kanauj

Project: Students may be asked to prepare a project on influence of Islam and Hinduism in their respective areas.

Encourage students to write their autobiography or biography of their inspiringpersonalities

B. A. HISTORY

II Year B. A. Programme (UG) Courses – Under CBCS

Semester – III

Paper – III (Core Paper)

LATE MEDIEVAL & COLONIAL HISTORY OF INDIA (1526 to 1857 A. D.)

(History and Culture of India (1526 – 1857))

Unit – 1	India from 1526 to 1707 A. D.: Emergence of Mughal Empire - Sources, Conditions in India on the eve of Babur's invasion, Brief Summary of Mughal Polity – Sher Shah & Sur Interregnum – Expansion & Consolidation of Mughal Empire – Rise of Marathas &Peshwas.
Unit – II	Administration, Economy, Society and Cultural Developments under the Mughals – Disintegration of Mughal Empire.
Unit - III	India under Colonial Hegemony : Beginning of European Settlements – Anglo-French Struggle – Policies of Expansion - Subsidiary Alliance & Doctrine of Lapse - Consolidation of British Empire in India up to 1857 A. D.
Unit - IV	Economic Policies of the British (1757-1857): Land Revenue Settlements – Commercialization of Agriculture – Impact of Industrial Revolution on Indian Industry ; Administration of the Company – Regulating Charter Acts; Cultural & Social Policies: Humanitarian Measures & Spread of Modern Education
Unit – V	Anti-Colonial Upsurge –Peasant & Tribal Revolts - 1857 Revolt – Causes, Nature& Consequences.

References:

1	Bipan Chandra, Modern India
2	Bipan Chandra, Rise and Growth of Economic Nationalism in India
3	C.A.Bayly, Indian Society and the Making of the British Empire
4	HarbansMukhia, The Mughals of India
5	Irfan Habib, Medieval India: The study of a Civilization
6	L.P.Sharma, The Mughal Empire
7	R.P.Dutt, India Today
8	Sathis Chandra, Essays on Medieval Indian History
9	Tripathi R.P., The Rise & Fall of the Mughal Empire

Project Work: Students should be asked to identify structures belonging to Mughal period or colonial period and present status.

Make students to create a collage or collection of images related to a topic.

Images can be hand drawn, printed, or clipped from a magazine or newspaper.

B. A. HISTORY

II Year B. A. Programme (UG) Courses – Under CBCS

Semester – IV

Paper – IV (Core Paper)

SOCIAL REFORM MOVEMENT & FREEDOM STRUGGLE (1820 to 1947 A.D.)

(History and Culture of India (1857 – 1947))

Unit – 1	Social, Religious & Self-Respect Movements: Social & Cultural Awakening – Brahma Samaj, Arya Samaj, Theosophical Society, Ramakrishna Mission, Aligarh Movement – Emancipation of Women – Struggle Against Caste: JyotibaPhule, Narayana Guru, Periyar, Dr. B. R. Ambedkar.
Unit – II	Growth of Nationalism in the 2nd Half of 19th Century – Impact of British Colonial Policies under Viceroys' Rule and the Genesis of Freedom Movement – Birth of Indian National Congress.
Unit - III	Freedom Struggle from 1885 to 1920: Moderate Phase — Partition of Bengal - Emergence of Militant Nationalism –Swadeshi & Boycott Movement – Home Rule Movement.
Unit - IV	Freedom Struggle from 1920 to 1947: Gandhiji's Role in the National Movement – Revolutionary Movement –Subhas Chandra Bose.
Unit – V	Muslim League & the Growth of Communalism – Partition of India – Advent of Freedom - Integration of Princely States into Indian Union – SardarVallabhai Patel.

References:

1	Anil Seal, Emergence of Indian Nationalism
2	Banerjee, Sekhar, From Plassey to Partition
3	Bayly, C A., Indian Society and Making of the British Empire
4	Brown, Judith: Gandhi's Rise to Power
5	Chandra, Bipan, et. al., India's Struggle for Independence
6	Chatterjee, Jaya, Bengal Divided: Hindu Communalism and Partition 1932-1947
7	Desai, A. R, : Social Background to Indian Nationalism
8	Dutt, R.P., India Today
9	Joshi, P.C., Rammohun and the Forces of Modernisation in India
10	Sarkar Sumit: Modern India 1885 to 1947
11	Stokes, Eric, Peasants and the Raj
12	R.C. Majumdar, The Struggle for Freedom, BharatiyaVidhyaBhavan Series

Project Work: As part of Internal Assessment, Project Work may be given on regional or local history related to culture, economy, struggles, land relations, cultural institutions and their influence on the society.

They can also be asked to create a play centered on any event in social reform movement or freedom struggle.

B. A. HISTORY

III Year B. A. Programme (UG) Courses – Under CBCS

Semester – V

Paper – V (Core Paper)

AGE OF RATIONALISM AND HUMANISM

THE WORLD BETWEEN 15TH& 18TH CENTURIES

(History of Modern World (1453 – 1821 A.D))

Unit – 1	Feudalism -Geographical Discoveries: Causes – Compass & Maps – Portugal Leads and Western World Follows – Consequences;
Unit – II	The Renaissance Movement: Factors for the Growth of Renaissance – Characteristic Features - Transformation from Medieval to Modern World; Reformation & Counter Reformation Movements: The Background – Protestantism – Spread of the Movement– Counter Reformation– Effects of Reformation
Unit - III	Emergence of Nation States: Contributory Factors - England and other Nation States – Impact due to the Emergence of Nation States.;Age of Revolutions: The Glorious Revolution (1688) – Origin of Parliament – Constitutional Settlement – Bill of Rights – Results.
Unit - IV	Age of Revolutions: The American Revolution (1776) – Opening of New World – Causes – Course – Declaration of Independence, 1776 – Bill of Rights, 1791 – Significance.
Unit – V	Age of Revolutions: The French Revolution (1789) – Causes - Teachings of Philosophers - Course of the Revolution – Results.

References:

1	Burke, Peter, The Renaissance
2	C.J.H. Hayes, Modern Europe up to 1870
3	C.D. Hazen, Modern Europe up to 1945
4	Christopher Hill, From Reformation to Industrial Revolution
5	Elton, G.R., Reformation Europe, 1517-1559
6	Ferguson, The Renaissance
7	Gilmore, M.P., The World of Humanism, 1453-1517
8	Hilton, Rodney, Transition from Feudalism to Capitalism
9	J.H.Parry, The Age of Renaissance
10	J.N.L. Baker, History of Geographical Discoveries and Explorations
11	The New Cambridge Economic History of Europe, Vol. I, VII.

Project Work: Individual or group projects may be presented by the students regarding preparation of bibliography on various topics.

Students should also be asked to construct glossaries to help them study and review lessons while helping them to understand a large array of vocabulary words.

B. A. HISTORY

III Year B. A. Programme (UG) Courses – Under CBCS

Semester – V

Paper – VI (Core Paper)

HISTORY & CULTURE OF ANDHRA DESA (from 12th to 19th Century A.D.)

(History and Culture of Andhra from Satavahanas to 1857 A.D)

Unit – 1	Andhra during 12th& 13th Centuries A.D.: Kakatiyas – Origin & its Antecedents – Administration – Social & Economic Life – Industries & Trade - Promotion of Literature and Culture – Architecture & Sculpture – Decline; The Age of Reddy Kingdoms: Patronage to Literature – Trade & Commerce.
Unit – II	Andhra between 14th & 16th Centuries A.D.: Vijayanagara Empire: Polity, Administration, Society & Economy – Sri Krishna Devaraya and his contribution to Andhra Culture – Development of Literature & Architecture – Decline and Downfall.
Unit - III	Andhra through 16th& 17th Centuries A.D.: Evolution of Composite Culture - The QutbShahis of Golkonda – Origin & Decline – Administration, Society & Economy – Literature & Architecture.
Unit - IV	The 18th& 19th Centuries in Andhra: East India Company's Authority over Andhra – Three Carnatic Wars – Occupation of Northern Circars and Ceeded Districts –Early Uprisings – Peasants and Tribal Revolts.
Unit – V	The 18th& 19th Centuries in Andhra: Impact of Company Rule on Andhra – Administration – Land Revenue Settlements – Society – Education - Religion – Impact of Industrial Revolution on Economy – Peasantry & Famines – Contribution of Sir Thomas Munroe, C. P. Brown & Sir Arthur Cotton – Impact of 1857 Revolt in Andhra

References:

1	BalenduSekharam, The Andhras Through the Ages
2	K. Sathyanarayana, A Study of the History and Culture of Andhras
3	Mallampalli Soma SekharaSarma, History of the ReddiKindogms
4	K.A.N.Sastry, A History of South India
5	H.K.Sherwani, History of the KutubShahi Dynasty
6	P.R.Rao, History of Modern Andhra
7	KhandavalliLakxmiranjanam&BalenduSekharam, –
8	SuravaramPratap Reddy,
9	B.S.L.Hanumanta Rao,
10	I.K.Sarma, *Early Historic Andhra Pradesh,500 B.C.-624 A.D.,* New Delhi, 2008
11	B. Rajendra Prasad, *Early Medieval Andhra Pradesh, A.D.624 -1000 A.D.*, New Delhi, 2009
12	C. Somasundara Rao, *Medieval Andhra Pradesh, A.D. 1000 -1324 A.D.*, New Delhi, 2011
13	R. Soma Reddy, *Late Medieval Andhra Pradesh, A.D. 1324-1724 A.D.,* New Delhi, 2014

Project Work: Students may be asked to identify families/ areas/ institutions/ personalities/ monuments related to freedom struggle and prepare dissertation under the guidance of a teacher so as to equip them with better understanding of society and historical processes. This exercise should also aim at exposing the spirit of research, analysis, criticism, innovation and invention among the students.

B. A. HISTORY

III Year B. A. Programme (UG) Courses – Under CBCS

Semester – VI

Paper – VII-(A) :: (Elective Paper)

HISTORY OF MODERN EUROPE (from 19th Century to 1945 A. D.)

(History of Modern World (1821 – 1945))

Unit – 1	Industrial Revolution: Origin, Nature and Impact.
Unit – II	Unification Movements in Italy & Germany and their Impact.
Unit - III	Communist Revolution in Russia – Causes, Course and Results – Impact on World Order.
Unit - IV	World War I: Age of Rivalry in Europe Between 1870 and 1914 – Results of the War – Paris Peace Conference - League of Nations.
Unit – V	World War II: Causes, Fascism & Nazism – Results; The United Nations Organization: Structure, Functions and Challenges.

References:

1	J.A.Hobson, Imperialism: A Study
2	C.D. Hazen, Modern Europe up to 1945
3	H.A.L.Fisher, History of Europe
4	C.M.M.Ketelbey, A History of Modern Times
5	Grant and Temperley (ed), Europe in the 18th and 20th Centuries
6	David Thomson, Europe Since Napoleon
7	A.P.J.Taylor, The Struggle for Mastery in Europe
8	S.P.Nanda, History of Modern World
9	S.N.Dhar, International Relations and World Politics Since 1919

Project Work: Project work on the consequences of industrialization & globalization on society and economy should be given to students.

B. A. HISTORY

III Year B. A. Programme (UG) Courses – Under CBCS

Semester – VI

Paper – VII-B :: (Elective Paper)

HISTORY OF EAST ASIA (from 19th Century A.D.to 1950 A.D)

Unit – 1	Pre-colonial China - The nature and structure of the traditional Chinese Society, Polity, Economy; Colonial Penetration in China -Tribute system, Canton system and their collapse - Opium Wars and Treaties with imperialist powers and struggle for concessions in China - Increasing western economic interests- Open-Door Policy.
Unit – II	Chinese Popular Movements with special reference to Taiping Revolt - Cause, Nature & Legacy; The Self-Strengthening Movement - Boxer Rebellion and its consequences - Republican Revolution of 1911- Role of various social classes - Sun Yat Sen.
Unit - III	Nationalism and Communism in China - Emergence of the Republic and Yuan Shi Kai - New Intellectual ideas and May Fourth Movement- Political crisis in the 1920's- The first United Front- Kuomintang-Communist Conflict- Ten years of Nanking Government - The Communist Party under Mao Tse Tung- Red Army- Long March- The Chinese Revolution (1949)- ideology, causes and significance - the Establishment of the Peoples' Republic of China.
Unit - IV	Japan during Pre- Restoration Period - The Tokugawa Shogunate- Encounter with the West- the Perry Mission and the opening up of Japan to the West - The crisis and fall of Shogunate - Meiji Restoration (1867-68) - Processes of modernization- social, military, political and educational - Popular and Democratic Movements - Meiji Constitution - Rise of Political Parties.
Unit – V	Economic Modernization - Emergence of Japan as an Imperial Power - The Sino-Japanese War - The Anglo-Japanese Alliance - The Russo- Japanese War - World War I and after- Japan in the Pacific and the Washington Conference - Manchurian Crisis - Failure of the Democratic System and the Rise of Militarism in the1930's and 1940's - Japan and the World War II - Post War Japan under General MacArthur.

References:

1	Allen George – A Short Economic History of Modern Japan
2	Beckmann George M – Modernization of China and Japan
3	Beckmann George M - The Making of Meiji Constitution
4	Bianco Lucian – Origins of the Chinese Revolution, 1915-1949
5	The Cambridge History of Japan Vols V and VI
6	The Cambridge History of China Vol X
7	Chen Jerome – Mao Tse Tung and the Chinese Revolution
8	Fitzgerald C.P. – Birth of Communist China
9	Peffer Nathaniel – The Far East: A Modern History
10	Vinacke H – A History of the Far East in Modern times

Project Work: A project report on Sino-India Relations; Chinese economic leadership; Japan's present status

B. A. HISTORY

III Year B. A. Programme (UG) Courses – Under CBCS

Semester – VI

Paper – VII-(C) :: (Elective Paper)

CONTEMPORARY HISTORY OF THE WORLD (1945 to Circa 2000 A. D.)

Unit – 1	Debate on the origins of the Cold War - Emergence of Soviet and American economic and military alliances: NATO, WTO, IMF, World Bank, Warsaw, COMECON.
Unit – II	USSR's relation with the East European countries (1945-64) - The US foreign policy in the Post war period: Truman Doctrine and Marshall Plan.
Unit - III	Disintegration of European Empires and the emergence of the Third World - The Non-Aligned Movement - Indo-Pakistan relations - Liberation war of Bangladesh - The Liberation Struggle of Vietnam (1945-54 and 1954-1975) - Sino- Soviet relations - Sino- U.S. relations – SAARC.
Unit - IV	Bi-polarism and regional conflicts: War in Korea – Crisis in Cuba – Conflict in the Middle East (Arab – Israel wars of 1948-49,67, 1973) – Activities of P.L.O- Intifada – Gulf War of 1990-91 -
Unit – V	Reunification of Germany - The end of Socialist regime and the disintegration of USSR; The end of the Cold War - The onset of Globalization - American Uni-polarism and its significance for international politics.

References:

1	C.Brown&J.Mooney, Cold War to Détente 1945-83
2	Chain Herzog, The Arab Israeli War
3	Eric Hobsbawm, Age of Extremes: The Short Twentieth Century 1914-1991
4	H.Higgins, Vietnam
5	J.Bhagwati, In Defense of Globalization
6	J.N.Dixit, Across Borders: Fifty Years of Indian's Foreign Policy
7	Karuna Kaushik, History of Communist Russia 1917-1991
8	LipyongJ.Kim, The Strategic Triangle: China, the United States and the Soviet Union
9	O.Leorose and Richard Sisson, War and Secession: Pakistan, India and the creation of Bangladesh
10	M.Hastings, The Korean War

Project Work: Project work on India's foreign policies – Strengths & Challenges; Regional Cooperation; International Relations

B. A. HISTORY

III Year B. A. Programme (UG) Courses – Under CBCS

Semester – VI

Paper – VII-D (Elective Paper)

BASICS OF JOURNALISM

Unit – 1	Definition of Journalism – Nature and Scope – Principles and Functions – Mass Communication Media – Concept of Fourth Estate – Democracy and the Press – Freedom of Press - Limitation of Freedom.
Unit – II	Early Forms of Mass Communication – Primitive Types of Journalism - Proclamations –War Reports in Medieval times - Significance of Print Revolution– Telegraphic Communication – Morse Code –Radio - Changes in Printing Techniques – Offset – DTP – Electronic Revolution - Digitalization – Online Journalism.
Unit - III	Journalism in the Contemporary World- Press Commission of 1947 – Newspaper Magnates – Corporate Bodies – Commercialization – News Agencies – Reuters – AP, UPI, AFT etc.,. TV & Journalism.
Unit - IV	Ideologies & the Press –Social Responsibility – Woman Issues - Workers & Peasant Issues - Politicization - Competition - Advertising and Journals – Cost of Production and Marketing - Sensationalisation – Networking.
Unit – V	Beginnings of Indian Press – James Hicky – Early Publications from Bengal – Contents of early English Journals – Indian Vernacular Pres – Aims & Objectives of the early Newspapers - Development of Press after Independence

References:

1	Agee Ault & Emery, Introduction to Mass Communication
2	Asa Briggs, A Social History of Media From Gutenberg to the Internet
3	Gardiner Lambert, A History of Media
4	Kamat M V., Professional Journalism
5	Krishnamurthy N, Indian Journalism
6	Herman Edward and Nom Chomsky, The Political Economy of Mass Media
7	Raghavan G N S, The Press in India
8	Rivers Williams, Mass Media and Society

Project Work: Students should be given assignment to collect news on important activities in their local areas and present reports. They should also be asked to prepare reports on college level activities and approach the local reporters for the publication of the same.

Students can also be asked to create a questionnaire and survey in the locality to gather an understanding about thematic issues like water, sanitation, health for a presentation.

B. A. HISTORY

III Year B. A. Programme (UG) Courses – Under CBCS

Semester – VI

Paper – VII-E :: (Elective Paper)

HISTORICAL APPLICATION IN TOURISM

Unit – 1	Tourism: Definition, Nature and Scope, Concepts- History of Tourism and its Development- Motivations for Travel-Types of Tourism - Components of Tourism
Unit – II	Social and Economic significance of Tourism - Tourism as an Industry - Components of Tourism Industry - Attractions, Transport, Accommodation, Shopping, Entertainment, Hospitality, Airlines, Travel Agencies – Impact of Tourism on Physical Environment.
Unit - III	History as Tourism product- Archaeological and Historical Monuments –Ajanta, Ellora , Sanchi, Amaravati, Nagarjunakonda, Mahabalipuram, Kanchi, Badami, TanjavurBrihadisvara temple, Puri, Ramappa temple, Alampur, Halebid, Mukhalingam, Tadiparti, Hampi.
Unit - IV	Cultural and Pilgrimage Tourism- Fairs and Festivals- Ajmir, Amruthsar, Madhurai, Mount Abu, Warangal, Goa, Mahanandi, Tirupati, Lepaskhi, Simhachalam; Kuchapudi dance, Khajuraho Festival, JagannathRathayatra, Flamingo Festival.
Unit – V	Field Trip & Viva-voce: It would be compulsory for the students to attend the field trip to the tourist centers/ historical monuments and submit a comprehensive Report to the Department. The Viva – Voce would be based especially on field trip of tourist centers / historical monuments in surrounding areas. The Viva – Voce will be of 10 marks, and Tour Report should be evolved for 15 marks.

References:

1	Lucas Jr., H. C. *Information Technology for Management*, McGraw Hill, 2005
2	Shobita Chopra, *Tourism and Development in India*, New Delhi, 1992
3	Singh Ratandeep : *Handbook of Environmental Guidelines for Indian Tourism*
4	Bhatia, A.K., *Tourism Development Principles and Practices*, New Delhi, 1983
5	Bhatia, A.K., *Tourismin India*, New Delhi
6	VirendraKaul, *Tourism and the Economy*, New Delhi, 1994
7	Gopal Singh, *The Geography of India* , Delhi ,1988
8	Ghulam Yazdan, The Art and Architecture of Deccan
9	Burkart A.J. and Medlik , Tourism: Past Present & Future : (London, Heinemann)
10	M.P. Bezbaruah, Tourism : Future Challenges and Opportunities.
11	John Anderson, Catalogue and Handbooks of the Archaeological Collections in the Indian Museum, 2 Volumes
12	Seth P.N. *Successful Tourism –Planning and Management*, New Delhi, 1987
13	Allchin F.R. *Cultural Tourism in India; Its scope and Development*, New Delhi

B. A**B. A. HISTORY**

III Year B. A. Programme (UG) Courses – Under CBCS

Semester – VI

Paper – VII-F :: (Elective Paper)

MODERN TECHNIQUES IN ARCHAEOLOGY

Unit – 1	Dating Techniques in Archaeology - Relative Techniques – Stratigraphy - Absolute Dating Methods – Carbon 14 – Fluorine – Potassium Argon – Limitations of Carbon 14.
Unit – II	Dendrochronology – Pollen Analysis – Petrology – Thermo Luminescence – Typology – Terracotta, Metallic, Stone, Sarcophagi.
Unit - III	Post Excavation Activities – Collection and Classification of Artefacts – Field Laboratory – Services of Curator – Preservation of the Finds - Preparation and Publication of Archaeological Report.
Unit - IV	Conservation & Exhibition of Artefacts – Methods of Conservation – Organic Objects – Various kinds of Metallic Objects – Need and Importance.
Unit – V	Recent Trends in Indian Archaeology – Underwater Archaeology – Indian Institute of Oceanography, Goa – Recovery of Submerged Sites – Dwaraka – Environmental Archaeology.

References:

1	Atkinson R.J.C., Field Archaeology
2	Chakrabarti D.K., Theoretical Perspectives in Indian Archaeology
3	Rajan K., Archaeology, Principles and Methods
4	Raman K.V., Principles and Methods in Archaeology
5	Paddya K., *The New Archaeology and Aftermath*
6	Rao, S. R., Dwaraka Excavations

Study Tour: Study tour to archaeological sites & museums at least to nearby historical sites is to be compulsorily undertaken. Students should be asked to prepare notes on the objects, how they are collected and maintained in the museums.

. HISTORY

III Year B. A. Programme (UG) Courses – Under CBCS

Semester – VI

Paper – VIII-A-1 (Cluster Elective Paper –1)

CULTURAL TOURISM IN ANDHRA PRADESH

Unit – 1	Concepts of Tourism: Nature – Scope – Definition – Tourists & Excursionists – Domestic & International Tourists.
Unit – II	Types of Tourism: Heritage Tourism – Pilgrimage Tourism - Recreation Tourism – Sports & Adventure Tourism - Advance Tourism – Health Tourism – Environment Tourism.
Unit - III	History and Tourism – Heritage Sites – Definition – Ancient Monuments Preservation Act of 1904, Act of 1958 and Act of 1972 - Archaeological Survey of India – Stage Museums.
Unit - IV	Planning and Development of A.P. Tourism: APTDC – Aims & Objectives – Fairs & Festivals – Andhra Cuisine –Restaurants - Eco Tourism – Beaches & Hill Resorts – Mountaineering – Tourist Places in A.P.
Unit – V	Modalities of Conducting Tourism: Field Work - Visit to a Site – Conduct of Research – Preparation of Project Report

References:

1	APTDC Publications
2	Ashorth G.J, Marketing in Tourism Industry
3	Bhatia A.K., Tourism Development
4	Clare, Gunn, Tourism Planning
5	Khan, Nafees A, Development Tourism in India
6	Krishna K Karama, Basics of Tourism
7	Marrison A.M, Hospitality and Travel Marketing
8	RangaMukesh, Tourism Potential in India
9	Sarkar H, Museums and Protection of Monuments and Antiquities in India
10	Vijayalaxmi K.S., History of Tourism

Field Trip: Compulsory field trip to destinations of architectural, archaeological, historical and cultural importance is to be conducted. Students should be made to prepare detailed reports on the hand-on experience they gained in such trips.

Students should be encouraged to create **blogs** for local site seeing places and to write and organize articles on those spots.

B. A. HISTORY

III Year B. A. Programme (UG) Courses – Under CBCS

Semester – VI

Paper – VIII-A-2 (Cluster Elective Paper 2)

POPULAR MOVEMENTS IN ANDHRA DESA (1848 TO 1956 A.D.)

(History and Culture of Andhra from 1857 to 2014)

Unit – 1	Social & Self Respect Movements: Social Conditions –KandukuriVeeresalingam, Raghupathi Venkata Rathnam Naidu, GuruzadaApparao, Komarraju Venkata Laxmana Rao; New Literary Movements: Causes – RayaproluSubbarao, ViswanathaSathyanarayana, GurramJashua, BoyiBheemanna, SriSri – Impact.
Unit – II	Freedom Movement in Andhra (1885-1920): Contributory Factors – Vandemataram Movement – Swadeshi & Boycott programs – Glorious Events at Rajahmundry, Kakinada, Kotappakonda& Tenali – Home Rule Movement in Andhra.
Unit - III	Freedom Movement in Andhra (1920-1947): Non-Cooperation Movement – ChiralaPerala, Palanadu&Pedanandipadu Activities – Alluri Seetarama Raju &Rampa Revolt (1922-24) – Anti-Simon Commission Movement – Civil Disobedience Movement – Quit India Movement.
Unit - IV	Movement for Separate Andhra State (1953): Causes – Andhra Maha Sabha – Andhra Provincial Congress Committee – Andhra University – Conflict between Coastal Andhra &Rayalaseema – Sri Bagh Pact – Constitution of Committees & their Contribution – Martyrdom of PottiSriramulu – Formation of separate Andhra State.
Unit – V	Movement for formation of Andhra Pradesh (1956): VisalandhraMahasabha – Role of Communists – States Reorganization Committee – Gentlemen's Agreement – Formation of Andhra Pradesh.

References:

1	B. Kesava Narayana, Political and Social Factors in Modern Andhra
2	K.V.Narayana Rao, The Emergence of Andhra Pradesh
3	M. Venkata Rangaiah, The Freedom Struggle in Andhra Pradesh
4	P.R.Rao, History of Modern Andhra
5	SarojiniRegani, Highlights of Freedom Movement
6	SarojiniRegani,
7	V. Ramakrishna, Social Reform Movement in Andhra
8	B. Kesava Narayana, Modern Andhra & Hyderabad – 1858 – 1956 A.D., 2016

Project Work: With the aim of understanding of techniques and methods of research and presentation, students should be encouraged to draft a report on local writers, struggles, human rights movements, different types of social discrimination etc.

B. A. HISTORY

III Year B. A. Programme (UG) Courses – Under CBCS

Semester – VI

Paper – VIII-A-3 (Cluster Elective Paper – 3)

COMTEMPORARY HISTORY OF ANDHRA PRADESH (1956-2014)

Unit – 1	Socio-Economic Changes in Andhra Pradesh – River Projects & Infrastructural Development – Education & Scientific Progress – Regional Politics – Emergence of Telugu Desam Party.
Unit – II	Growth of Leftist Ideology – Marxist & Radical Literature – Naxalbary Movement - Communist Activities - Electoral Politics – Present Status of Communist Movement.
Unit - III	Dalit Movement – Understanding Untouchability - Education – Literature - Struggle for Identity – Demand for Political Space.
Unit - IV	Early trends towards Bifurcation: Jai Telengana Movement (1969) – Mulki Rules – Legal Battle - Jai Andhra Movement (1972) – Six Point Formula (1973).
Unit – V	Bifurcation of Andhra Pradesh: Power Politics – Economic Discontentment – Riparian Disputes - Unemployment –Foundation of Telangana RastraSamiti – Movements for separate Telangana & unified Andhra Pradesh – Formation of Telangana State (2014)

References:

1	Barry Pavier, The Telangana Movement - 1944-51
2	Chinnayya Suri, Agrarian Movement in Andhra, 1921-71
3	K. Ramachandra Murthy, Unveiling Telangana State
4	P.R.Rao, History of Modern Andhra
5	S. Ratnakar, A Brief History of Telangana & Andhra Pradesh
6	Sri Krishna Committee Report
7	TarimelaNagireddy, India Mortgaged
8	Y.V.Krishna Rao, Growth of Capitalism in Indian Agriculture: A Case Study of A.P.
9	KattiPadmarao,
10	Y. Chinnarao,
11	News Paper Clippings (2001-2014)

Project Work: Students may be asked to prepare assignments on local caste struggles; regional disparities; aspirations; recent developments etc., through interviews and verifying press reports.

COURSE: B. A. HISTORY (CBCS)MODEL QUESTION PAPER & PATTERN

Max. Marks: 75 **Time: 3 hrs**

SECTION A (Total: 20 Marks)

Matching (5 Marks: 5 x 1)

A		B
1	( )	A
2	( )	B
3	( )	C
4	( )	D
5	( )	E

Multiple Choice (5 Marks: 5 x 1)

1.
2
3
4
5.

Fill in the Blanks (5 Marks: 5 x 1)

1.	
2.	
3.	
4.	
5.	

SECTION B (Total: 3x5=15 Marks)

(Answer any **three questions**. Each answer carries **5 marks**

(At least 1 question should be given from each Unit)

1.	
2.	
3.	
4.	
5.	
6.	

SECTION C (Total: 3x15 = 45 Marks)

(Answer any **three questions**. Each answer carries **15 marks**

(At least 1 question should be given from each Unit)

1.	
2.	
3.	
4.	
5.	
6.	

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(Code:)

Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx University

xxth Semester End Examination

II B. A., HISTORY

Paper IV - xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Max. Marks: 75 **Time: 3 hrs**

SECTION A (Total: 20 Marks)

Matching (5 Marks: 5 x 1)

A		B
1. Servants of Indian Society	( )	a. V.D.Savarkar
2. Home Rule League	( )	b. Subash Chandra Bose
3. Gaddhar Party	( )	c. LalaHardayal
4. Free Indian Society	( )	d. Gokhale
5. Indian National Army	( )	e. Anne Besant

Multiple Choice (5 Marks: 5 x 1)

1. When did Portuguese rule came to end in India?

a.1612 b. 1947 c. 1962 d. 1565

2. Battle of Baxar took place in the year ____.

a. 1526 b. 1556 c. 1757 d. 1764

3. First Viceroy of India was ------.

?

a. Canning b. Rippon c. Lytton d. Curzon

4. Who wrote the book 'My Experiments with Truth'?
'My Experiments with Truth' ?
a. Sardar Patel b. Sarojini Naidu c. Rajaji d. M.K.Gandhi
M K

5.IndividualSathyagraha was started in the year ----.
-----.
a. 1940 b. 1942 c. 1943 d. 1946

Fill in the Blanks (5 Marks: 5 x 1)

1. First Governor of Portuguese Company was --------.
?
2. ------ gave the title 'Raja' to Ram Moham Roy.
‘ ’ -----.
3. ------ wrote the book 'Annihilation of Caste'.
‘ ’ ----.
4. Salt Sathyagraha started from this area ----.
----.
5. ----- is called as 'Frontier Gandhi'.
-------- ‘ ’ .

SECTION B (Total: 3x5=10 Marks)

(Answer any **three questions**. Each answer carries **5 marks**
. **5**
)

1 Give a brief account of Permanent Revenue Settlement.
.
.

2 Narrate the contribution of William Bentinck in India.
. .

3 Write short notes on Brahma Samaj.
. .

4 Describe Home Rule Movement.
. .

5 What were the causes for the downfall of Mughal empire?
?

6 Describe the conditions in India during Moghal rule.

.

SECTION C (Total: 3x15 = 45 Marks)

(Answer any **three questions**. Each answer carries **15 marks**

. **15**

)

1 How did Robert Clive establish British rule in India?

.

?

2 Give an account of main features of Regulating Charter Acts.

. .

3 What were the reasons and results of 1857 revolt?

. 1857 , .

4 Describe the reforms of Rippon.

. .

5 Explain the role played by Gandhiji in freedom struggle.

. o ?

6 Why is SardarVallabhai Patel called as Builder of Modern India?

.

?

@@@@@

ACHARYA NAGARJUNA UNIVERSITY

BA Economics Syllabus under CBCS

w.e.f. 2015-16 (Revised in April 2016)

Structure of Syllabus

Table-1:

Semester	*Paper*	*Title*
Semester I (Core)	I	Micro Economics – Consumer Behavior
Semester II (Core)	II	Micro Economics - Production and Price theory
Semester III (Core)	III	Macro Economics - National Income, Employment and Money
Semester IV (Core)	IV	Macro Economics - Banking and International Trade
Semester V (Core)	V	Economic Development and Indian Economy
Semester V (Core)	VI	Indian and Andhra Pradesh Economy
Semester VI	VII – (A) Elective Paper	Agricultural Economics
Semester VI	**Cluster Electives – (A) Agribusiness**	
	VIII Cluster Elective Papers	A-1: Agribusiness Environment in Andhra Pradesh
		A-2: Agricultural output Marketing
		A-3: Agricultural Input Marketing.

Table – 2:

Sl. No	Paper	Name of Paper	Sem	Hours/ Week	Credits	Marks	
						Mid Sem	Sem End
1	I	Micro Economics – Consumer Behavior	I	5	4	25	75
2	II	Micro Economics - Production and Price theory	II	5	4	25	75
3	III	Macro Economics - National Income, Employment and Money	III	5	4	25	75
4	IV	Banking and International Trade	IV	5	4	25	75
5	V	Economic Development and Indian Economy	V	5	4	25	75
6	VI	Indian and Andhra Pradesh Economy	V	5	4	25	75
7	VII – (A) Elective paper	Agricultural Economics	VI	5	4	25	75
8	**Cluster Elective – A: Agribusiness**		VI	5	4	25	75
	VIII	A-1. Agribusiness Environment in Andhra Pradesh					
		A-2. Agricultural Output Marketing	VI	5	4	25	75
		A-3. Agricultural Input Marketing.	VI	5	4	25	75

The teacher shall identify appropriate activities for each unit and assign them to all the students for improving domain skills.

		E-3. Industrial Management					

Note: Student Activities like Data/picture analysis, Seminars, Assignments, Group Discussions, Case studies, Fieldwork, Surveys, Study Projects, Models are Part of Curriculum in all papers. The teacher shall identify appropriate activities for each unit and assign them to all the students for improving domain skills.

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

BA Economics Syllabus under CBCS

w.e.f. 2015-16 (Revised in April 2016)

I Year B. A. Programme (UG) Courses – Under CBCS
Semester – I
Paper – I (Core Paper)
Micro Economics – Consumer Behavior

Module -1

Nature, definition and scope of Economics - Wealth, Welfare, Scarcity and modern definitions.

Module -2

Methodology in Economics - Micro & Macro; Static and Dynamic analysis; Normative and positive science, Inductive & Deductive methods; Partial and general Equilibrium.

Module - 3

Utility analysis**:** - cardinal approach-The Law of diminishing Marginal utility- The Law of Equi-Marginal Utility- concept of consumer's surplus

Module - 4

Demand analysis - Law of Demand - Elasticity of Demand - Measurement of Elasticity of Demand - Price, Income & Cross Elasticities of Demand**.**

Module - 5

Ordinal Approach**:** Indifference Curve analysis - Properties of Indifference curves - Price or budget line - Equilibrium of the Consumer with the help of Indifference curves – Samuelson's Revealed preference theory.

REFERENCES:

1. R.G. Lipsey and K.A.Chrystal - "Economics", Oxford University Press, 10/e, 2004.
2. P.A.Samuelson & W.D. Nordhaus-"Economics", Tata Mc.Graw Hill, 18/e, 2005.

3. N.Gregory Mankiw-"Principles of Economics", Thompson 2015 .
4. H.L.Ahuja-"Advanced Economic Theory"' S.Chand.
5. M.L.Seth-"Micro Economics", Laxmi Narayana Agarwal, 2015.
6. Bilas, A.-"Micro Economic Theory", International Student Edition, Mc.Graw Hill, 1971.
7. Telugu Academy Publications
8. D.M. Mithani & G.K. Murty - Business Economics, Himalaya Publishing, 2015.

B. A. ECONOMICS

I Year B. A. Programme (UG) Courses – Under CBCS

Semester – II

Paper – II (Core Paper)

Micro Economics - Production and Price Theory

Module - 1

Production function-Concept of homogeneous production function-Cobb- Douglas Production function- Law of variable proportions-Law of Returns to Scale - Different Concepts of Costs – Explicit & Implicit, Opportunity, Total – fixed and Variable Costs, Marginal & Average Costs & its Relationship. Concept of Revenue – Total, Marginal & Average Revenue and Break – Even Point

Module - 2

Analyse different types of Market structures - Perfect Competition - Price determination and equilibrium of firm and industry under perfect competition - Monopoly - Price determination - Price discrimination.

Module - 3

Monopolistic competition - price determination - Oligopoly - Kinked demand curve approach.

Module - 4

Marginal Productivity theory of distribution - Theories of wage determination Subsistence theory of wages, Standard of living theory of wages, Modern theory of wages Wages and collective bargaining - concept of minimum wage.

Module - 5

Theory of Rent: Ricardian theory of rent - Quasi rent concept of Alfred Marshall. Theories of Interest - Classical, Neo-classical and Keynes Liquidity Preference theory - Profit - dynamic, innovations, Risk and Uncertainty theories.

REFERENCES:

1. R.G. Lipsey and K.A.Chrystal - "Economics", Oxford University Press, 10/e, 2004.
2. P.A.Samuelson & W.D. Nordhaus-"Economics", Tata Mc.Graw Hill, 18/e, 2005.
3. N.Gregory Mankiw-"Principles of Economics", Thompson 2015.
4. H.L.Ahuja-"Advanced Economic Theory"' S.Chand, 2004.
5. M.L.Seth-"Micro Economics", Laxmi Narayana Agarwal, 2015.
6. Bilas, A.-"Micro Economic Theory", International Student Edition, Mc.Graw Hill, 1971.
7. Telugu Academy Publications
8. D.M. Mithani & G.K. Murty - Business Economics, Himalaya Publishing, 2015.
9. Bilas, A.-"Micro Economic Theory", International Student Edition, Mc.Graw Hill, 1971.

B. A. ECONOMICS

II Year B. A. Programme (UG) Courses – Under CBCS

Semester – III

Paper – III (Core Paper)

Macro Economics - National Income, Employment and Money

Module - 1

Meaning, definition of Macro Economics - Importance of Macro Economics- Difference between Micro and Macro Economics - Paradox of Macro Economics -Limitations

Module - 2

National Income - Definitions, Concepts of National Income - Measurement of National Income- Circular flow of Income in Two, Three and Four Sector Economy.

Module - 3

Classical theory of Employment - Say's Law of Markets.

Module - 4

Keynesian Theory of Employment - Consumption function – Investment Function - Marginal Efficiency of Capital (MEC)- Concepts of multiplier and accelerator

Module - 5

Meaning and Functions of Money - Classification of money - Gresham's Law - RBI classification of Money. Theories of Money - Fisher's Quantity theory of Money Cambridge approach (Marshall, Pigou, Robertson & Keynes).

REFERENCES:

1. G.Ackley - "Macro Economics Theory and Policy", Collier Macmillan, 1978.
2. E.Shapiro - "Macro Economic Analysis", Galgotia Publications, 1999.
3. Central Statistical Organisations - "National Accounts Statistics".
4. R.Dornbush, s.Fisher and R.Startz - "Macro Economics", Tata Mc.Graw Hill, 9/e, 2004.
5. M.L.Seth-"Macro Economics", Lakshmi Narayana Agarwal, 2015.
6. K.P.M. Sundaram - "Money, banking & International Trade", Sultan Chand, 2010.
7. Dillard, D - "The Economics of John Maynard Keynes", Crossby Lockwood & Sons.
8. M.N.Mish ra & S.B.Mishra - "Insurance Principles & Practice" S.Chand 2012.
9. Bharati V.Pathak "The Indian Financial System Markets. Institutions & Services". Pearson 2008.
10. Telugu Academy Publication

B. A. ECONOMICS

II Year B. A. Programme (UG) Courses – Under CBCS

Semester – IV

Paper – IV (Core Paper)

Banking and International Trade

Module - 1

Trade Cycles - meaning and definition - Phases of a Trade Cycle -Inflation - definition - types of inflation - causes and effects of inflation measures to control inflation.

Module - 2

Banking: Meaning and definition -Functions of Commercial Banks - Concept of Credit creation-Functions of RBI - Recent developments in banking sectors.

Module – 3

Non-Bank Financial Institutions – Types of NBFIs - Factors contributing to the Growth of NBFIs –-Money market – Defects of Indian money market

Module – 4

Concepts of Shares-Debentures - Stock Market - Functions - Primary and Secondary Markets - SEBI - - Insurance - Life Insurance and General Insurance.

Module - 5

Macro Economic Policy - Fiscal, Monetary and Exchange rate policies

Objectives and Significance - Importance of International Trade - Regional and International Trade – Defining Balance of Trade and Balance of Payment.

REFERENCES:

1. G.Ackley - "Macro Economics Theory and Policy", Collier Macmillan, 1978.
2. E.Shapiro - "Macro Economic Analysis", Galgotia Publications, 1999.
3. Central Statistical Organisations - "National Accounts Statistics".
4. R.Dornbush, s.Fisher and R.Startz - "Macro Economics", Tata Mc.Graw Hill, 9/e,2004.
5. M.L.Seth-"Macro Economics", Lakshmi Narayana Agarwal, 2015.
6. K.P.M. Sundaram - "Money, banking & International Trade", Sultan Chand, 2010.
7. Dillard, D - "The Economics of John Maynard Keynes", Crossby Lockwood & Sons.
8. M.N.Mish ra & S.B.Mishra - "Insurance Principles & Practice" S.Chand 2012.
9. Bharati V.Pathak "The Indian Financial System Markets. Institutions & Services".
10. Pearson.
11. D.M.Mithani & G.K.Murty - “Business Economics", Himalaya Publishing House, 2015.
12. M.L.Jhingan - Economic Development - Vikas, 2012.
13. G.Omkarnath - Economics - A Primer for India - Orient Blackswan, 2012.
14. Agarwal, V. (2010) Macroeconomics: theory and Policy, Dorling Kindersley (India)
15. Pvt. Ltd., New Delhi
16. Ahuja, H.L. (2012) Macro Economics, Theory and policy, S. Chand and Company Ltd.,
17. New Delhi

B. A. ECONOMICS

III Year B. A. Programme (UG) Courses – Under CBCS

Semester – V

Paper – V (Core Paper)

Economic Development and Indian Economy

Module - 1

Concept of Economic Growth - Distinction between economic growth and development - Measurement of economic development - Theories of Economic Growth: Adam Smith, Rostow, Karl Marx and Harrod & Domar Models.

Module - 2

Sustainable development - Balanced and unbalanced growth-choice of techniques Labour intensive and capital intensive methods.

Module - 3

Basic features of the Indian Economy - Natural Resources - Important Demographic features- Concept of Population Dividend - Population Policy.

Module - 4

National Income in India - trends and composition-poverty, inequalities and Unemployment - Measures taken by the Government. - MGNREGS

Module - 5

Economic reforms - liberalization, privatization and globalisation - concept of inclusive growth.

REFERENCES:

1. Dhingra, I.C - "Indian Economy", Sultan Chand, 2014.
2. Ruddar Dutt and K.P.M. Sundaram - "Indian Economy", S.Chand & Co., 2015.
3. G.M.Meier -"Leading Issues in Economic Development", Oxford University Press, New York,.
4. M.P.Todaro - "Economic Development", Longman, London 6/e, 1996.
5. Reserve Bank of India - Hand book of Statistics on Indian Economy (Latest).
6. S.K.Misra & V,K,Puri - "Indian Economy", Himalaya Publishing House, 2015.
7. R.S.Rao, V.Hanumantha Rao & N.Venu Gopal (Ed) - Fifty Years of Andhra Pradesh (1956-2006), Centre for Documentation, Research and Communications, Hyderabad, 2007.
8. G.Omkarnath - Economics - A Primer for India - Orient Blackswan, 2012.
9. Benjamin Higgins - Economic Development
10. Telugu Academy Publications.
11. Dr. Ch.S.G.K. Murthy, Indian Economy - Gitam University

B. A. ECONOMICS

III Year B. A. Programme (UG) Courses – Under CBCS

Semester – V

Paper – VI (Core Paper)

Indian and Andhra Pradesh Economy

Module - 1

Indian Agriculture - Importance of Agriculture in India - Agrarian structure and relations- Factors determining Productivity- Agricultural Infrastructure - Rural credit - Micro Finance - Self Help Groups (SHGs) - Agricultural Price policy- concept of Crop Insurance - Food Security.

Module - 2

Structure and growth of Indian Industry - Industrial policies of 1956 & 1991 Meaning of Micro small and Medium Enterprises (MSMEs)- Problems and Prospects of small scale Industries in India.

Module - 3

Disinvestment in India - FEMA - Foreign direct investment - Services Sector in India – Reforms in Banking and Insurance -, IT, Education and Health.

Module - 4

Planning in India Economy - Objectives of Five year plans - Review of Five year Plans - Current Five year plan- NITI Aayog

Module - 5

Andhra Pradesh Economy - Population - GSDP - Sector Contribution and trends - IT – Small Scale Industry - SEZs.

REFERENCES:

1. Dhingra, I.C - "Indian Economy", Sultan Chand, 2014.
2. Ruddar Dutt and K.P.M. Sundaram - "Indian Economy", S.Chand & Co., 2015.
3. G.M.Meier - "Leading Issues in Economic Development", Oxford University Press, New York, 3/e.
4. M.P.Todaro - "Economic Development", Longman, London 6/e, 1996.
5. Reserve Bank of India - Hand book of Statistics on Indian Economy (Latest).
6. S.K.Misra & V,K,Puri - "Indian Economy", Himalaya Publishing House, 2015.
7. R.S.Rao, V.Hanumantha Rao & N.Venu Gopal (Ed) - Fifty Years of Andhra Pradesh (1956-2006), Centre for Documentation, Research and Communications,Hyderabad, 2007.
8. G.Omkarnath - Economics - A Primer for India - Orient Blackswan, 2012.
9. Telugu Academy Publications.
10. Dr.Ch.S.G.K.Murthy, Indian Economy - Gitam University.

Andhra Pradesh State Council of Higher Education

Structure of BA - Political Science under CBCS w.e.f.2015-16

Revised in April, 2016

Yr	Semester	Paper	Title	Hr/ Wk	Credits	Marks	
						Int	Ext
1	I	I	Basic Concepts of Political Science	5	4	25	
	II	II	Political Institutions (Concepts, Theories and Institutions)	5	4	25	75
2	III	III	Indian Constitution	5	4	25	75
	IV	IV	Indian Political Process	5	4	25	75
3	V	V	Indian Political Thought	5	4	25	75
		VI	Western Political Thought	5	4	25	75
	VI	VII	Electives (any one) VII-(A): Major issues in Indian Politics (or) VII-(B): Principles of Public Administration (or) VII-(C): Local Self - Government in Andhra Pradesh	5	4	25	75
		VIII	Cluster Electives (any one cluster, i.e., set of three papers) Elective VIII-A-1: Colonialism and Nationalism in India	5	4	25	75
			Elective VIII-A-2: Political Economy of Development in India	5	4	25	75
			Elective VIII-A-3: Feminism: Theory and Practice **(or)** Elective VIII-B-1: Comparative Constitutionalism; UK, USA Elective VIII-B-2: Human Rights in a Comparative Perspective Elective VIII-B-3: Political Sociology **(or)** Elective VIII-C-1: International Relations Elective VIII-C-2: Indian Foreign Policy ElectiveVIII-C-3: Contemporary Global Issues	5	4	25	75

Note: Student Activities like Data/picture analysis, Seminars, Assignments, Group Discussions, Case studies, Fieldwork, Surveys, Study Projects, Models are Part of Curriculum in all papers. The teacher shall identify appropriate activities for each unit and assign them to all the students for improving domain skills.

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
FIRST YEAR; SEMESTER – I
B.A. POLITICAL SCIENCE
PAPER-I(CORE): BASIC CONCEPTS OF POLITICAL SCIENCE

Unit-1: Explanatory Frameworks of Politics

1. What is Politics: Nature and Scope of Political Science
2. Approaches to the Study of Politics: Normative, Historical, Empirical Traditions

Unit-2: What is the State

1. Origin and Evolution of the Modern State
2. Different Conceptions on the role of the Modern State: Social Democratic and Neo Liberal conceptions

Unit-3: Nations and Nationalism

1. Conceptual Distinction between Nationality and Nation
2. Varieties of Nationalism: Culture and Civic Nationalism

Unit-4: Rights and Citizenship

1. Evolution of Rights: Civil and Social rights
2. Citizenship: Universal and Differential Citizenship

Unit-5: Freedom, Equality and Justice

1. Freedom: Negative and Positive Freedom
2. Equality: Formal Equality, Equality of Opportunity, Equality of Outcome
3. Justice: Justice based on Needs, Deserts and Rights

Reference books:

1. Bhargava Rajeev and Acharya Ashok (eds) (2008) Political Theory: An Introduction, Pearson, New Delhi.
2. Andrew Heywood (2007) Politics 3rd edition, Palgrave Macmillan, NewYork.
3. Bellamy R (1993) (Ed) Theories and Concepts of Politics, Manchester university press, New York.
4. Vincent A (2004) The Nature of Political Theory, Oxford Universit Press, NewYork.

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
FIRST YEAR; SEMESTER – I
B.A. POLITICAL SCIENCE
PAPER-II (CORE): POLITICAL INSTITUTIONS
(CONCEPTS, THEORIES AND INSTITUTIONS)

Unit-1: Constitutionalism

1. The Purpose of Constitutional law, Theory of Separation of Powers
2. Structural Forms of the Modern State: Basic features of Parliamentary and Presidential forms of Government

Unit-2: Territorial Division of Authority of the Modern State

1. Basic features of Federal form of Government
2. Basic features of Unitary form of Government

Unit-3: Institutional forms of the Modern State

1. Democracy: Basic features of Classical and Modern Representative Democracy
2. Models of Democracy: Procedural Democracy and Substantive Democracy

Unit-4: Judiciary and Democratic State

1. The nature, role and functions of the Judiciary
2. Judicial Review: Debates on the Supremacy of legislature or Judiciary in the protection of Constitutional law

Reference books:

1. Andrew Heywood (2007) Politics 3rd edition, Palgrave Macmillan, New York
2. Held, David (2006) Models of Democracy 3rd edition Oxford Polity Press
3. Birch A.H (2000) The Concepts and Theories of Democracy, London Routledge
4. Bogdanor, V (Ed) (1988) Constitutions in Democratic Politics Gower, Aldershot
5. Scott Gordon (1999) Controlling the State: Constitutionalism from Ancient Athens to Today, Cambridge, Harvard University Press.

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
SECOND YEAR; SEMESTER – III
B.A. POLITICAL SCIENCE
PAPER-III(CORE): INDIAN CONSTITUTION

Unit-1: The Making of the Constitution

1. The ideological legacy of the Indian National Movement on the Constituent Assembly
2. The Nature and Composition of the Constituent Assembly

Unit-2: Philosophical Premises of the Indian Constitution

1. Preamble: The underlying values of the Indian Constitution
2. Salient features of the Constitution of India

Unit-3: Fundamental rights and Directive principles of State Policy

1. Individual and Collective Rights: Limitations on the fundamental Rights
2. Judicial Interpretation of Fundamental Rights
3. The doctrine of 'Basic Structure' of the Constitution: KesavanandaBharathi Case

Unit-4: Indian Federalism

1. Unitary and Federal features in the Indian Constitution
2. Tension Areas between the Union and State Governments
   Legislative, Administrative and Financial Spheres

Unit-5: Working of the Indian Constitution

1. The Values of the Indian Constitution and Ushering of Social Revolution in India
2. The causes for the Ascendency of the Executive over legislature and Judiciary; Major Controversies regarding the Amendments to the Constitution
3. Nature and Role of Higher Judiciary in India; Recent Debates on the mode of appointment of Judges

Reference books:

1. Granville Austin (1972) the Indian Constitution, Cornerstone of a Nation Oxford university Press, New Delhi.

2. Madhavkhosla (2012) the Indian Constitution, oxford university press, New Delhi

3. Granville Austin (1999) Working a Democratic Constitution; A History of the Indian Experience, Oxford University Press, New Delhi

4. Zoya Hasan, Sridharan E and Sudharshan R (Eds) 2002 India's living Constitution, Permanent black, New Delhi

5. BaxiUpendra (1980) the Indian Supreme Court and Politics Eastern book co, Lucknow

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
SECOND YEAR; SEMESTER – IV
B.A. POLITICAL SCIENCE
PAPER-IV (CORE): INDIAN POLITICAL PROCESS

Unit-1: Approaches to Study the Political Processes in India

1. Theory of Modernization: Transition from Tradition to Modernity
2. Marxian Approach: Transition from pre-capitalism to capitalism

Unit-2: Social Structure and Democratic Process

1. Transition of Caste System: From Hierarchy to Identity: Role of Agency
2. Politicisation of Intermediate and Dalit Caste Communities
3. Evolution of Modernity in India

Unit-3: Religion and Politics

1. Competing Communalisms: Majoritarian and Minoritarian
2. Debates on Secularism; Role of the State towards religion

Unit-4: Party and Electoral Processes in India

1. Electoral Trends of the lokSabha from 1952 to 2014:From the One Party Congress System to Multi Party Coalitions
2. Determinants of Voting Behavior in India;Caste,Class,Patronage, Money etc.
3. Evolution of Party System in India: the Ideology and Social bases of major Political Parties: INC,BJP,CPM, DMK,BSP,TDP

Reference books:

1. Chandhoke N and Priyadarshini P (Eds) (2009) Contemporary India Economy, society, politics, Pearson, NewDelhi.
2. Vanaik A and Bhargava R (Eds) (2010) Understanding Contemporary India Critical perspectives orient black swan New Delhi.
3. Jayal N G and Mehta PB (Eds) (2010) Oxford Companion to Indian Politics Oxford University Press, New Delhi.
4. Kohliatul and Prema Singh (Ed) (2013) Routledge Hand book of Indian Politics Routledge, NewYork.
5. Jaffrelot C (2003) India's Silent Revolution: The Rise of the Lower Caste in North India, C Hrust, London.
6. Stanely A. Kochanek, Robert L.Hardgrave, India Government and Politics in a Developing Nation, Boston, Wards Worth Publishing, 2006.
7. Rajeev Bhargava (Ed) Secularism and its Critics (1998), Delhi, OUP.

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
THIRD YEAR; SEMESTER – V
B.A. POLITICAL SCIENCE
PAPER-V(CORE): INDIAN POLITICAL THOUGHT

Unit-1: Traditions of Ancient Indian Political Thought

1. Sources and features of Ancient Indian Political Thought
2. Manu: Social laws
3. Kautilya:Theory of the State

Unit-2: Renaissance Thought

1. Rammohun Roy: Religious and Social Reform
2. PanditaRamabai: Gender

Unit-3: Early Nationalism

1. DadabaiNaoroji: Drain Theory and Poverty
2. Ranade M G : The Role of the State and Religious Reform

Unit-4: Religious Nationalism

1. Savarkar V D : Hindutva or Hindu Cultural Nationalism
2. Mohammed Iqbal: Islamic Communitarian Nationalism

Unit-5: Democratic Egalitarianism

1. Gandhi-Swaraj and Satyagraha
2. Jawaharlal Nehru- Democratic Socialism
3. Dr.Ambedkar B R – Annihilation of Caste System
4. M.N.Roy: Radical Humanism

Reference books:

1. Pantham Thomas and Kenneth Deutsch(Ed)(1986)
   Political thought in modern India, Sage, New Delhi
2. BidyutChakrabarthy and Rajendra Kumar Pandey (2009) modern Indian political thought, Sage, New Delhi
3. Gurpreet Mahajan (2013), India : Political ideas and making of a democratic discourse, zed book, London
4. Partha Chatterjee (1986) nationalist thought and the colonial world: A derivative disclosure, zed books, London
5. Bhikhu Parekh (1999) colonialism, tradition and reform,Sage,New Delhi
6. Bhikhu Parekh(1989) Gandhi's political philosophy ,Macmillan, London

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
THIRD YEAR; SEMESTER – V
B.A. POLITICAL SCIENCE
PAPER-VI (CORE): WESTERN POLITICAL THOUGHT

Unit-1: Classical Western Political Thought

1. Plato: Theory of Forms, Critique of Democracy, Justice
2. Aristotle: Citizenship, State, Justice, Virtue

Unit-2: Early Medieval to the Beginning of Modern Thought

1. St. Augustine: Earthly City and Heavenly City, Evil, Freewill, Moral Action
2. Machiavelli, Statecraft, Virtue, Fortuna

Unit-3: Liberal Thought

1. Thomas Hobbes: Human nature, Social Contract, liberty, State
2. John Locke: Natural Rights, Consent, Social Contract, State
3. Rousseau: Social institutions and Moral Man, Equality, liberty and General Will

Unit-4: Liberal Democratic Thought

1. Jeremy Bentham: Utilitarianism
2. John Stuart Mill: Individual liberty, Representative Government

Unit-5: Philosophical Idealism and its critique

1. Hegel: Individual Freedom, Civil Society, State
2. Karl Marx: Alienation, Surplus Value,Materialist Conception of History, State

Reference books

1. ShefaliJha (2010) Western Political Thought from Plato to Karl Marx, Pearson, NewDelhi
2. Boucher D and Kelly P (Eds) (2009) Political Thinkers from Socrates to the Present, Oxford University press, oxford
3. Coleman J (2000) A History of Modern Political Thought: From Ancient Greece to early Christianity, Blackwell publishers, oxford
4. Macpherson C B (1962) The Political Theory of Possessiveness Individualism, Oxford University press, oxford
5. Hampsher-monk I (2001) A History of Modern Political Thought: Major Political Thinkers fromHobbers to Marx,Blackwell publishers, oxford

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
THIRD YEAR; SEMESTER – VI
B.A. POLITICAL SCIENCE
PAPER-VII-(A) (ELECTIVE): MAJOR ISSUES IN INDIAN POLITICS

Unit- I: Caste and Politics

1. Changing Power Relations Within the Caste Structure
2. Ethnicisation of caste

Unit- II: Secessionism

1. Causes for Secessionist Movement in the State of Jammu & Kashmir

2. Causes for Secessionist Movements in the States of North-East India

Unit- III: Regionalism in India

1. Centralizing tendencies in India Federalism
2. Regionalism as a Response to protection of autonomy of States: Regionalism in Tamilnadu, Punjab and Assam

Unit- IV: Crisis of Governance of the State Institutions in India

1. Proliferation of Corruption in the Institutions of the State: Beaucratic and Political Corruption.
2. Electoral Malpractices and Defections of Elected Representatives: Need for reforms in the Anti-Defection Law
3. Electoral Populism and Competitive Populist Welfarism

Reference Books:

1. Partha Chatterjee, (Ed) State and politics in India, Delhi, OUP,1998
2. Sudiptakaviraj (ed), Politics in India, Delhi, OUP,2007
3. NirajaJayal, Democracy and the State, Welfare, Secularison and Development in Contemporary India, Delhi, OUP.2001
4. Rajeev Bhargava, Secularism and its Critics, Delhi, OUP,1999
5. PratapBhanu Mehta and DeveshKapur (eds), Political Institutions in India, Delhi, OUP,2011
6. Niraja Gopal Jayal and Bhanupratap Mehta (ed), The Oxford Companion to Politics in India, Delhi, OUP,2011
7. SanjibBaruach, Ethnonationalisam in India: A Reader, Delhi, OUP, 2012.
8. SanjibBaruach, Durable Disorder: Understanding the Politics of North East India, Delhi, OUP, 2007.

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
THIRD YEAR; SEMESTER –VI
B.A. POLITICAL SCIENCE
PAPER-VII-(B)(Elective): PRINCIPLES OF PUBLIC ADMINISTRATION

Unit-1: Nature of Public Administration

1. Meaning, Nature and Scope of Public Administration
2. Significance of Public Administration
3. Public and Private Administration

Unit-2: Administrative Theories

1. Classical Theory-Henry Fayol
2. Human Relations theory-Elton Mayo
3. Rational Decision making theory-Herbert Simon

Unit-3: Principles of Organization

1. Hierarchy- Span of control-Unity of command
2. Decision Making-Communication
3. Co-ordination-leadership

Unit-4: Structure of organization

1. Chief Executive-Types and Functions
2. Department-Bases of Departmentalization
3. Line and Staff Agencies

Unit-5: Theories of Motivation

1. Meaning and importance of Motivation
2. Hierarchy of needs theory; Abraham Maslow
3. Theories of X and Y ; Donglas Mc Gregor

Reference books:

1. Pardhasaradhi (Eds) (2011) Public Administration; Concepts, Theories and Principles, Telugu Academy, Hyderabad
2. R.kSapru (2014) 3rd Edition, Administrative Theories and Management Thought, PHI learning Pvt.Ltd, New Delhi.
3. Prasad D R, Prasad V S,(Eds) (2010),Administrative Thinkers, Sterling Publishers, NewDelhi.

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
THIRD YEAR; SEMESTER – VI
B.A. POLITICAL SCIENCE
PAPER-VII-(C) (ELECTIVE): LOCAL SELF - GOVERNMENT IN ANDHRA PRADESH

Unit- I: Evolution of Local Self-Government in India

1. Constitutional Provisions on local Self-Government
2. Recommendations of Balwantrai Mehta and Ashok Mehta Committees on Local Self - Government

Unit-II: Importance of Constitutional Amendments

1. 73rd Amendment – Rural Local bodies;Basic features
2. 74th Amendment – Urban Local bodie; Basic features

Unit-III: Structure and functions of Panchayati Raj in Andhra Pradesh

1. Gram Panchayat
2. Mandal Parishad
3. ZillaParishad
4. Structure and functions of Urban local bodies in Andhra Pradesh; Municipalities Nagar Panchayat and Municipal Corporations

Unit-IV: Structure and functions of Urban local bodies in Andhra Pradesh

1. Nagar Panchayats
2. Municipalities
3. Municipal Corporations

Unit-V: Role of leadership and Emerging Challenges

1. Emerging patterns of leadership
2. Problems of autonomy: Financial and Administrative spheres

Reference Books:

1. Maheswari, S.R., Local Self Government in India, Orient longman,1971
2. Venkatesan V, InstitutionalisingPanchayati Raj in India, Institute of Social Sciences, New Delhi 2002
3. Baviskar B.S, Inclusion and Excusion in Local Governance, Sage Publication, New Delhi 2009.
4. M.P. Dube and Padalia, M (Ed), Democratic Decentralization and Panchayati raj in India, Anamika Publishers, New Delhi, 2002.
5. BalaRamulu, CH and Ravinder D, "Five Decades of Democratic Decentralization process in Andhra Pradesh" in Social Change (Journal of the Council for Social Development published by Sage International) Vol.42, No.2, PP165-186, June 2012.

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
THIRD YEAR; SEMESTER – VI
B.A. POLITICAL SCIENCE
PAPER: VIII-A-1 (Cluster Elective): COLONIALISM AND NATIONALISM IN INDIA

Unit- I: The Impact of Colonial Rule on India

1. The Nature of Indian Society on the Eve of Colonial Rule
2. The impact of Colonial Rule on the Indian Society; On Agriculture, Handlooms and Industry

Unit-II: Reforms and Resistance

1. 1857 Rebellion : Causes, Nature and Aftermath
2. Socio - Religious Movements in 19th century; BrahmoSamaj, Arya Samaj etc.

Unit-III: Emergence and Growth of Nationalism

1. Liberal Constitutionalism: Swadeshi Movement
2. Role of Gandhiji in Mass Mobilization: Non- Cooperation, Civil Disobedience and Quit India Movements.

Unit-IV: Communalism, Partition and Establishment of Indian Republic

1. Colonial roots of Communalism and Partition of the Country
2. An Evaluation Civic and Secular Nationalism leading to the Constitution of India as a Republic.

Reference Books:

1. Chandra Bipan, Essays on Colonialism, Hyderabad, Orient Longman, 1999.
2. Chandra Bipan (Eds), India's struggle for Independence, Delhi, Penguin, 1988.
3. Sumit Sarkar, Modern India (1885-1947), New Delhi, Macmillan,1983
4. SekharBandopadhyay, From Plassey to Partition and after; A History of Modern India, Delhi, Orient Longman, 2015.
5. Jalal, A and Bose, S, Modern South Asia: History, culture and Political Economy, Delhi, OUP, 1999.

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
THIRD YEAR; SEMESTER – VI
B.A. POLITICAL SCIENCE
PAPER: VIII-A-2 (Cluster Elective): POLITICAL ECONOMY OF DEVELOPMENT IN INDIA

Unit- I: Colonialism and Indian Economy

1. Self-Sufficiency of Indian Village Structure
2. The Impact of Colonial Rule on the Indian Economy: De-Industrialization Thesis

Unit-II: Economic Development in the Post-Independent Era

1. Planning as a Strategy of Development
2. State led Import Substitution Industrialization for Self Reliant Economic Development

Unit-III: Agrarian Development

1. Politics of Land Reforms: legislative measures for the abolition of Zamindari System, Ceiling on Land Ownership Rights.
2. Green Revolution Strategy for Rapid Development of Agriculture

Unit-IV: Politics of Economics Reforms

1. The assertion of dominant class interests: Rich peasants, State Bureaucracy and Industrial Capitalist classes on the State.
2. Economic Reforms: Liberalization of regulation of the State controls on the economy: Strategy of Market led growth of the Indian economy from 1991 onwards.
3. The impact of Economic Reforms on the Indian Polity: Rising inequalities across Regions and Classes.

Reference Books:

1. Frankel Francine R, Indian Political Economy, Delhi, OUP,
2. Rudolph, Llyod and Rudolph Susan, In Pursuit of Lakshmi, Delhi, OUP, 2004.
3. Terry Byres, The Indian Economy: Major debates since Independence, New Delhi, OUP, 1999.
4. BardhanPranab,The Political Economy of Development, Delhi, OUP,1998
5. Jenkins Rob, Economics Reforms in India, Delhi, OUP,2000
6. Mukherjee Rahul, (Ed) India's Economic Transition: The politics of Reforms, New Delhi, OUP, 2007.

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
THIRD YEAR; SEMESTER – VI
B.A. POLITICAL SCIENCE
PAPER:VIII-A-3 (Cluster Elective): FEMINISM: THEORY AND PRACTICE

Unit- I: Approaches to Study Patriarchy

1. Understanding Sex/ Gender Distinction: Biologism versus Social Constructivism
2. Patriarchy; Private, Public and Power relations within the Family

Unit-II: History of Feminism

1. Origins of Feminism in the West: Britain and France
2. Liberal and Radical Feminist Trends

Unit-III: The Status of Women in India

1. The Position of Women in Indian Society
2. Gender relations in the Family
3. Legal Provisions for the protection of Women in India

Unit-IV: Contemporary Position of Women in Indian Society

1. Understanding Woman's Work and Labour
2. Representation of women in the Indian Parliament
3. Debates on the Reservation of Women in Legislature

Reference Books:

1. Geetha, V, Gender, Stree, Calcutta, 2002
2. Geetha, V, Patriarchy, Stree, Calcutta, 2007
3. Lerner Gerda, The creation of Patriarchy, New York, OUP,1986
4. Forbes, G., Women in Modern India, Cambridge, OUP,1998
5. Desai Neera and Thakkar, Usha, Women in Indian Society, New Delhi, National book Trust, 2001.
6. Rowbothan, Shiela, Women in Movements, London, Routledge, 1993.

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
THIRD YEAR; SEMESTER – VI
B.A. POLITICAL SCIENCE
PAPER: VIII-B-1(Cluster Elective): COMPARATIVE CONSTITUTIONALISM; UK, USA

Unit- I: Constitutionalism

- Evolution of Constitutionalism in U K and USA

Unit-II: Legislature

- Parliament (U K): Structure and Powers
- Congress (USA): Structure and Powers

Unit-III: Executive

- Prime minister & Cabinet (UK): Powers and Functions
- President (USA) : Powers and Functions

Unit-IV: Judiciary

- Nature, Powers and Functions of Judiciary (UK &USA)

Unit-V: Constitutional Amendments

- Procedures for the Amendment of Constitutional Law (UK &USA)

Reference Books:

1. Almond, G et.al, Comparative Politics Today: A world view, 9th Edition, Pearson Education, Delhi, 2011
2. Birch, A.H, British System of Government 4th Edition, Lodon, George Allen and Unwin, 1980.
3. Finer, H., Theory and Practice of Modern Government, London, Methuen,1969
4. Bagehot, The English Constitution, London, Fontana,1963.
5. Kavanagh, D., British Politics, Continuity and Change, Oxford, OUP, 2006.
6. Bogdanor, V (Ed) (1988) Constitutions in Democratic Politics Aldershot, Gower.

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
THIRD YEAR: SEMESTER – VI
B.A. POLITICAL SCIENCE
PAPER: VIII-B-2 (ELECTIVE): HUMAN RIGHTS IN COMPARATIVE PERSPECTIVE

UNIT - I: Human Rights; Theory and Institutionalization

1. Understanding Human Rights: Three Generations of Rights
2. Institutionalization: Universal Declaration of Human Rights
3. Rights in National Constitutions: South Africa and India

UNIT - II: Issues

1. Torture : USA and India
2. Terrorism and Insecurity of Minorities: USA and India

UNIT-III: Structural Violence

1. Caste and Race: Discrimination based on Birth: South Africa and India
2. Adivasis / Aborginals and the Land Question: Australia and India

UNIT-IV: Watchdogs of Human Rights Violation

1. Amnesty International
2. Human Rights Watch

Reference Books:

1. Byrne, Darren,O., Human Rights, An Introduction, Delhi, Pearson,2007.
2. R. Wolfrern, 'Discrimination, xenophobia and Racism' in Symonides, J, New Dimensions and challenges For Human Rights:JaipurRawat Publications, 1998.
3. Cadzon and Maynard, J (Eds), Aborginal studies; Nelson cengage learning, 2011.
4. Kannabiram, k., Tool of Justice: Non- Discrimination and the Indian Constitution, New Delhi, Routledge, 2012.
5. Ishay, M., The History of Human Rights: From Ancient Times to the Globalization Era, Delhi, Orient Blackswan.

Andrew Clapham, Human Rights: A Very Short Introduction, Oxford, OUP, 2007.

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
THIRD YEAR; SEMESTER – VI
B.A. POLITICAL SCIENCE
PAPER: VIII-B-3(Cluster Elective): POLITICAL SOCIOLOGY

Unit- I: Sociology and Politics

1. Sociology of Politics and Political Sociology
2. Evolution of Political Sociology as an Academic Discipline

Unit-II: Political Modernization

1. The theory of Political Modernization: Transition from Tradition to Modernity; The European Experience
2. Nature of Transition ofTradition in Post-Colonial Countries

Unit-III: Political Culture

1. Meaning and role of Political Culture
2. Types of political culture: Parochial, Subjective and Participatory Political Cultures

Unit-IV: Political Socialization

1. Meaning and role of Political Socialization
2. Agencies of Socialization: Family, Media, Education etc.
3. Political Communication: Meaning

Reference Books:

1. Bottomore, T.B. Political Sociology, New Delhi, London, PLUTTO PRESS,1993
2. Dipankar Gupta, Political Sociology in India, New Delhi, Orient Longman 1996
3. Giddens, Anthony Sociology, London Wiley, 2013.

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
THIRD YEAR; SEMESTER – VI
B.A. POLITICAL SCIENCE
PAPER: VIII-C-1 (Cluster Elective): INTERNATIONAL RELATIONS

Unit- I: Basic Concepts of International Relations

1. Meaning, Nature and Scope of International Relations
2. (a). Balance of power (b). National interests
   (c). Collective Security (d). Diplomacy

Unit-II: Approaches to the study of International Relations

1. Idealism – Woodrow Wilson
2. Classical Realism – Hans Morgenthau
3. Neo – realism – Kenneth Waltz

Unit-III: Phases of International Relations (1914-1945)

1. Causes for the First World War
2. Causes for the Second World War

Unit-IV: Phases of International Relations (1945 onwards)

1. Origins of First Cold War
2. Rise and Fall of Détente
3. Origins and the End of Second Cold War

Unit-V: International Organisation

1. The role of UNO in the protection of International Peace
2. Problems of the Third World : Struggle for New International Economic Order

Reference Books:

1. Jackson, R and Sorensan Y, Introduction to International Relations; Theories and approaches, New York, OUP, 2008.
2. Baylis, J and Smith, S (Eds), The Globalization of World Politics; An Introduction to International Relations, Oxford, OUP,2011
3. Aneek Chatterjee, International Relations Today; Concepts and Applications, New Delhi, Pearson Education, 2008.
4. E.H. Carr, International relations between the two world Wars, Lodon, Palgrave Macmillan, 2004.

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
THIRD YEAR; SEMESTER –VI
B.A. POLITICAL SCIENCE
PAPER:VIII-C-2 (Cluster Elective): INDIAN FOREIGN POLICY

Unit- I: Evolution of Indian Foreign of Policy

1. Determinants of Indian Foreign of Policy
2. Continuity and change in Indian Foreign Policy

Unit-II: Non-Alignment and UNO

1. The role of India in the Non-Alignment Movement
2. Relevance of Non-Aligned Movement in the Contemporary World
3. Role of India in the UNO in protection of International Peace

Unit-III: India's Relation with USA and China

1. Indo- US Relations: Pre- Cold War Era, Post- Cold War Era
2. India – China Relations: Pre- Cold War Era, Post- Cold War Era

Unit-IV: India and her Neighbours

1. Indo- Pakistan Relations
2. India's role in South Asian Association of Regions Cooperation (SAARC)

Reference Books:

1. David Scott (Ed), Handbook of India's International Relations, London, Routledge,2011
2. Ganguly, S (Ed), India as an Emerging Power,Portland, Franck class, 2003
3. Pant, H, Contemporary Debates in Indian Foreign and Security Policy, London, Palgrave Macmillian,2008
4. Tellis, A and Mirski, S (Eds), Crux of Asia; China, India, and the Emerging global Order, Washington, Carnegie endowment for international peace,2013
5. Muni, S.D, India's Foreign Policy Delhi CUP, 2009
6. Alyssa Ayres and Raja Mohan, C (Eds), Power Realignment in Asia: China, India and the United States, New Delhi, Sage, 2002.
7. Appadorai, A, Domestic roots of Indian Foreign Policy, New Delhi, OUP,1971 Dutt, V.P, India's Foreign Policy in a Changing World, New Delhi,NBT,2011

CBCS: SYLLABUS - SEMESTER WISE (2015-16)
THIRD YEAR; SEMESTER – VI
B.A. POLITICAL SCIENCE
PAPER: VIII-C-3 (Cluster Elective): CONTEMPORARY GLOBAL ISSUES

Unit- I: Conceptions of Globalization

1. Economic Conception of Globalization
2. Political Conception of Globalization

Unit-II: Anchors of Global Political Economy

1. International Monetary Fund – Nature, Role and Functions
2. Work Bank-Nature, Role and Functions
3. World Trade Organization: Origin, Nature and role in the context of Globalization

Unit-III: Nation State and Globalization

1. The role of Nation State in the context of Globalization
2. Consequences of Globalization – Rise of Inequalities within and across Nations

Unit-IV: Contemporary Global issues

1. Ecological Issues: International Agreements On Climate Change
2. International Terrorism: Non- State Actors and State Terrorism

Reference Books:

1. Ritzer, G., Globalization: A Basic Text, Sussex: Wiley- Black well,2009
2. Streger, M., Globalization: A Very Short Introduction, Oxford, OUP,2013
3. Heywood, A., Global Politics, New York, Palgrave Macmillian,2011
4. Held, D et.al, Global Transformations; Politics, Economics and culture California, Stanford University Press,1999
5. J. Volger, 'Environmental Issues'in J. Baylis, S. Smith an owens, P(Eds) Globalization of world politics, New York, Palgrave,2011

A.P. State Council of Higher Education
Revised Common Framework of CBCS for B.Com (w.e.f.2015-16) in AP
B.Com - Semester –I

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam*	Sem. End Exam	Teaching Hours**	Credits
1.	First Language	English	100	25	75	4	3
2.	Second Language	(Tel/Hindi/Urdu/Sans)	100	25	75	4	3
3.	Foundation Course -1	HVPE (Human Values & Professional Ethics)*	50	---	50	2	2
4.	Foundation Course- 2	Environmental Studies	50	---	50	2	2
5.	DSC 1 A	Fundamentals of Accounting-I	100	25	75	5	4
6.	DSC 2 A	Business Organization	100	25	75	5	4
7.	DSC 3 A	Business Economics-I	100	25	75	5	4
Total			**600**	**125**	**475**	**27**	**22**

#The marks split between formal test and co-curricular activities may be decided by the University concerned
@ Syllabus size shall be in accordance with the No. of teaching hours.
*HVPE may be taught by Telugu teachers

B.Com - Semester – II

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1.	First Language	English	100	25	75	4	3
2.	Second Language	(Tel/Hindi/Urdu/Sans)	100	25	75	4	3
3.	Foundation Course -3	ICT-1 (Information & communication Technology)	50	---	50	2	2
4.	Foundation Course-4	Communication & Soft Skills-1	50	---	50	2	2
5.	DSC 1 B	Fundamentals of Accounting-II	100	25	75	5	4
6.	DSC 2 B	Business Environment	100	25	75	5	4
7.	DSC 3 B	Business Economics-II	100	25	75	5	4
Total			**600**	**125**	**475**	**27**	**22**

B.Com- Semester – III

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1.	First Language	English	100	25	75	4	3
2.	Second Language	(Tel/Hindi/Urdu/Sans)	100	25	75	4	3
3.	Foundation Course- 5	ICT-2 (Information & communication Technology)	50	---	50	2	2
4.	Foundation Course- 6	Communication & Soft Skills-2	50	---	50	2	2
5.	DSC 1 C	Corporate Accounting	100	25	75	5	4
6.	DSC 2 C	Business Statistics	100	25	75	5	4
7.	DSC 3 C	Banking Theory & Practice	100	25	75	5	4
Total			**600**	**125**	**475**	**27**	**22**

B.Com -Semester – IV

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1.	Foundation Course- 7	Communication & Soft Skills-3	50	---	50	2	2
2.	Foundation Course- 8	Analytical Skills*	50	---	50	2	2
3.	Foundation Course- 9	Entrepreneurship	50	---	50	2	2
4.	Foundation Course- 10	Leadership Education**	50	---	50	2	2
5.	DSC 1 D	Accounting for Service organizations	100	25	75	5	4
6.	DSC 2 D	Business Laws	100	25	75	5	4
7.	DSC 3 D	Income Tax	100	25	75	5	4
Total			**500**	**75**	**425**	**23**	**20**

* To be taught by Maths/Statistics Teachers (and partly by English teachers)
** To be taught by Telugu Teachers

Table-5: B.Com -Semester – V

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1	DSC 1 E	5.2 Cost Accounting	100	25	75	5	4
2.	DSC 2 E	5.3 Indirect Taxes	100	25	75	5	4
3.	DSC 3 E	5.4 Commercial Geography	100	25	75	5	4
4.	Elective-DSC 1F/Inter-disp.	***Cluster Electives -1*** ***1. E-Commerce*** 5.5 e-Commerce 5.6Business Networks 5.7 **Project Work:** Working with Organizations on e-Commerce activities, viz., Amazon.com., Flipkart, etc. /Online Operations in Banks ***2. Retailing*** 5.5 Purchase Management 5.6 Stores Management 5.7 **Project Work:** Survey on Rural Producers/Retailing Practices (Kirana) ***3. Corporate Accounting*** 5.5 Accounting & Auditing Standards 5.6 Accounting for Government Entities 5.7 **Project Work:** Application of Accounting & Auditing Standards in Companies /Internship in Govt. Depts. (Treasury, Local Bodies, Public Utilities, Govt. Corporations, etc.) ***4. Security Market Operations*** 5.5 Financial Markets 5.6 Stock Market Operations 5.7 **Project Work:** Survey on Investment behaviour/Working with on Stock issues, Share transfers, Documentation, Commodity trading, Derivatives, etc. ***5. Banking & Financial Services*** 5.5 Central Banking 5.6 Rural and Farm Credit 5.7 **Project Work:** Rural Credit survey/Banking operations/Credit Appraisal ***6. Taxation*** 5.5Assessment of Tax: Individual, HUF and Partnership 5.6 Corporate Taxation 5.7 **Project Work:** Working on Tax Filing Procedures & Documentation with IT Dept/Auditor/Tax Consultant	100	25	75	5	4
5.	Elective-DSC 2F /Inter-disp.		100	25	75	5	4
6.	Elective-DSC 3F/Inter-disp.		100	25	75	5	4

		7. Insurance 5.5 Life Insurance 5.6 Non- Life Insurance 5.7 **Project Work:** Working with Insurance Companies/Development Officers/Agents on Policies & Documentation. ***8. Logistics & Supply Chain Management*** 5.5 Logistics Management - Surface 5.6Logistics Management - Air and Sea 5.7**Project Work:** Internship in Transport Organizations/ Railways/Ports /Tour Operators (on Goods, Parcel and Courier Services) ***9. Advertising and Sales Promotion*** 5.5 Advertising and Media Planning 5.6 Brand Management 5.7 **Project Work:** Working with Advertising Agencies/ Survey in Business units **10. Computer Applications** 5.5 Database Management & Report Generator 5.6 Management Information system 5.7 Project Work: Working on Debase Applications & Report generations and Documentation / Designing MIS Systems in different types of business units.					
Total			**600**			**30**	**24**

Table-6: B.Com- Semester – VI

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1.	DSC 1 G	6.2 Marketing	100	25	75	5	4
2.	DSC 2 G	6.3 Auditing	100	25	75	5	4
3.	DSC 3 G	6.4 Management Accounting	100	25	75	5	4
4.	Elective-DSC 1 H/Inter-disp./Gen. Elec.	**Cluster Electives -2** ***1A. e-Commerce*** 6.5 e-Payments System 6.6 Social Media and e-Marketing 6.7 **Project Work:** Working with Organizations on Tele-marketing /e-Shopping Activities	100	25	75	5	4
5.	Elective-DSC 2H/Inter-disp./Gen. Elec.		100	25	75	5	4
6.	Elective-DSC 3H/Inter-disp./Gen. Elec.	***2A. Retailing*** 6.5 Agricultural & Rural Marketing 6.6 Warehouse Management 6.7 **Project Work:** Survey on Hawkers/ Working with Warehouses ***3A. Corporate Accounting*** 6.5 Financial Reporting 6.6 Emerging Areas in Accounting 6.7 **Project Work:** Financial Reporting practices in Companies/ Survey on Human Resource/ Environmental Accounting. ***4A. Security Market Operations*** 6.5 Derivatives Trading 6.6 Stock Market Regulatory Framework 6.7 **Project Work:** Internship in Stock Exchanges/ Mutual Funds /Working with Stock Brokers ***5A. Banking & Financial Services*** 6.5 Financial Services 6.6 Marketing of Financial Services 6.7 **Project Work:** Working with Financial Services Firms on Documentation for Sanction of Loans and financial Services **6A. Taxation** 6.5 Service Tax & VAT 6.6 Tax Planning and Management 6.7 **Project Work:** Internship on Tax Planning Practices in Business Units ***7A. Insurance*** 6.5 Marketing of Insurance Services 6.6 Insurance Regulatory Framework	100	25	75	5	4

		6.7 **Project Work: S**urvey on Settlement of Claims and Customer Care ***8A. Logistics & Supply Chain Management*** 6.5 Supply Chain Management - Products 6.6 Supply Chain Management - Services 6.7 **Project Work:** Internship with Freight Operators/ Supply Chain Management Practices in Business Units ***9A. Advertising and Sales Promotion*** 6.5 Sales Promotion 6.6 Direct Marketing 6.7 **Project work:** Survey with Customers/Sales Force/Middlemen **10A. Computer Applications** 6.5 e-Commerce Applications 6.6 Enterprise Resource Planning 6.7 Project Work: Working on the applications of ERP packages in Companies / Internship/Projects in e-Commerce Companies on the Design and Creation of websites.					
Total			**600**			**30**	**24**
Grand Total						**164**	**134**

Note:

*1. Titles of a few Electives Streams are given for DSC- F (1F, 2F & 3F combined) at V Semester and the same titles are repeated for DSC – H (1H, 2H & 3H combined). Each Elective Stream consists of two theory papers and one project work for each semester. The total for V & VI semesters will be four theory papers and two project works under each stream. A student has to select O**ne Stream of Elective consisting of four theory papers and two projects** (together for V & VI semesters). That means, the student will continue the same elective in the VI semester also.*

*2. The colleges have to **implement original project work** which may consist of field survey/internship/case study/practical training also for the third respective elective papers in V & VI semester.*

B.Com. Detailed Syllabi w.e.f. 2015-16

Semester - I

DSC 1A - Fundamentals of Accounting-I

Unit-I – Introduction to Accounting
Need for Accounting – Definition – Objectives, Advantages – Book keeping and Accounting– Accounting concepts and conventions - Accounting Cycle - Classification of Accounts and its rules - Double Entry Book-keeping - Journalization - Posting to Ledgers, Balancing of ledger Accounts (problems).

Unit –II: Subsidiary Books:
Types of Subsidiary Books - Cash Book, Three-column Cash Book- Petty cash Book (Problems).

Unit-III: Trail Balance and Rectification of Errors:
Preparation of Trail balance - Errors – Meaning – Types of Errors – Rectification of Errors (Problems)

Unit-IV- Bank Reconciliation Statement:
Need for bank reconciliation - Reasons for difference between Cash Book and Pass Book Balances- Preparation of Bank Reconciliation Statement- Problems on both favorable and unfavourable balances.

Unit -V: Final Accounts:
Preparation of Final Accounts: Trading account – Profit and Loss account – Balance Sheet – Final Accounts with adjustments (Problems).

Reference Books

1. T.S.Reddy & A. Murthy, Financial Accounting , Margham Publications
2. R L Gupta & V. K Gupta, Principles and Practice of Accounting, Sultan Chand & Sons
3. S.P. Jain & K.L Narang, Accountancy-I, Kalyani Publishers
4. Tulasian, Accountancy -I, Tata McGraw Hill Co.
5. V.K.Goyal, Financial Accounting, Excel Books
6. K. Arunjothi, Fundamentals of Accounting; Maruthi Publications

DSC 2 A - Business Organization

Unit-I – Introduction

Concepts of Business, Trade , Industry and Commerce – Features of Business -Trade Classification - Aids to Trade – Industry – Classification – Relationship of Trade, Industry and Commerce.

Unit II- Business Functions and Entrepreneurship

Functions of Business and their relationship - Factors influencing the choice of suitable form of organization – Meaning of Entrepreneurship – Characteristics of a good entrepreneur - Types – Functions of Entrepreneurship.

Unit –III – Forms of Business Organizations

Sole Proprietorship – Meaning – Characteristics – Advantages and Disadvantages – Partnership - Meaning – Characteristics- Kinds of partners – Advantages and Disadvantages – Partnership Deed – Hindu-undivided Family – Cooperative Societies.

Unit-IV- Joint Stock Company

Joint Stock Company – Meaning – Characteristics –Advantages – Kinds of Companies - Differences between Private Ltd and Public Ltd Companies.

Unit-V- Company Incorporation

Preparation of important Documents for incorporation of Company – Memorandum of Association – Articles of Association – Differences Between Memorandum of Association and Articles of Association - Prospectus and its contents.

Reference Books

1. C.D.Balaji and G. Prasad, Business Organization - Margham Publications, Chennai.
2. R.K.Sharma and Shashi K Gupta, Business Organization - Kalyani Publications.
3. C.B.Guptha, Industrial Organization and Management, Sultan Chand.
4. Y.K.Bushan, Business organization and Management, Sultan Chand.
5. Sherlekar, Business Organization and Management, Himalaya Publications.

DSC 3A - Business Economics-I

Unit-I- Introduction
Meaning and Definitions of Business Economics - Nature and scope of Business Economics- Micro and Macro Economics and their differences.

Unit-II- Demand Analysis
Meaning and Definition of Demand - Determinants of Demand -- Demand function – Law of demand- Demand Curve - Exceptions to Law of Demand.

Unit –III- Elasticity of Demand
Meaning and Definition of Elasticity of Demand – Types of Elasticity of Demand – Measurements of Price elasticity of demand – Total outlay Method – Point Method – Arc Method.

Unit – IV- Cost and Revenue Analysis
Classification of Costs – Total - Average – Marginal and Cost function – Long-run – Short-run – Total Revenue - Average revenue – Marginal Revenue.

Unit-V- Break-Even Analysis
Type of Costs – Fixed Cost – Semi-variable Cost – Variable Cost– Cost behaviour - Breakeven Analysis - Its Uses and limitations.

Reference Books

1. S.Sankaran, Business Economics, Margham Publications, Chennai.
2. Business Economics - Kalyani Publications.
3. Business Economics – Himalaya Publishing House.
4. Aryasri and Murthy Business Economics , Tata McGraw Hill.
5. Business Economics, Maruthi Publications.

Semester - II

DSC 1B – Fundamentals of Accounting-II

Unit-I: **Depreciation**
Meaning of Depreciation - Methods of Depreciation: Straight line – Written down Value – Sum of the Years' Digits - Annuity and Depletion (Problems).

Unit-II: **Provisions and Reserves**
Meaning – Provision vs. Reserve – Preparation of Bad debts Account – Provision for Bad and doubtful debts – Provision for Discount on Debtors – Provision for discount on creditors - Repairs and Renewals Reserve A/c (Problems).

Unit-III: Bills of Exchange
Meaning of Bill –Features of bill – Parties in the Bill – Discounting of Bill – Renewal of Bill – Entries in the books of Drawer and Drawee (Problems).

Unit-IV: **Consignment Accounts**
Consignment - Features - Proforma invoice - Account sales – Del-credre Commission - Accounting treatment in the books of consigner and consignee - Valuation of closing stock - Normal and Abnormal losses (Problems).

Unit-V: **Joint Venture Accounts**
Joint venture - Features - Differences between Joint-venture and consignment – Accounting procedure - Methods of keeping records (Problems).

Reference Books:

1. R.L. Gupta & V.K. Gupta, Principles and Practice of Accounting, Sultan Chand
2. T. S. Reddy and A. Murthy - Financial Accounting, Margham Publications.
3. S.P. Jain & K.L Narang, Accountancy-I, Kalyani Publishers.
4. Tulsan, Accountancy-I, Tata McGraw Hill Co.
5. V.K. Goyal, Financial Accounting, Excel Books
6. T.S. Grewal, Introduction to Accountancy, Sultan Chand & Co.
7. Haneef and Mukherjee, Accountancy-I, Tata McGraw Hill
8. Arulanandam, Advanced Accountancy, Himalaya Publishers
9. S.N.Maheshwari & V.L.Maheswari, Advanced Accountancy-I, Vikas Publishers.

DSC 2 B: Business Environment

Unit – I: Overview of Business Environment

Business Environment – Meaning – Macro and Micro Dimensions of Business Environment – Economic – Political – Social – Technological – Legal – Ecological – Cultural – Demographic – Changing Scenario and implications – Indian Perspective – Global perspective.

Unit – II: Economic Growth

Meaning of Economic growth – Factors Influencing Development – Balanced Regional Development.

Unit – III - Development and Planning

Rostow's stages of economic development - Meaning – Types of plans – Main objects of planning in India – NITI Ayog and National Development Council – Five year plans.

Unit – IV : Economic Policies

Economic Reforms and New Economic Policy – New Industrial Policy – Competition Law – Fiscal Policy – Objectives and Limitations – Union budget – Structure and importance of Union budget – Monetary policy and RBI.

Unit – V -Social, Political and Legal Environment

Concept of Social Justice - Schemes - Political Stability - Leal Changes.

Suggested Readings:

1. Rosy Joshi and Sangam Kapoor : Business Environment.
2. Francis Cherunilam : Business Environment.
3. S.K. Mishra and V.K. Puri : Economic Environment of Business.
4. K. Aswathappa : Essentials of Business Environment.

DSC 3 B - Business Economics-II

Unit-I: Production and Costs: Techniques of Maximization of output, Minimization of costs and Maximization of profit - Scale of production - Economies and Dis-economies of Scale - Costs of Production – Cobb-Douglas Production Function.

Unit-II: Market Structure-I: Concept of Market - Market structure - Characteristics - Perfect competition -characteristics equilibrium price - profit maximizing output in the short and long run Monopoly- characteristics - Profit maximizing out-put in the short and long run - Defects of Monopoly – Distinction between Perfect competition and Monopoly.

Unit-III Market Structure-II: Monopolistic Competition - Characteristics - Product differentiation - Profit maximization - Price and output in the short and long - run – Oligopoly - characteristics - Price rigidity - Kinked Demand Curve - Distribution - Concepts - Marginal Productivity - Theory of Distribution.

Unit-IV National Income And Economic Systems: National Income - Definition Measurement - GDP - Meaning Fiscal deficit - Economic systems - Socialism - Mixed Economic System - Free Market economy.

Unit-V Structural Reforms: Concepts of Economic liberalization, Privatization, Globalization - WTO Objectives Agreements - Functions - Trade cycles - Meaning - Phases - Benefits of International Trade - Balance of Trade and Balance of payments.

Reference Books:

1. Aryasri and Murthy, Business Economics, Tata McGraw Hill
2. H.L Ahuja, Business Economics, Sultan Chand & Sons
3. KPM Sundaram, Micro Economics
4. Mankiw, Principles of Economics, Cengage Publications
5. Mithani, Fundamentals of Business Economics, Himalaya Publishing House
6. DAR Subrahmanyam &V Hari Leela, A Text Book on Business Economics, Maruthi Publishers.
7. A.V. R. Chary, Business Economics, Kalyani Publishers, Hyderabad.

Semester - III

DSC 1 C - Corporate Accounting

Unit-I:

Accounting for Share Capital - Issue, forfeiture and reissue of forfeited shares- concept & process of book building - Issue of rights and bonus shares - Buyback of shares (preparation of Journal and Ledger).

Unit-II:

Issue and Redemption of Debentures - Employee Stock Options – Accounting Treatment for Convertible and Non-Convertible debentures (preparation of Journal and Ledger).

Unit –III:

Valuation of Goodwill and Shares: Need and methods - Normal Profit Method, Super Profits Method – Capitalization Method - Valuation of shares - Need for Valuation - Methods of Valuation - Net assets method, Yield basis method, Fair value method (including problems).

UNIT – IV:

Company Final Accounts: Preparation of Final Accounts – Adjustments relating to preparation of final accounts – Profit and loss account and balance sheet – Preparation of final accounts using computers (including problems).

Unit –V

Provisions of the Companies Act, 2013 relating to issues of shares and debentures - Book Building- Preparation of Balance Sheet and Profit and Loss Account – Schedule-III.

Reference Books:

1. Corporate Accounting – Haneef & Mukherji,
2. Corporate Accounting – RL Gupta & Radha swami
3. Corporate Accounting – P.C. Tulsian
4. Advanced Accountancy: Jain and Narang
5. Advanced Accountancy : R.L. Gupta and M.Radhaswamy, S Chand.
6. Advanced Accountancy : Chakraborthy
7. Modern Accounting: A. Mukherjee, M. Hanife Volume-II McGraw Hill
8. Accounting standards and Corporate Accounting Practices: T.P. Ghosh Taxman
9. Corporate Accounting: S.N. Maheswari, S.R. Maheswari, Vikas Publishing House.
10. Advanced Accountancy: Arutanandam, Raman, Himalaya Publishing House.
11. Advanced Accounts: M.C. Shukla, T.S. Grewal, S.C. Gupta, S. Chand & Company Ltd.,
12. Management Accounting: Shashi K. Gupta, R.K. Sharma, Kalyani Publishers.

DSC 2C - Business Statistics

Unit 1: Introduction to Statistics:
Definition, importance and limitations of statistics - Collection of data - Schedule and questionnaire – Frequency distribution – Tabulation -Diagrammatic and graphic presentation of data using Computers (Excel).

Unit 2: Measures of Central Tendency:
Characteristics of measures of Central Tendency-Types of Averages – Arithmetic Mean, Geometric Mean, Harmonic Mean, Median, Mode, Deciles, Percentiles, Properties of averages and their applications.

Unit 3: Measures of dispersion and Skewness:
Properties of dispersion-Range-Quartile Deviation –Mean Deviation-Standard Deviation-Coefficient of Variation-Skewness definition-Karl Pearson's and Bowley's Measures of skewness-Normal Distribution.

Unit 4: Measures of Relation:
Meaning and use of correlation – Types of correlation-Karlpearson's correlation coefficient – Spearman's Rank correlation-probable error-Calculation of Correlation by Using Computers.
Regression analysis comparison between correlation and Regression – Regression Equations-Interpretation of Regression Co-efficient.

Unit 5: Analysis of Time Series & Index Numbers:
Components of Time series- Measurement of trend and Seasonal Variations – Index Numbers-Methods of Construction of Index Numbers – Price Index Numbers – Quantity Index Numbers – Tests of Adequacy of Index Numbers – Cost of Index Numbers-Limitations of Index Numbers – Use of Computer Software.

Suggested Readings:

1. Business Statistics — Reddy, C.R Deep Publications.
2. Statistics-Problems and Solutions — Kapoor V.K.
3. Fundamentals of Statistics — Elhance.D.N
4. Statistical Methods — Gupta S.P
5. Statistics — Gupta B.N.
6. Fundamentals of Statistics — Gupta S.C
7. Statistics-Theory, Methods and Applications — Sancheti,D.C. &Kapoor V.K
8. Business Statistics — J.K.Sharma
9. Business Statistics — Bharat Jhunjhunwala
10. Business Statistics — R.S.Bharadwaj

DSC 3C - Banking Theory & Practice

Unit-I: Introduction

Meaning & Definition of Bank – Functions of Commercial Banks – Kinds of Banks - Central Banking Vs. Commercial Banking.

Unit-II: Banking Systems

Unit Banking , Branch Banking, Investment Banking- Innovations in banking – E banking - Online and Offshore Banking , Internet Banking - Anywhere Banking - ATMs - RTGS.

Unit-III: Banking Development

Indigenous Banking - Cooperative Banks, Regional Rural banks, SIDBI, NABARD - EXIM Bank.

Unit-IV: Banker and Customer

Meaning and Definition of Banker and customer – Types of Customers - General Relationship and Special Relationship between Banker and Customer - KYC Norms.

Unit-V: Collecting Banker and Paying Banker

Concepts - Duties & Responsibilities of Collecting Banker – Holder for Value – Holder in Due Course – Statutory Protection to Collecting Banker - Responsibilities of Paying Banker - Payment Gateways.

Books for Reference

1. Banking Theory: Law & Practice : K P M Sundram and V L Varsheney
2. Banking Theory, Law and Practice : B. Santhanam; Margam Publications
3. Banking and Financial Systems : Aryasri
4. .Introduction to Banking : Vijaya Raghavan
5. Indian Financial System : M.Y.Khan
6. Indian Financial System : Murthy & Venugopal

Semester - IV

DSC 1D- Accounting for Service Organizations

Unit-I: Non-Trading/ Service Organizations:
Concept - Types of Service Organizations – Section (8) and other Provisions of Companies Act, 2013.

Unit – II Electricity Supply Companies:
Accounts of Electricity supply companies: Double Accounting system – Revenue Account – Net Revenue Account – Capital Account – General Balance Sheet (including problems).

Unit – III - Bank Accounts
Bank Accounts – Books and Registers to be maintained by Banks – Banking Regulation Act, 1969 - Legal Provisions Relating to preparation of Final Accounts (including problems).

Unit-IV: Insurance Companies
Life Insurance Companies –Preparation of Revenue Account, Profit and Loss Account, Balance Sheet (including problems) – LIC Act, 1956.

Unit – V: General Insurance
Principles – Preparation of final accounts – with special reference to fire and marine insurance (including problems) – GIC Act, 1972.

Suggested Readings

1. Corporate Accounting – RL Gupta & M. Radha Swami
2. Corporate Accounting – P.C. Tulsian
3. Company Accounts : Monga, Girish Ahuja and Shok Sehagal
4. Advanced Accountancy: Jain and Narang
5. Advanced Accountancy : R.K. Gupta and M. Radhaswamy
6. Advanced Accountancy : Chakraborty
7. Advanced Accountancy: S.P. Iyengar
8. Modern Accounting: A. Mukherjee, M. Hanife McGraw Hill Company Ltd., New Delhi.
9. Accounting standards and Corporate Accounting Practices: T.P. Ghosh Taxman
10. Corporate Accounting: S.N. Maheswari, S.R. Maheswari, Vikas Publishing.
11. Advanced Accountancy: Arutanandam, Raman, Himalaya Publishing House.
12. Advanced Accounts: M.C. Shukla, T.S. Grewal, S.C. Gupta, S. Chand.

DSC 2D - Business Laws

Unit-1 Contract

Meaning and Definition of Contract-Essential elements of valid Contract -Valid, Void and Voidable Contracts - Indian Contract Act, 1872.

Unit-2 Offer and Acceptance

Definition of Valid Offer, Acceptance and Consideration -Essential elements of a Valid Offer, Acceptance and Consideration.

Unit-3 Capacity of the Parties and Contingent Contract

Rules regarding to Minors contracts - Rules relating to contingent contracts - Different modes of discharge of contracts-Rules relating to remedies to breach of contract.

Unit-4 Sale of Goods Act 1930

Contract of sale – Sale and agreement to sell – Implied conditions and warranties – Rights of unpaid vendor.

Unit-5:

Cyber Law and Contract Procedures - Digital Signature - Safety Mechanisms.

Suggested Readings:

1. J. Jayasankar, Business Laws, Margham Publication. Chennai -17
2. Kapoor ND, Mercentile Law , Sultan Chand
3. Balachandram V, Business law Tata
4. Tulsian , Business Law Tata
5. Pillai Bhagavathi, Business Law , S.Chand.
6. Business Laws, Maruthi Publishers

DSC 3D - Income Tax

Unit-I

Introduction: Income Tax Law – Basic concepts: Income, Person, Assesse, Assessment year, Agricultural Income, Capital and revenue, Residential status, Income exempt from tax (theory only).

Unit-II

Income from salary: Allowances, perquisites, profits in lieu of salary, deductions from salary income, computation of salary income and qualified savings eligible for deduction u/s 80C (including problems).

Unit-III

Income from House Property: Annual value, let-out/self occupied/deemed to be let-out house, deductions from annual value - computation of income from house property (including problems).

Unit-IV

Income from Capital Gains – Income from other sources – (from Individual point of view) - chargeability – and assessment (including problems).

Unit-V:

Computation of total income of an individual – Deductions under section - 80 (including problems).

Reference Books:

1. Dr. Vinod; K. Singhania; Direct Taxes – Law and Practice, Taxman Publications
2. B.B. Lal; Direct Taxes; Konark Publications
3. Dr. Mehrotra and Dr. Goyal; Direct Taxes – Law and Practice; Sahitya Bhavan Publication.
4. Gaur and Narang; Income Tax, Kalyani Publishers, New Delhi.

Semester - V

DSC - 1E 5.2 Cost Accounting

Unit-I:Introduction: Distinguish between Financial Accounting, Cost Accounting and management accounting - Cost Concepts and Classification – Cost Centre and Cost Unit – Preparation of Cost Sheet.

Unit-II: Elements of Cost: Materials: Material control – Selective control, ABC technique – Methods of pricing issues – FIFO, LIFO, Weighted average, Base stock methods, choice of method (including problems).

Unit-III: Labour and Overheads: Labour: Control of labor costs – time keeping and time booking – Idle time –Methods of remuneration – labour incentives schemes - Overheads: Allocation and apportionment of overheads – Machine hour rate.

Unit-IV: Methods of Costing: Job costing – Process costing - treatment of normal and abnormal process losses – preparation of process cost accounts – treatment of waste and scrap, joint products and by products (including problems).

Unit -V: Costing Techniques: Marginal Costing – Standard costing – Variance Analysis (including problems).

References:

1. S.P. Jain and K.L. Narang – Advanced Cost Accounting, Kalyani Publishers, Ludhiana.
2. M.N. Aurora – A test book of Cost Accounting, Vikas Publishing House Pvt. Ltd.
3. S.P. Iyengar – Cost Accounting, Sultan Chand & Sons.
4. Nigam & Sharma – Cost Accounting Principles and Applications, S.Chand & Sons.
5. S.N .Maheswari – Principles of Management Accounting.
6. I.M .Pandey – Management Accounting, Vikas Publishing House Pvt. Ltd.
7. Sharma & Shashi Gupta – Management Accounting, Kalyani Publishers. Ludhiana.

DSC 2E 5.3 Indirect Taxes

Unit –I: Central Sales Tax/G.S.T (Goods And Services Tax): Objectives of CST Act, Dealer-Business-Sales-Goods-Declared goods, Turnover - Sale Price - Sales Exempt from Central Sales Tax, Interstate and Intra state sale, sales in the course of imports and exports, registration under CST Act.

Unit- II: Customs Act: Types of Custom Duties- Valuation for Customs Duty- Tariff Value- Customs Value- Methods of Valuation for Customs - Problems on Custom Duty Assessment.

Unit –III: Central Excise: Procedures relating to Levy, Valuation and Collection of Duty, Types of Excise Duties- Cenvat Credit- Classification of Excisable Goods- Valuation of Excisable Goods- Central Excise Procedures (including problems).

Unit –IV: Service Tax: Features of Service Tax- Levy and Collection - Service Tax Administration- Exemptions from Service Tax - Taxable Services- Determination of Service Tax Liability (including problems)

Unit -V: VAT: Concept and Principles - Calculation of VAT Liability including input Tax Credits, Small Dealers and Composition Scheme, VAT Procedures.

References:

1. Customs Law Manual and Customs Tariff of India- R K Jain
2. Central Excise Manual and Central Excise Tariff- Taxman's
3. CENVAT Law and Procedure- Taxman's
4. Income Tax Law including VAT/Service Tax- T N Manoharan, Snow White Publications
5. Direct taxes Law & Practice – Vinodh Singhania, Kapil Singhania, Taxman.
6. Direct Taxes- H C Mehrotra and Goyal, Sahithya Bhavan Publications.
7. Direct Taxes- Gaur and Narang, Kalyani Publishers, Ludhiana.

DSC 3E 5.4 Commercial Geography

Unit –I: The Earth: Internal structure of the Earth – Latitude – Longitude – Realms of the Earth – Evolution of the Earth – Environmental pollution - Global Warming - Measures to be taken to protect the Earth.

Unit -II: India – Agriculture: Land Use - Soils - Major crops – Food and Non-food Crops – Importance of Agriculture – Problems in Agriculture – Agriculture Development.

Unit -III: India – Forestry: Forests – Status of Forests in Andhra Pradesh – Forest (Conservation) Act, 1980 – Compensatory Afforestation Fund (CAF) Bill, 2015 - Forest Rights Act, 2006 and its Relevance – Need for protection of Forestry.

Unit -IV: India – Minerals and Mining: Minerals – Renewable and non Renewable – Use of Minerals – Mines – Coal, Barites, etc. – Singareni Coal mines and Mangampeta Barites - District-wise Profile.

Unit-V: India – Water Resources – Rivers: Water resources - Rationality and equitable use of water – Protection measures - Rivers - Perennial and peninsular Rivers - Interlinking of Rivers - Experience of India and Andhra Pradesh.

References:

1. Shabiar Ahmad; Quazi ,Natural Resource Consumption and Environment Management, APH Publishing Corporation.
2. Tarachand, Economic and Commercial Geography of India, Vikas Publishing House.
3. Dr. S. Sankaran, Commercial Geography, Margam Publications, Chennai.
4. C. B. Memoria, Commercial Geography, Lal Agarwal & Co.
5. C. B. Memoria, Economic and Commercial Geography, Lal Agarwal & Co.
6. Vinod N. Patel, Commercial Geography, Oxford Book Company

Cluster Elective -1: E-Commerce

DSC F 5.5 e-Commerce

Unit-I: e-Commerce: Features of Electronic Commerce - Distinction between e-Commerce and e-Business - Types of Business Models: B2B, B2C, C2C - Benefits and Limitations of e-Commerce - Apps.

Unit-II: **e-Business Applications:** Integration and e-Business suits - ERP, e-SCM, e-CRM - Methods and benefits of e-Payment Systems –e-Marketing – Applications and issues

Unit-III: **e-Business on different Fields**: e-Tourism – e-Recruitment – e- Real Estate – e-Stock Market – e-Music/Movies - e-Publishing and e-Books.

Unit-IV: **Concept of Online Education:** Process - Methods - e-Content development and Deliveries - Major technologies used in e-Education - Online Testing - Methods - Future Trends.

Unit-V: Mobile Commerce: Ticketing - Me-Seva; Government and Consumer Services – e-Retailing - e-Groceries – Security challenges - Case Studies.

References:

1. Turban E. Lee J., King D. and Chung H.M: Electronic commerce-a Managerial Perspective, Prentice-Hall International, Inc.
2. Bhatia V., E-commerce, Khanna Book Pub. Co. (P) Ltd., Delhi.
3. Daniel Amor, E Business R (Evolution), Pearson Education.
4. Krishnamurthy, E-Commerce Management, Vikas Publishing House.
5. David Whiteley, E-Commerce: Strategy, Technologies and Applications, Tata McGraw Hill.
6. P. T. Joseph, E-Commerce: A Managerial Perspectives, Tata McGraw Hill.

DSC F 5.6 Business Networks

Unit-I: Business Forms: Interrelation among Stakeholders – Business and Government – Business and Society: Social Network and Facebook.

Unit-II: Business Networking through ICT: Basic concepts – Uses and Application of Business Networks – Different Layers of Business Networks – Internet and Business Networks – Network Security.

Unit-III: Business Networking Systems and Devices: Communication Satellites – Servers – Cloud Computing – Sharing – Spectrum – Commercial issues.

Unit-IV: Customer Relationship Management: Establishing Network connection with customers – Forward and Backward Integration – Customer Data Base – Creation and Maintenance – Legal and Ethical Issues.

Unit-V: Business Analytics: Master Data Management – Data Warehousing and Mining – Data Integration – OLTP and OLAP.

References:

1. Jerry, FitzGerald and Alan Dennis, Business Data Communications and Networking, John Wiley & Sons.
2. Tanenbaum, A. S., Computer Networks, Pearson Education.
3. David A Stamper, Business Data Communications. Addison Wesley.
4.Business Analytics – Methods, Models and Decisions, James R. Evans, Prentice Hall.
5.Business Analytics - An Application Focus, Purba Halady Rao, PHI learning
6. R.N Prasad and Seema Acharya, Fundaments of Business Analytics, Wiley India.

5.7: Project work

Cluster Elective – 2: Retailing
DSC F 5.5 Purchase Management

Unit-I: Introduction: Purchase Function - Supply Management – Sources of Purchase: Local vs. Global - Negotiation & Bargaining - Purchasing Methods - e-Procurement –DGS & D.

Unit-II: **Purchasing Function**: Right Quantity - Economic Order Quantity - Re-order Levels - ABC Analysis - Right Price, Time - Tendering: Single, Limited, Open, Global tenders.

Unit-III: **Vendor Analysis**: Identification of vendor – Selection - Criteria and Methodology of evaluation - Vendor Rating – Maintenance of Vendor relations.

Unit-IV: **Buyer-Supplier Relationships**: Transformation of buyer-supplier relationships - Developing and managing collaborative and alliance relationships – joint problem solving, Information sharing.

Unit-V: Supply Chain Management: JIT in the supply management - Cross-Functional Teams: Cross-functional teams and supply management - challenges of cross-functional teams, prerequisites to success.

References:

1. Dobler & Burt, Purchasing and Supply Management, McGraw Hill.
2. P. Gopala Krishan, Purchasing and Materials Management, Tata McGraw-Hill Education.
3. L.N. Aggarwal & Parag Diwan, Management & Production Systems, National Publishing House.
4. N.G. Nair, Production and Operations Management, Tata McGraw Hill Publishing Co. Ltd.
5. Gopalakrishnan P. & Sundaresan. M., Materials Management-An Integrated Approach, PHI.

DSC F 5.6 Stores Management

Unit-I: Stores Function: Layout and Organization - Stores Responsibilities - Relationships with Other Departments - Logistics - Supply Chain - Coding of materials - Methods of Coding

Unit-II: Material Receipt and Issue: Receipts from Suppliers - Inspection - Authorization of issues - Methods of issue - Records and Systems - Manual Systems - Computerized Systems - Recent Developments.

Unit-III: Stock Control Techniques: Approaches to Control - ABC Analysis - Provision of Safety Stock - Stocktaking Procedure - Obsolescence and Redundancy - Prevention of Deterioration - Stock Checking.

Unit-IV: Stores Operations: Storehouse Location - Centralization of Storage - Measurement of Stores efficiency - Health and Safety directives on stores operations - Manual and Mechanical lifting - Control of Substances Hazardous to Health Regulations - Storage Equipment.

Unit-V: Procedure Manuals: Need for Manuals - Preparation of the Manual - Contents of the Manual - Publication and Distribution - Implementation of the Manuals.

References:

1.Jessop David & Morrison Alex, Storage and Supply of Materials, Pearson Education Ltd. England.

2.Saleemi N.A., Store keeping and Stock Control Simplified, Saleemi Publications Ltd., Nairobi.

3. Gopalakrishnan P. & Sundaresan. M., Materials Management-An Integrated Approach, PHI.

4. P. Gopala Krishan, Purchasing and Materials Management, Tata McGraw-Hill Education.

5.7: Project work

Cluster Elective-3: Corporate Accounting

DSC F 5.5 Accounting & Auditing Standards

Unit-I: Introduction: Significance of Accounting Standards - National and International Accounting Standards - Accounting Standards in India.

Unit-II: Accounting Standards (AS-1 to AS-16): AS-1: Disclosure of Accounting policies – AS-2: Valuation of inventories –AS-3: Cash flow statement – AS-4: Contingencies in balance sheet – AS-5: Net profit or loss, prior period items and changes – AS-6: Depreciation Accounting – AS-7: Construction Contracts – AS-9: Revenue Recognition – AS 10: Accounting for Fixed assets - AS-11: Effects of changes in foreign exchange rates- AS-12: Accounting for government grants – **AS-13: Accounting for investments** – AS-14: Accounting for Amalgamation – AS-15: Employee benefits – AS-16: Borrowing costs .

Unit-III: Accounting Standards (AS17 to AS-32): – AS-17: Segment reporting – AS-18: Related party disclosures – AS-19: Leases – AS-20: Earning per share - AS-21: Consolidated financial statements – AS-22: Accounting for taxes – AS-23: Accounting for investments – AS-24: Discontinuing operations – AS-25: Interim Financial Reporting – AS-26: Intangible assets – AS-27: Financial reporting of interests in joint ventures – AS-28: Impairment of assets – AS-29: Provisions, Contingent liabilities and assets; AS-30: Financial Instruments: Recognition and Measurement; AS-31: Financial Instruments: Presentation – AS-32:Financial Instruments: Disclosures.

Unit-IV: Auditing Standards: Procedure - International Federation of Accountants - Auditing and Assurance Standards Board - Indian Auditing Standards (issued so far) Overview.

Unit-V: International Financial Reporting Standards (IFRS): Origin - Procedure - International Accounting Standards Board - Adoption in India.

References:

1. Taxman's Students' Guide to Accounting Standards, D. S. Rawat, Taxman Publications.
2. Compendium of Statements and Standards on Accounting, The Institute of Chartered Accountants of India, New Delhi.
3. British Accounting Standards, Ronal Leach and Edward Stamp, Woodhead Faulkner Ltd, Cambridge.
4. T. P. Ghosh, Accounting Standards and Corporate Accounting Practices, Taxman Publications.

DSC F 5.6 Accounting for Government Entities

Unit-I: General Principles - Government Accounting System - Consolidated Fund of India - Comparison with Commercial Accounting system.

Unit-II: Role of Comptroller and Auditor General of India - Role of Public Accounts Committee, Review of Accounts - Civil and Commercial Entities.

Unit-III: Government Accounting Standards issued by Government Accounting Standards Advisory Board (GASAB) - Adoption and Review.

Unit-IV: Financial Reporting in Public Sector Undertakings and Government Companies.

Unit-V: Case Studies: Railway Accounts - Defense Accounts - CPWD Accounts, etc.

References:

1. Jain, S.P., Narang, K.L., Advanced Accountancy (Vol-1), Kalyani Publishers, Ludhiana.
2. Paul Marcus Fischer, William James Taylor & Rita Hartung Cheng, Advanced Accounting, Cengage Learning, USA.
3. K.K. Bhardwaj, Public Accounting and Auditing (office of the Comptroller and Auditor General of India), Mittal Publications, New Delhi.
4. Mortimer A. Dittenhofer, Applying Government Accounting Principles, LexisNexis.
5. Warren Ruppel, Governmental Accounting: Made Easy, John Wiley & Sons, INC., USA.
6. A Mukherjee & M. Hanif, Modern Accountancy, Tata McGraw Hill Publishing Company Limited, New Delhi.
7. K. B. Verma, Reading in Indian Railway Finance, Academic Foundation, Delhi.

5.7: Project work

Cluster Elective -4: Security Market Operations

DSC F 5.5 Financial Markets

Unit-I: **Financial Markets**: Financial Instruments - Intermediaries - Services - Structure of Financial Market in India.

Unit-II: **Capital Market**: Role, Evolution in India - Future Trends - Primary Market - Issue of Capital: Process, Pricing, Methods of Issue, Book-building - Managing Shareholders Relations.

Unit-III: Secondary Market: Growth, Development, Regulation - Stock Exchange Mechanism: Trading, Settlement - Carry Forward, Badla system - Insider Trading, Price Rigging.

Unit-IV: **Players on Stock Exchange**: Investors, Speculators, Market Makers, Bulls, Bears, Stags - Stock Exchange Regulations - Stock Indices - Regulations and Regulatory Agencies (SEBI).

Unit-V: **Bond Market in India:** Bond Market and its Interface with Equity Market and Debt Market - Mutual Funds.

References:

1. Gupta, L.C: Stock Exchange Trading in India; Society for Capital Market Research and Development, Delhi.
2. Bhole, I.M., Financial Institutions and Market, Tata McGraw Hill.
3. Vasant Desai, Indian Financial System, Himalaya Publishing House.
4. Pathak, Bharati V., Indian Financial System: Markets, Institutions and Services, Pearson Education (Singapore), New Delhi.
5. Gordon E. & K. Natarajan, “Financial Markets and Services”, Himalaya Publishing House, New Delhi.

DSC F 5.6 Stock Market Operations

Unit-I: **Listing of Securities:** Merits and demerits - Listing requirements, Procedure, Fee - Listing of rights issue, bonus issue, further issue - Listing conditions of BSE and NSE- Delisting.

Unit-II: Indian Stock Exchanges: BSE – NSE - BOLT System – Demat and Electronic transfer of Securities – Institutional segment – RETDEBT market (RDM).

Unit-III: Trading System: Different trading systems - NEAT system, Market types, Order Types - Order management, Trade Management, Auction Internet Broking.

Unit-IV: Clearing and Settlement: Transaction cycle - Settlement process and agencies - Risks in settlement – Securities and Funds settlement - De-mat settlement – Shortages handling - Identification Number.

Unit-V: Stock Market Indices: Purpose and Considerations in developing index - Stock market indices in India - BSE Sensex - Scrip selection criteria - Construction – NSE indices – S&P CNX Nifty – OTCEI.

References:

1. Punithavathy Pandian, Security Analysis and Portfolio Management, Vikas Publishing House, New Delhi.
2. V. A. Avadhani, Investment and Securities Market in India, Himalaya Publishing House.
3. Prasanna Chandra, Security Analysis and Portfolio Management, Tata McGraw-Hill.
4. Sanjeev Agarwal, A Guide to Indian Capital Market, Bharat Publishers
5. Ravi Puliani and Mahesh Puliani, Manual of SEBI, Bharat Publication

5.7: Project work

Cluster Elective -5: Banking and Financial Services

DSC F 5.5 Central Banking

Unit-I: Introduction: Evolution and Functions of Central Bank - Development of Central Banks in Developed and Developing countries - Trends in Central Bank Functions.

Unit-II: Central banking in India: Reserve Bank of India - Constitution and Governance, Recent Developments, RBI Act. - Interface between RBI and Banks.

Unit-III: Monetary and Credit Policies: Monetary policy statements of RBI - CRR - SLR - Repo Rates - Reverse Repo Rates - Currency in circulation - Credit control measures.

Unit-IV: Inflation and price control by BRI: Intervention mechanisms - Exchange rate stability - Rupee value - Controlling measures.

Unit-V: **Supervision and Regulation**: Supervision of Banks - Basle Norms, Prudential Norms, Effect of liberalization and Globalization - Checking of money laundering and frauds.

References:

1. Reserve Bank of India Publication, Functions and Working of the RBI.
2. Vasant Desai, Central Banking and Economic Development, Himalaya Publishing.
3. S. Panandikar, Banking in India, Orient Longman.
4. Reserve Bank of India Publication, Report on Trends and Progress of Banking in India.
5. Annual Reports of Reserve Bank of India.
6. Rita Swami, Indian Banking System, International Publishing House Pt. Ltd..
7. S.V. Joshi, C.P. Rodrigues and Azhar Khan, Indian Banking System, MacMillan Publishing.

DSC F 5.6 Rural and Farm Credit

Unit-I: Rural Credit: Objectives and Significance of Rural credit - Classification of rural credit - General Credit Card (GCC) – Financial Inclusion - Rupay Card.

Unit-II: Rural Credit Agencies: Institutional and Non-institutional Agencies for financing agriculture and Rural development - Self-Help Groups (SHG) - Financing for Rural Industries.

Unit-III: Farm Credit: Scope - Importance of farm credit - Principles of Farm Credit - Cost of Credit - Types - problems and remedial measures - Kisan Credit Card (KCC) Scheme.

Unit-IV: Sources of Farm Credit: Cooperative Credit: PACS - APCOB - NABARD - Lead Bank Scheme - Role of Commercial and Regional Rural Banks - Problems of recovery and over dues.

Unit-V: Farm Credit Analysis: Eligibility Conditions - Analysis of 3 R's (Return, Repayment Capacity and Risk-bearing Capacity) - Analysis of 3 C's of Credit (Character, Capacity and Capital) - Crop index reflecting use and farm credit - Rural Credit Survey Reports..

References:

1. National Bank of Agricultural and Rural Development (NABARD) Annual report.
2. Economic Survey, Government of India.
3. Rural Development, Sundaram I.S., Himalaya Publishing House, Mumbai.
4. Rural Credit in India, C.S.Rayudu, Mittal Publications.
5. Farm Credit and Co-operatives in India, Tiruloati V., Naidu. V T Naidu, Vora & Co. Pub. Ltd.

5.7: Project work

Cluster Elective -6: Taxation

DSC F 5.5 Assessment of Tax: Individual, HUF and Partnership

Unit-I: **Deductions u/s 80:** Basic rules of deductions, deductions in computing total income.

Unit-II: Set off and Carry forward of Losses: Set off of loss from one source against income from another source, carry forward and set off of losses - brought forward of losses.

Unit-III: **Assessment of Individuals:** Computation of Total income of Individuals and Tax liability - Rates of Income tax.

Unit-IV: Assessment of Tax of HUF: Computation of Gross Total Income and Total Income of a Hindu Undivided Family - Rates of Income tax.

Unit-V: Assessment of Tax of Partnership: Computation of Gross Total Income and Total Income of Partnership Firm - Deductions U/S 80.

References:

1. H C Meharotra & S P Goyal, Income Tax Law & Accounts: Sahitya Bhavan Publications.
2. Vinod. K. Singhania; Direct Taxes – Law and Practice, Taxman Publications
3. B.B. Lal, Direct Taxes, Konark Publications.
4. Vinod K Singhania, Students' Guide to Income Tax, Taxman Publication.

DSC F 5.6 Corporate Taxation

Unit-I: Tax Provisions of Companies: Income from Business or Profession, Tax Provisions for certain types of businesses.

Unit-II: Tax Provisions of Companies: Capital Gains, Income from Other Sources - Tax Provisions for Off shore and Special Tax Zones.

Unit-III: Computation of Taxable Income: Computation of Gross Total Income - Deductions - Carry-forward and set-off of losses - Minimum Alternative Tax (MAT).

Unit-IV: Filing of Return and Assessment: Procedure for Filing Returns, e-Filing, Assessment, Reassessment and Settlement of Cases, Special Procedure for Assessment of Search Cases.

Unit-V: Tax Authorities and Administration: Powers and Duties – Appeals and Revisions - Tax Administration - Collection of Tax at Source – Advance payment of Tax – Recovery and Refund of Tax – Penalties, Offences and Prosecution.

References:

1. T.S.Reddy & Y.Hari Prasad Reddy, Income Tax Theory, Law and Practice, Margham Publications, Chennai.
2. Vinod K Singhania, Students' Guide to Income Tax, Taxman Publication.
3. R. Bupathy, A study on Income Tax & CST, Prime Knowledge Series, Chennai.
4. Mehrotra & Sr. Goyal, Income tax Law and Accounts, Sahitya Bhavan Publication
5. Vinod. K. Singhania; Direct Taxes – Law and Practice, Taxman Publications

5.7: Project work

Cluster Elective -7: Insurance

DSC F 5.5 Life Insurance

Unit-I: Principles of Life Insurance: Life Insurance Products - Pensions and Annuities - Risk Assessment and Underwriting - Premium Setting- Product Development - Tax planning.

Unit-II: Principal of Utmost Good Faith: Insurable Interest, Medical Examination - Age proof, Special reports - Premium payment - Lapse and revival – Premium, Surrender Value, Non-Forfeiture Option - Assignment Nomination Loans – Surrenders - Foreclosure.

Unit-III: Features of Life insurance contract: Types of Policies – Investment of funds – Bonus option – Annuity Contracts - Group Insurance – Group Gratuity Schemes - Group Superannuation Schemes, Social Security Schemes, etc.

.

Unit-IV: Plans of Life Insurance: Types of Plans: Basic - Popular Plans - Convertible - Joint Life Policies - Children‘s Plans - Educational Annuity Plans - Variable Insurance Plans – Riders - For Handicapped, etc.

Unit-V: Policy Claims: Maturity claims, Survival Benefits, Death Claims, Claim concession - Procedures - Problems in claim settlement - Consumer Protection Act relating to life insurance and insurance claims.

References:

1. G. S. Pande, Insurance – Principles and Practices of Insurance, Himalaya Publishing.
2. C. Gopalkrishna, Insurance – Principles and Practices, Sterling Publishers Private Ltd.
3. G. R. Desai, Life Insurance in India, MacMillan India.
4. M. N. Mishra, Insurance Principles and Practices, Chand & Co, New Delhi.
5. M.N.Mishra, Modern Concepts of Insurance, S.Chand & Co.
6. P.S. Palandi, Insurance in India, Response Books – Sagar Publications.
7. Taxman, Insurance Law Manual.

DSC F 5.6 Non-Life Insurance

Unit-I: Introduction: General Insurance Corporation Act - Areas of General Insurance - Structure - Classification - Salient features of Indian general insurance market.

Unit-II: **Motor Insurance**: Motor Vehicles Act 1988 - Requirements for compulsory third party insurance - Certificate of insurance – Liability without fault – Compensation on structure formula basis - Hit and Run Accidents.

Unit-III: **Fire Insurance**: Features – Kinds of policies – Policy conditions – Payment of claims – Standard Fire and Special peril Policy - Documentation - Cover Note - Calculation of premium.

Unit-IV: Marine Insurance: Contract of Marine Insurance – Classes of policies – Function of Marine insurance - Policy conditions – Marine Losses - Insurance intermediaries.

Unit-V: **Agriculture Insurance**: Types of agricultural insurances - Crop insurance - Problems of crop insurance - Crop Insurance vs Agricultural relief - Considerations in Crop insurance - Live Stock Insurance.

References:

1. M. N. Mishra, Insurance Principles and Practices, Chand & Co, New Delhi.
2. M.N.Mishra, Modern Concepts of Insurance, S.Chand & Co.
3. P.S. Palandi, Insurance in India, Response Books – Sagar Publications.
4. C. Gopalkrishna, Insurance – Principles and Practices, Sterling Publishers Private Ltd.
5. G. R. Desai, Life Insurance in India, MacMillan India.

5.7: Project work

Cluster Elective -8: Logistics and Supply Chain Management

DSC F 5.5 Logistics Management - Surface

Unit-1: Logistics: Logistics and Physical Distribution - Functions of Logistics Management - Structure of logistics - Logistics Costs - Customer Service –Logistics in 21st Century.

Unit-II: Logistics and Customer Relationship Management: Customer Service as a Link between Logistics and Marketing - Customer Service and Customer Retention – Integrating Logistics and Customer Relationship Management.

Unit-Ill: Managing the Lead Time: Role of Time in Competitive Advantage - P:D Ratios and Lead Time Gap - Time-based Mapping - Managing Timeliness in the Logistics Pipeline -Methods for implementing Time based practices.

Unit-IV: Transport Operations: Means of Surface Transport: Rail – Road – Network connections – Problems of Surface transport.

Unit-V: Logistics International Scenario: Drivers and Logistics implications of Internationalization - Trend towards Internationalization - Organizing for International Logistics - Challenges of International Logistics - General Tendencies.

References:

1. Shailesh Kasande, Materials and logistics Management, Nirali Prakashan
2. L. C. Jhamb, Materials and logistics Management, Everest Publishing House.
3. Purchasing and Supply Management - Dobler and Burt, McGraw Hill Company
4. Purchasing and Inventory Management - K S Menon, Shroff Publishers.
4. Introduction to Materials Management – J R Tony Arnold, Prentice Hall
7. Logistics & Supply Chain Management – Martin Christopher, Prentice Hall.

DSC F 5.6 Logistics Management - Air and Sea

Unit 1: Airline Logistics: History - Regulatory Bodies - Navigation systems - Air Transport System - Operations - Civil Aviation - Safety and Security - Industry regulations.

Unit II: Air Cargo: Air freight - Exports and Imports - Documentation - Cargo Operations Process - Air-way bill - Consignee controlled cargo - Customs clearance - Routing Instructions - Future trends.

Unit -III: Sea Cargo: Shipping Liners - Advices - Booking - Containerization -Container Numbering - Process flow - Shipping Sales - Leads - Quotations - Customer Service.

Unit IV: Shipping Operations: Volume/Weight calculations - Shipment Planning - Preparing and loading containers- Types of Container services - FCL - LCL - Container de-stuffing.

Unit V: Documentation: Bill of Lading - MBL - HBL - CY - CFS - Sea Way bill - Multimodel Transport Document (MTD) - Invoicing - Release of cargo - Consortium.

References:

1. Peter S. Smith (Faber), Air freight: Operations, Marketing and Economics, Research and Development Bureau, Illinois Central System.

2. P.S.Senguttavan, Fundamental of Air Transport Management, Excel Books.

3. John F. Wilson (Harlow: Longman), Carriage of goods by Sea, Longman

4. Yuen Ha Lun, Kee Hung Lai, Tai Chiu Edwin Cheng (Springer), Shipping and Logistics Management, Springer

5. Alan Rushton, Phil Croucher & Peter Baker (CILT), Logistics and Distribution Management, Kogan Page Ltd.

5.7: Project work

Cluster Elective -9: Advertising and Sales Promotion

DSC F 5.5 Advertising and Media Planning

Unit-I: **Advertising Functions:** Types of Advertising - Economic and Social aspects of advertising - Advertising process - Advertising objectives and Budget.

Unit- II: **Consumer Behaviour:** Consumer decision making process – Consumer perception process - Consumer Choices - Consumer surplus.

Unit- III: **Creativity Advertising:** Creative thinking – Process – Appeals – Copy Writing – Print Copy elements, Headlines – body Copy – Slogan elements of design and principles of design.

Unit- IV: **Media Planning and Strategy**: Market Analysis - Development of Media Plan - Implementing Media Strategies, Media Mix and Target Market Coverage - Media Reach and Frequency - Scheduling.

Unit-V: Designing Print Advertisement: Print Format Lay-out – Designing page – Working with visuals – Print and Electronic Media - Present trends - Class Vs. Mass media.

References:

1. Chunawalla & K.C.Sethia, Foundation of Advertising Theory & Practice, Himalaya Publishing House, New Delhi.
2. William H. Bolew, Advertising, John Wiley & Sons, New York.
3. Asker, David and Myers John G., Advertising Management, Prentice Hall of India, New Delhi.
4. Aaker David A, Batra Rajeev, Myers G., Advertising Management, PHI, New Delhi.
5. Sundage, Fryburger, Rotzoll, Advertising Theory and Practice, AITBS, New Delhi.

5.7: Project work

DSC F 5.6 Brand Management

Unit-I:Brand Concept: Brands vs. Products, Benefits of branding; Brand attributes, Significance of branding to consumers and Firms, selecting brand names - Brand life cycle - Brand loyalty.

Unit-II: Brand Equity: Cost, Price and Consumer Based methods - Sustaining Brand Equity - Brand Personality - Formulation - Brand Image vs. Brand Personality - Brand Reinforcement, Brand Revitalization.

Unit-III: **Brand Building and Positioning**: Brand Positioning vs. Brand Building - Brand knowledge, Brand hierarchy, Strategy, Extension and Transfer, Managing brand over time.

Unit-IV: Brand Portfolios and Segmentation: Identifying and establishing brand portfolio - Brand Segmentation - Portfolio and Brand values - Evaluation and Revision.

Unit-V: Branding in Different Sectors: Agriculture - Education - Health - Tourism - Hospitality and other services - Role of e-Communities in Brand Management.

References:

1. Aaker, David, Managing Brand Equity, Prentice Hall of India.
2. Brand Positioning Strategies for Competitive Advantage -Subrato Sen Gupta
3. Kumar, Ramesh, Managing Indian Brands, Vikas Publishing House, Delhi.
4. Keller K. L., Strategic Brand Management, 2nd Edition, Pearson Education.
5. Strategic Brand Management - Kevin Lane Keller, Prentice Hall.
6. Branding Concepts and Process - Debashish Pati, McMillan Publishers.
7. Successful Branding - Pran K Choudhary, University Press, New Delhi.

Cluster Elective -10: Computer Applications

DSC F 5.5 Database Management & Report Generator

Unit-I: MS Word: Formatting Text and Documents - Working with Headers, Footers and Footnotes – Tabs -Tables and Sorting - Working with graphs - Templates, Wizards and sample documents.

Unit-II: Power Point Basics: Creating Presentations; working with text in Power Point -Working with Graphs & Multimedia – Model presentations.

Unit-III: MS Excel: Features – Formatting in Excel – Tips and Techniques – Charts preparation – Using Excel worksheets as Data bases.

Unit-IV: Dbase Management: Creating Databases – Tables - Entering and Editing Data – Printing of Reports – Working with Access – Model Presentations.

Unit-V: Relational Databases – Expressions – Macros and other Automations – Graphics in Databases – Customized reports generation – Problems – Model Reports,

References:

1. Mansfield R: Working with Microsoft Office T.M.H.Osborne.
2. Paneerselvam: Database Management Systems, PHI.
3. David Kruglinski, Osborne, Data Management System McGraw Hill Publication.
4. Shgirley Neal and Kenneth LC Trunik Database Management Systems in Business – PHI.
5. Godeon C. EVEREST, Database Management – McGraw Hill Book Company.
6. MARTIN, Database Management – Prentice Hall of India, New Delhi.
7. Bipin C. Desai, “An Introduction to Database Systems”, Galgotia Publications.

DSC F 5.6 Management Information System

Unit-I: MIS: Types of Management Systems - Hardware support for MIS - Decision Making Process, System Approach to Problem Solving, Structure of Management Information System - Trends in MIS.

Unit-II: MIS and Business Process Outsourcing: Business Process Outsourcing - Improving a process in BPO, Object Oriented methodology, BPO – Current Focus - Managing the E-enterprise, Organization of Business in an e-Enterprise, e-Business, e-Commerce, e-Collaboration.

Unit-III: Decision Support Systems: Deterministic Systems, Marketing Information System – Financial Information System – Human Resource Information System - Operations Management Systems - Knowledge Management System.

Unit IV: Database Management Systems: Data Models – Design of Database – Implementation – DGMS – Design of MIS and DSS Systems.

Unit-V: MIS and Case Development: Designing MIS for a College – University – Business Unit-Service Organization – NGOs.

References:

1. Jawadekar, Management Information System, Tata McGraw Hill, New Delhi.
2. C.S.V. Murthy, Management Information System, Himalaya Publishing House, Mumbai.
3. Keen Peter G.W.: Decision Support System: An Organizational Perspective, Addison-Wesley Pub.
4. G.V.Satya Sekhar, Management Information System**,** Excel Books, New Delhi.
5. Turban, Efrain Decision Support and Expert Systems – Management Perspective - McMillan Publishing Company, New York.
6. Sadagopan: Management Information Systems, Prentice Hall of India, New Delhi
7. Nirmalya Bagchi, Management Information Systems, Vikas Publishing House Pvt. Ltd

5.7: Project work

Semester VI

DSC 1 G 6.2 Marketing

Unit-I: **Introduction:** Concepts of Marketing: Product Concept – Selling Concept - Societal Marketing Concept – Marketing Mix - 4 P's of Marketing – Marketing Environment.

Unit-II: **Consumer Markets and Buyer Behaviour:** Buying Decision Process – Stages – Buying Behaviour – Market Segmentation – Selecting Segments – Advantages of Segmentation.

Unit-III: Product Management: Product Life Cycle - New products, Product mix and Product line decisions - Design, Branding, Packaging and Labeling.

Unit-IV: Pricing Decision: Factors influencing price determination, Pricing strategies: Skimming and Penetration pricing.

Unit-V: Promotion and Distribution: Promotion Mix - Advertising - Publicity – Public relations - Personal selling and Direct marketing - Distribution Channels – Online marketing- Global marketing.

References:

1. Philip Kotler, Marketing Management, Prentice Hall of India.
2. Philip Kotler & Gary Armstrong, Principles of Marketing, Pearson Prentice Hall
3. Stanton J. William & Charles Futrel, Fundamentals of Marketing, McGraw Hill Company
4. V.S. Ramaswamy S. Nama Kumari, Marketing Management – Planning, McMillan

DSC 2G 6.3 Auditing

Unit-I: Auditing: Meaning – Objectives – Importance of Auditing – Auditing as a Vigil Mechanism – Role of Auditor in checking corporate frauds.

Unit-II: Types of Audit: Based on Ownership and time - Independent, Financial, Internal, Cost, Tax, Government, Secretarial audits.

Unit-III: Planning of Audit: Steps to be taken at the commencement of a new audit - Audit programme - Audit note book - Internal check, internal audit and internal control.

Unit-IV: Vouching and Investigation: Vouching of cash and trading transactions - Investigation, Auditing vs. Investigation

Unit-V: Company Audit and Auditors Report: Auditor's Qualifications – Appointment and Reappointment – Rights, duties, liabilities and disqualifications - Audit report: Contents – Preparation - Relevant Provisions of Companies Act, 2013.

References:

1. S.Vengadamani, "Practical Auditing", Margham Publications, Chennai.
2. Ghatalia, "Principles of Auditing", Allied Publishers Pvt. Ltd., New Delhi.
3. Pradeesh Kumar, Baldev Sachdeva & Jagwant Singh, "Auditing Theory and Practice, Kalyani Publications, Ludhiana.
4. N.D. Kapoor, "Auditing", S. Chand, New Delhi.
5. R.G. Saxena, "Principles and Practice of Auditing", Himalaya Publishing House, New Delhi.
6. Jagadesh Prakesh, "Principles and Practices of Auditing" Kalyani Publications, Ludhiana.
7. Kamal Gupta and Ashok Gupta, "Fundamentals of Auditing", Tata McGraw Hill
8. B.N. Tondan, "Practical Auditing", S.Chand, New Delhi.

DSC 3G 6.4 Management Accounting

Unit–I: Management Accounting: Interface with Financial Accounting and Cost Accounting - Financial Statement analysis and interpretation: Comparative analysis – Common size analysis and trend analysis (including problems).

Unit–II: Ratio Analysis: Classification, Importance and limitations - Analysis and interpretation of Accounting ratios - Liquidity, profitability, activity and solvency ratios (including problems).

Unit–III: Fund Flow Statement: Concept of fund: Preparation of funds flow statement. Uses and limitations of funds flow analysis (including problems).

Unit–IV: Cash Flow Statement: Concept of cash flow – Preparation of cash flow statement - Uses and limitations of cash flow analysis (including problems).

Unit–V: Break-Even Analysis and Decision Making: Calculation of Break-even point - Uses and limitations - Margin of safety – Make/Buy Decision - Lease/own Decision (including Problems).

References:

1. S.N. Maheswari, A Textbook of Accounting for Management, S. Chand Publishing, New Delhi.
2. I.M Pandey, "Management Accounting", Vikas Publishing House, New Delhi,
3. Shashi K. Gupta & R.K. Sharma, "Management Accounting: Principles and Practice", Kalyani Publishers, Ludhiana.
4. Jawahar Lal, Accounting for Management, Himalaya Publishing House, New Delhi.
5. Charles T. Horngren, et.al, "Introduction to Management Accounting" Person EducationIndia, New Delhi, 2002.
6. Murthy & Guruswamy – Management Accounting, Tata McGraw Hill, New Delhi.
7. Dr. Kulsreshtha & Gupta – Practical problems in Management Accounting.
8. Bhattacharya, D., "Management Accounting", Pearson Education India, New Delhi.
9. S.P. Gupta – Management Accounting, S. Chand Publishing, New Delhi.

Cluster Elective -1A: E-Commerce

DSC H 6.5 e-Payments System

Unit-I: e-Cash and Virtual Money: Electronic Data Interchange (EDI) - NEFT/RTGS/Electronic Payment modes - Foundations of e-Cash and Issues; Security, Anonymity, Untraceability, Virtual currencies, Bitcoin.

Unit-II: Automated Clearing and Settlement: Process of Real Time Gross Settlement System - Net Settlement -ATM Networks - Fedwire, CHIPS and SWIFT.

Unit-III: e-Payment Security and Digital Signature: Cryptographic Methods - Hash functions - Public/Private Key methods: RSA - Digital Signatures - Certification Process - Digital identity Documents and Remote Authentication.

Unit-IV: **Mobile Payments:** Wireless payments, Digital Wallets, Google Wallet – Obopay - Security Challenges.

Unit-V: Electronic Invoice and Payment System: Electronic Statement Delivery - EIPP providers - Biller service providers - Customer service providers - Reconciliation through Bank -Invoice Paper elimination - Scan-based trading (SBT).

References:

1. Domonique Rambure and Alec Nacamuli, "Payment Systems: From the Salt Mines to the Board Room", Palgrave MacMillan.
2. Weidong Kou, *"Payment Technologies for E-Commerce"*. Springer, Germany.
3. Donal O'Mahony, Michael Peirce and Hitesh Tewari, "Electronic Payment Systems", Artech House, Inc.
4. M. H. Sherif, Protocols for Secure Electronic Commerce, Boca Raton, Fla, CRC Press.

DSC H 6.6 Social Media and e-Marketing

Unit-I: Social Media: Career in Social Media Marketing - Strategic Marketing - Social media Planning process - Campaigns (tactics and results).

Unit-II: Social Consumers: Social media marketing segments - Digital consumers - Digital communities - Online communities - Strong & Weak Ties - Social Community - Social Publishing.

Unit-III: Social Media Sites: Face book - Twitter - LinkedIn - YouTube and their Operations - Data mining and Social Media - Role of Social Media in Marketing Research - Social Media and Privacy/Ethics.

Unit-IV: e-Marketing: Objectives, Online Advertising - Distribution in e-Marketing, Lead Generation Platform - Customer Service mechanism - Relationship Building medium.

Unit-V: **Methods of e-Marketing**: Advertising Techniques, Selling Methods, Sales Promotion - Public Relations - Sponsorship, Merchandising, Teleconferencing - Chatting.

References:

1. Chaffey, D., e-Marketing Excellence: Planning and Optimizing Your Digital Marketing, Burlington: Elsevier.

2. Hanson, W. A. & Kalyanam, K., Internet Marketing & e-Commerce, Thomson Southwestern, Mason, Ohio.

5. Harris, L., Marketing the e-Business, Hoboken: Taylor & Francis.

6. Krishnamurthy, S., Contemporary research in e-Marketing, Hershey, PA: Idea Group Publication.

7. Stephen Dann & Susan Dann, E-Marketing: Theory and Application, Macmillan, New York.

8. Seth Godin, E-Marketing, Berkley Publishing Group.

9. Irvine Clarke & Theresa B. Flaherty Advances in Electronic Marketing, Idea Group Publishing, Hershey.

6.7: Project work

Cluster Elective -2A: Retailing

DSC H 6.5 Agricultural and Rural Marketing

Unit-I Concept of Rural Market: Rural market Characteristics - Rural markets and Environmental factors - Agricultural Market Yards.

Unit-II Rural Consumer Behaviour: Rural vs. Urban Consumer – Relevance of Marketing mix for Rural market/Consumers - Problems in rural market - Life Style Marketing – Rural market Segmentation.

Unit-III: Agricultural Marketing: Problems and Challenges in Agriculture Marketing - Market Yards - Support prices - Rural Warehousing.

Unit-IV: Agriculture Support Mechanism: Role of CCI, Tobacco Board, Spices Board, Coffee Board, Tea Board - Agriculture Price Commission.

Unit-V: **Export potential for Agro-products:** Role of Government and Non-Govt. Agencies in the development of rural and agricultural Marketing - Strategies for supply of Seed, Fertilizers, Pesticides, Farm Equipment.

References:

1. C.S.G.Krishnamacharyulu & Lalitha Ramakrishnan, "Rural Marketing: Text and Cases", Pearson Education, New Delhi.
2. Awadhesh Kumar Singh & Satyaprakash Pandey, Rural Marketing: Indian Perspective, New Age International Publishers, New Delhi.
3. Mamoria, C.B. & Badri Vishal: Agriculture Problems in India
4. Arora, R.C., "Integrated Rural Development", S. Chand Limited, New Delhi.
5. Gopalaswamy, T.P., "Rural Marketing: Environment, Problems and Strategies, Vikas Publishing House Pvt. Ltd., New Delhi.
6. Bedi & Bedi, "Rural Marketing", Himalaya Publishing House, New Delhi.

DSC H 6.6 Warehouse Management

Unit-I: **Concept of Warehouse**: Functions of Warehouses - Warehousing Cost - Warehousing Management Systems (WMS) - Strategic planning for Warehousing - Supply Chain and Warehousing.

Unit-II: Role of Warehousing in Retail: Challenges in retail warehousing, Warehousing in fashion retail - Retail product tracking in warehouse using RFID - Role of government in warehousing - Warehousing and Supply Chain.

Unit-III: Warehouse Operations: Structure - Inventory Receiving - Picking - Locating - Dispatching Maintenance - Security and Safety - Records Maintenance.

Unit-IV: **Health and Safety Perspective**: Health and Safety Risks at Warehouse, Assessment of Risks, Management of Health and Safety risks - Bar Code Scanners, Wireless LAN, Mobile Computers, Radio Frequency Identification (RFID).

Unit-V: Warehousing Practices: FCI, CWC, Reliance - Wal-Mart - KFC - ICT Applications in Warehouse - World-class Warehousing.

References:

1. Edward H. Frazelle, World Class Warehousing and Material Handling.
2. Gwynne Richards, Warehouse Management: A Complete guide to improving efficiency and minimizing costs in the modern warehouse, Kogan Page, London.
3. Stuart Emmett, Excellence in Warehouse Management: How to Minimize costs and Maximize Value, John Wiley & Sons, Ltd., London.
4. James A. Tompkins & Jerry D. Smith, The Warehouse Management Handbook, Tompkins Press, North Carolina.
5. David E. Mulcahy & Joachim Sydow, Supply Chain Logistics Program for Warehouse Management, CRC Press, New York.

6.7: Project work

Cluster Elective -3A: Corporate Accounting

DSC H 6.5 Financial Reporting

Unit-I: Corporate Financial Reporting: Issues and problems of financial statements - Balance sheet and profit and loss account - Recent trends in reporting.

Unit-II: Consolidated Financial Statements: Purposes of consolidated financial statements - Consolidation procedures – Minority interests, Goodwill, Treatment of pre- acquisition and post-acquisition profits.

Unit-III: Companies Act 2013 - Reporting requirements - National Finical Reporting Authority (NFRA).

Unit-IV: Companies Act, 2013 - Board of Directors - Director's Report - Business Responsibility report - Corporate Governance Reporting - Corporate Social Responsibility reporting.

Unit-V: Developments in Financial Reporting: Value Added Statements: Economic Added Value, Market Value - Shareholders' Value - Human Resource Reporting – Reporting on Price Level changes.

References:

1. P.C. Tulsian & Bharat Tulsian, Financial Reporting, S. Chand, New Delhi.
2. RSN Pillai, Bhagirathi & S. Uma, Fundamentals of Advanced Accounting, Vol.1, S.Chand, New Delhi.
3. Nehru J. Financial Reporting by diversified Companies, Vision Books, New Delhi.
4. Hawkins David, Financial Statements Corporations, Dow Jones- Irwin Homewood.
5. Paul Marcus Fischer, William James Taylor & Rita Hartung Cheng, Advanced Accounting, Cengage Learning, USA.
6. Maheswari S N., Maheswari S K., Corporate Accounting, Vikas Publishing House Pvt. Ltd., New Delhi.
7. S.K.Gupta, Financial Analysis and Reporting, Kalyani Publishers, Ludhiana.

DSC H 6.6 Emerging Areas in Accounting

Unit-I: Human Resource Accounting: Methods: Cost approach - Replacement cost approach - Present value of future earnings approach – Expense model - Model on human resource accounting (including problems).

Unit-II: Social Accounting: Rationale for Social Accounting - Qualitative and quantitative social accounting disclosures - Evaluation of social accounting reports.

Unit-III: Inflation Accounting: Historical Cost basis of Financial statements – Limitations – Evolution of Inflation accounting - Constant-rupee accounting - International standard for hyperinflationary accounting (including problems)

Unit-IV: Environmental Accounting: Qualitative and quantitative Environmental accounting disclosures - Evaluation of Environmental accounting reports - Green Accounting - Concept and implementation.

Unit-V: Special Areas in Accounting: Intrinsic Value Accounting – Resource Consumption Accounting – Forensic Accounting – Fund Accounting – Hedge Accounting.

References:

1. Gupta R. L. – Advanced Financial Accounting – S. Chand & Sons

2. Shukla and Grewal: Advanced Accounts, S. Chand & Ltd. New Delhi.

3. Jain and Narang: Advanced Accounts, Kalyani Publishers, Ludhiana.

4. Gupta, Shashi K. & Sharma, R.K., Management Accounting: Principles and Practice, Kalyani Publishers, Ludhiana.
5. L. S. Porwal : Accounting Theory, Tata McGraw Hill

6. S. N. Maheshwari : Corporate Accounting,Vikas Publishing House Pvt. Lit. New Delhi.

7. Ashok Sehgal& Dr. Deepak Sehgal: Advanced Accounting, Taxmen, New Delhi.

8. Mukherji and Hanif - Modern Accounts, Vol. I and II, Tata McGraw Hill.

9. R. L. Gupta & V. K. Gupta - Advanced Accounting, Sultan Chand, New Delhi.

6.7: Project work

Cluster Elective -4A: Security Market Operations

DSC H 6.5 Derivatives Trading

Unit-I: Derivatives: Forward and Futures Contracts – Options – Swaps – Types of Traders – OTC and Exchange Traded Securities - Risks in Derivatives.

Unit-II: Futures Contract: Specifications - Margin Requirements – Marking to Market – Types of Futures - Relationship between Future, Forward and Spot Prices - Futures Trading and operations.

Unit-III: Options: Types: Call and Put – American and European – Intrinsic value and Time value of Options – Option payoff – Futures vs. Options - Trading operations.

Unit-IV: Swaps: Types: Interest Rate – Currency – Role of financial intermediaries in Swaps trading - Credit Risk - Swaps trading in India.

Unit-V: Derivatives Trading in India: Regulations - Framework – Exchange trading in Derivatives – Stock Futures and Index futures in NSE – Interest Rate Derivatives.

References:

1. John.C.Hull, Options, Futures and other Derivative Securities, PHI Learning.
2. Keith Redhead, Financial Derivatives: An Introduction to Futures, Forwards, Options and Swaps, PHI Learning.
3. Stulz, Risk Management and Derivatives, Cengage Learning.
4. Varma, Derivatives and Risk Management.
5. David Dubofsky, 'Option and Financial Futures – Valuation and Uses, McGraw Hill
6. S.L.Gupta, Financial Derivatives- Theory, Concepts and Practice, Prentice Hall of India.

DSC H 6.6 Stock Market Regulatory Framework

Unit-I: Stock Market Regulations: Regulations of Companies Act, 2013 - Registrar of Companies - Powers and Functions - Securities Contract and Regulations Act.

Unit-II: **Stock Exchanges**: Listing of Securities - Conditions - Listing Agreement - Problems in Implementation.

Unit-III: **Securities Exchange Board of India**: SEBI Act - SEBI Guidelines on Initial Public Offerings - Investors' Protection.

Unit-IV: Legal Process of Company: Expansion and Restructuring - Takeover, Amalgamation and Merger – Regulations - Repurchase of own company shares - consequences of non-compliance with the rules.

Unit-V: **Function of Dealers:** Investment advisors and representatives in the capital market - Statutory control on Dealers - Common law and statutory liabilities for malpractices.

References:

1. E. Gordon & H. Natarajan, Capital Market in India, Himalaya publishing House,
2. H.R. Machiraju, Indian Financial system, Vikas publishing House Pvt, Ltd
3. Sanjeev Agarwal, Guide to Indian Capital Market, Bharat Law House
4. V.L. Iyer, SEBI practice Manual, Taxman Allied Service (P) Ltd
5. M.Y. Khan, Indian Financial Systems, Tata McGraw Hill,
6. SEBI Manual, Taxman

6.7: Project work

Cluster Elective -5A: Banking and Financial Services

DSC H 6.5 Financial Services

Unit-I: Financial Services: Role of Financial Services - Banking and Non Banking Companies – Activities of Non Banking Finance Companies- Fund Based Activities - Fee Based Activities .

Unit-II: Merchant Banking Services: Scope and importance of merchant banking services - Venture Capital - Securitization - Demat services - Commercial Paper.

Unit-III: Leasing and Hire-Purchase: Types of Lease, Documentation and Legal aspects – Fixation of Rentals and Evaluation - Hire Purchasing- Securitization of debts - House Finance.

Unit-IV: **Credit Rating**: Purpose – Types – Credit Rating Symbols – Agencies: CRISIL and CARE – Equity Assessment vs. Grading – Mutual funds.

Unit-V: Other Financial Services: Factoring and Forfaeiting - Procedural and financial aspects - Installment System - Credit Cards - Central Depository Systems: NSDL, CSDL.

References:

1. B. Santhanam, Financial Services, Margham Publication, Chennai.

2.M.Y. Khan, Financial Services, Tata McGraw – Hill, New Delhi.

3. Machendra Raja, Financial Services, S.Chand Publishers, New Delhi.

4. V. A. Avdhani, Marketing of Financial Services.

5. Machiraji, “Indian Financial System”, Vikas Publishers.

6. Sandeep Goel, Financial Services, PHI Learning.

7. L.M. Bhole, Financial Institutions and Markets, Tata McGraw Hill.

8. SEBI Guidelines, Bharat Publications, New Delhi.

9. E. Gordon & H. Natarajan, Capital Market in India, Himalaya publishing House.

DSC H 6.6 Marketing of Financial Services

Unit-I: Difference between Goods and Services: Managing Service Counters – Integrated Service Management – Service Elements.

Unit-II: Constructing Service Environment – Managing People for service Advantage – Service Quality and Productivity – Customer Loyalty.

Unit-III: Pricing and Promotion Strategies: Pricing strategies – Promotion strategies – B2B Marketing – Marketing Planning and Control for services.

Unit-IV: Distributing Services: Cost and Revenue Management – Approaches for providing services - Channels for Service provision – Designing and managing Service Processes.

Unit-V: Retail Financial Services - Investment services – Insurance services - Credit Services - Institutional Financial Services - Marketing practices in select Financial Service Firms.

References:

1. Aradhani "Marketing of Financial Services" Himalaya Publications
2. Sinha and Saho, Services Marketing, Himalaya Publishing House
3. Reddy Appanaiah, Anil Kumar and Nirmala, Services Marketing, Himalaya Publishing.
4. Shajahan, Services Marketing, Himalaya Publishing House.
5. Christopher lovelock, Services Marketing, Pearson Education Asia.
6. Helen Woodroffe – Services Marketing, McMillan India Ltd.
7. S.M. Jha, Services Marketing, New Delhi Himalaya Publishing House.
8. Valarie A. Zeithmal & Mary JoBitner, Services Marketing, New Delhi, Tata McGraw Hill

6.7: Project work

Cluster Elective -6A: Taxation

DSC H 6.5 Service Tax and VAT

Unit-I: Service Tax: Charge of Service Tax – Service Tax Systems: Central and State – Taxable Services, Valuation of taxable services – Collection and Payment of Service Tax.

Unit-II: Provisions: Registration Procedure, Service Receiver liability – Computation of Service Tax – Revaluation of service tax.

Unit-III: Central Sales Tax: Tax on Inter- State Trade and Exports – Registration – Rates of Tax, Assessment and Refunds – GST Act and Rules.

Unit-IV: Value Added Tax: Concept of VAT, Declared Goods, Registration and Procedural Aspects, Rate and Computation of VAT liability – Collection and Payment of VAT.

Unit-V: Assessment Procedure & Appeals: Assessment of Service Tax – Filing of e-Return – Service Tax Appeals – Service Tax Appellate Tribunal – Refund and penalties.

References:

1) Income Tax VAT & Service Tax- T. N. Manoharan: Snow White Publication

2) Tax Laws – ICSI, New Delhi (www.icsi.edu, www.icai.org)

DSC H 6.6 Tax Planning and Management

Unit-I: Tax Planning: Difference between tax planning, tax avoidance, tax evasion and tax management – Tax planning with reference to setting up a New Business – Form and Size – Tax Holiday, etc.

Unit-II: Tax Planning of Financial Decisions: Absorption, Mergers, De-mergers and Takeovers – Reorganization or Restructuring of Capital – Decisions such as Borrowing or Investment Decisions.

Unit-III: Tax Planning on Managerial decisions: Own or lease – Make or buy decisions – Repair, replace, renewal or renovation of assets – Shut down or Continue decision.

Unit-IV: Tax planning on Foreign income: Selling in domestic or foreign marker – Avoidance of double taxation agreement – Foreign collaborations and joint ventures.

Unit-V: Foreign Collaborations: Incidence of tax on Domestic companies – Provisions for relief in respect of Double taxation – Double Taxation Avoidance Agreements.

References:

1. E.A. Srinivas, Corporate Tax Planning, Tata McGraw Hill.
2. Vinod K. Singhania, Taxman's Direct Taxes Planning and Management.
3. Taxman, The Tax and Corporate Law Weekly.
4. Bhagawati Prasad, Direct Taxes Laws Practice, Wishwa Prakashan.
5. Ahuja, Girish & Ravi Gupta. Corporate Tax Planning and Management, Bharat Law House.
6. Acharya, Shuklendra and M.G. Gurha, Tax Planning under Direct Taxes. Modern Law Publication, Allahabad.
7. IAS – 12 and AS – 22.
8. T.P. Ghosh, IFRSs. Taxman Publications Pvt. Ltd. New Delhi.

6.7: Project work

Cluster Elective -7A: Insurance

DSC H 6.5 Marketing of Insurance Services

Unit-I: Marketing of Services: Distinction between Product and Service Marketing - 7 Ps of Marketing.

Unit-II: Marketing of Insurance Services: Use of relationship marketing in insurance - Commoditization of insurance - Factors determining service quality of insurance products.

Unit-III: Understanding of Insurance Market - Insurance Market structure and competition - Insurance market penetration and density - Changing profile of Indian insurance buyer - Strategies for marketing of insurance.

Unit-IV: Promotion of insurance: Promotional Mix - Personal Selling vs. Advertising - Factors influencing Promotional Mix - Brand building.

Unit-V: Case Studies: Marketing methods and strategies adopted by LIC, GIC, Bajaj Life, SBI Life, HDFC Life.

References:

1. Gray Armstrong & Philip Kotler, Marketing-An Introduction, Pearson Education, Asia.

2. Shukla A.K, Service Marketing, Vaibhav Laxmi Prakashan Varanasi.

3. Adrian Payne, The Essence of Services Marketing, Prentice Hall of India.

4. K. Rama Mohana Rao, Services Marketing, Pearson Education.

6.7: Project work

DSC H 6.6 Insurance Regulatory Framework

Unit-I: Insurance Legislation in India: Insurance Act, 1938 - Functions of IRDA – Motor Vehicle Act, 1988 – Marine Insurance Act – Bill of Lading Act – Indian Railways Act – Carriage of Goods by Sea Act.

Unit-II: IRDA Regulatory Functions: Validity and Renewal of license – Regulations for Third Party Administrators (TPA) – Procedure for Registration of Insurance companies - Categorization of Surveyors - Inspection.

Unit-III: Regulations on Conduct of Business: Obligation of Insurers for rural and Social sector – Micro Insurance – IRDA guidelines – Anti Money laundering – IRDA regulations on Advertisements – Compliance and control – Statutory warnings.

Unit-IV: Policy Holders Rights of Assignment: Assignment and Transfer of policies – Nomination – Prohibition of Rebates – Provisions of sec 64 VB – Exemptions to Sec 64 VB.

Unit-V: Protection of Policy Holders Interest: Pre and Post stage of Insurance Cycle – Free look period – Grievance Redressal – Complaint handling.

References:

1. Nalini Prava Tripathy & Prabir Pal, Insurance: Theory and Practice, Prentice Hall of India.
2. Loomba, Jatinder, Risk Management and Insurance Planning, Prentice Hall of India.
3. Venkatesh Babu S., Manjunatha J.M., Manjunatha K.B. & S.K. Podder, Insurance and Risk Management, Himalaya Publishing House Pvt. Ltd.
4. S. Arunajatesan and T.R. Vishwanathan, Risk Management and Insurance, McMillan.
5. Indian Institute of banking and finance, Principles and Practice of Banking, McMillan.
6. Trieschmann, Hoyt and Sommer, Risk Management and Insurance, Cengage Learning
7. George E Rejda Principles of Risk Management and Insurance, Pearson

6.7: Project work

Cluster Elective -8A: Logistics and Supply Chain Management

DSC H 6.5: Supply Chain Management – Products

Unit-I: Introduction: Challenges in Supply chain management, Uncertainty and supply chain management, Supply chain Drivers and Obstacles, Supply chain Network, Different types of Supply Chain Networks.

Unit-II: Demand: Supply Chain Demand – Estimating Demand – Forecasting Techniques – Managing Supply Chain Demand and Supply.

Unit-III: Sources of Inputs: Suppliers – Relations – Sourcing – Vendor Selection – Performance Rating of Suppliers – Suppliers Networks – Supplier Development.

Unit-IV: Output: Customer Selection – Process – Relationship Management **–** Innovations in Supply Chain Management.

Unit-V: **Logistics:** Logistics and Customer Relationships Management – Functions – Structure – Logistics Costs – Customer Service and Logistics Management – Supply Future Challenges.

References:

1. G. Raghuram , Logics and Supply Chain Management, Macmillan.
2. Emiko Bonafield – Harnessing Value in Supply Chain, Johnwiley, Singapore.
3. Dr. Gopal Krishnan – Material Management Rearview, Pearson New Delhi.
4. B.S. Sahay, Macmillan – Supply Chain Management, Pearson Education.
5. Supply Chain Logistics Management – Bowersox, Closs & Cooper – McGraw-Hill.
6. World Class Supply Management – Burt, Dobbler, Sterling, Tata McGraw-Hill.

DSC H 6.6 Supply Chain Management – Services

Unit-I: Concepts of Supply Chain: Features – Role of Supply Chain Management in Services – Design and development of Supply Chain network for Services.

Unit-II: Customer Service: Service Mix – Cost – Pricing of Service – Channels of Distribution-Customer service linkages – Customer satisfaction Enablers – Sourcing and Availing.

Unit-III: Planning Demand and Supply*:* Planning for supply and demand of Services – Demand Forecasting, Supply and Managing variability – Quick Response and Accurate Response System in SCM – Other Planning Strategies.

Unit-IV: Supply Chain Service Operations: Supply Chain Services Planning – Supply Chain Facilities – Capacity Planning – Services Optimization – Dynamic Routing and Scheduling.

Unit-V: Recent Trends in Supply Chain Management: New Developments – Outsourcing Operations, Co-Makership – Role of e-Commerce in Supply Chain Management – Green Supply Chain Management.

References:

1. Sunil Chopra, Supply Chain Management, Pearson Education Publishing
2. G. Raghuram , Logics and Supply Chain Management, Macmillan.
3. Emiko Bonafield – Harnessing Value in Supply Chain, John Wiley, Singapore.
4. Dr. Gopal Krishnan – Material Management Rearview, Pearson New Delhi.
5. B.S. Sahay, Macmillan – Supply Chain Management, Pearson Education.

6.7: Project work

Cluster Elective -9A: Advertising and Sales Promotion

DSC H 6.5 Sales Promotion

Unit-I: **Sales Promotion:** Sales Executive Functions - Sales Promotion and control - Sales organization - Setting-up of Sales organization - Types of Sales organization .

Unit-II: **Personal Selling**: Theories of personal selling - analyzing market potential - sales potential and sales forecasting methods - Distribution policies and pricing policies.

Unit-III: **Sales Operations**: Sales budget, Sales territories, Sales Quata's, Point of Sale - Sales contests - Coupons and discounts - Free offers - Display - Showrooms and Exhibitions.

Unit-IV: Salesmanship: Sales Manager Qualities and functions - Types of salesman - prospecting - pre-approach and approach - selling sequence - psychology of customers.

Unit-V: **Sales force Management:** Recruitment and Selection - Training - Induction - Motivation of sales personnel - Compensation and Evaluation of Sales Personnel.

References:

1. Richard R. Still, Edward W. Cundiff & Norman A.P. Govani, "Sales Management: Decisions, Strategies and Cases", Person Education, New Delhi.
2. McMurry & Arnold, "How to Build a Dynamic Sales Organization", McGraw Hill, W.C.
3. Pradhan , Jakate & Mali, Elements of Salesmanship and Publicity, Kitab Mahal.
4. Anderson Robert, "Professional Sales Management", Prentice Hall of India, New Delhi.
5. Gerald A.Michaelson, Strategies for Selling, Tata McGraw Hill Publishing Co. New Delhi.
6. Building a Winning Sales Team – Gini Graham & Scott, ASJA Press.
7. Professional Sales Management – Anderson, Hair and Bush, McGraw Hill.

DSC H 6.6 Direct Marketing

Unit-I Direct Marketing: Features - Different Strategies - Mailing SMS - MMS - New Channels of Direct Marketing - Marketing Communication plan.

Unit-II: Direct Marketing Creativity: Creative Process and Testing – Direct Mail, Catalogs -Print Advertising - Marketing Intelligence - Relational, Direct and Interactive Marketing - 3's USP and Creativity.

Unit-III: Direct Marketing Media – Magazines, Newspapers and TV/Radio - Telemarketing - Evolution of Digital Marketing and New Customer.

Unit-IV: Social Media and Digital Marketing: Facebook, Twitter, LinkedIn, Emailing - Mobile Marketing - Interactive Television - Blended Direct Marketing - Integrating media and channels

Unit-V: Key factors of Direct Marketing - Digital Marketing Tips - Best practices in digital marketing - Legal Aspects - Practical examples of Flipkart, Amazon, Paytm, etc.

References:

1. Kotler, Philip, Armstrong, Gary, Saunders, John and Wong, Veronica, "Principles of Marketing", Prentice Hall Europe.

2. Bob Stone and Ron Jacobs, Successful Direct Marketing Methods, McGraw Hill..

3. Mary Lou Roberts, Paul D. Berger, Direct Marketing Management, Prentice Hall Publications.

4. Chet Meisner, The Complete Guide to Direct Marketing- Creating Breakthrough Programs that Really Work, Kaplan Publishing.

6.7: Project work

Cluster Elective -10A: Computer Applications

DSC G 6.5 e-Commerce Applications

Unit-I: e-Commerce Framework: Traditional vs. e-Business Applications - Anatomy of e-Commerce Applications – Present day trends.

Unit-II: Network Infrastructure of e-Commerce: Components of the I-way - Global information distribution networks - Public policy issues - Internet as a network infrastructure - Business of the internet commercialization.

Unit-III: Network Security: Client server network security - Firewalls and Network security - data and message security - Encrypted documents and Electronic mail.

Unit-IV: Electronic Commerce and World Wide Web: Consumer oriented E-commerce, Electronic payment systems, Electronic data interchange (EDI), EDI applications in business, EDI and E-commerce EDI implementation.

Unit-V: Intra-organizational e-Commerce: e-Commerce catalogs, Document Management and Digital libraries – Managing Supply Chain through e-Platform.

Reference:

1. R. Kalakota and A. B. Whinston, Frontiers of Electronic Commerce, Addison Wesley.

2. David Kosiur, Understanding Electronic Commerce, Microsoft Press.

3. Soka, From EDI to Electronic Commerce, McGraw Hill.

4. Saily Chan, Electronic Commerce Management, John Wiley.

DSC G 6.6 Enterprise Resource Planning

Unit-I: Enterprise Resource Planning: Applications - Business function and Business process – Development of ERP system SAP R/3 – New directions in ERP.

Unit-II: Production and Supply chain Management: Production Function – Production planning process – SAP ERP Approach to Production planning – Material requirement planning in SAP ERP – ERP and Supplier.

Unit -III: Marketing Information System and ERP: Sales and Distribution in ERP –Pre-sales activities – Sales order processing – Inventory Sourcing - Billing – Payment – Customer relationship Management.

Unit –IV: Accounting in ERP: ERP for Accounting Information – Industrial Credit Management in SAP ERP – Management Reporting with ERP system.

Unit – V: Human Resource Process in ERP: HR with ERP – Advance HR features – Time Management – ERP Recruitment process Modeling - Payroll – Training and Development – Case Studies.

References:

1. Ellen En Monk and Bret Wagner, Enterprise Resource Planning, McGraw Hill.

2. Alexis Leon, ERP Demystified, Tata McGraw Hill, New Delhi.

3. Joseph A Brady, Ellen F Monk, Bret Wagner, Concepts in Enterprise Resource Planning, Thompson Course Technology, USA.

4. Vinod Kumar Garg & Venkitakrishnan N K, Enterprise Resource Planning: Concepts and Practice, PHI, New Delhi.

6.7: Project work

A.P. State Council of Higher Education
Revised Common Framework of CBCS for B.Com (w.e.f.2015-16) in AP
B.Com - Semester –I

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam*	Sem. End Exam	Teaching Hours**	Credits
1.	First Language	English	100	25	75	4	3
2.	Second Language	(Tel/Hindi/Urdu/Sans)	100	25	75	4	3
3.	Foundation Course -1	HVPE (Human Values & Professional Ethics)*	50	---	50	2	2
4.	Foundation Course- 2	Environmental Studies	50	---	50	2	2
5.	DSC 1 A	Fundamentals of Accounting-I	100	25	75	5	4
6.	DSC 2 A	Business Organization	100	25	75	5	4
7.	DSC 3 A	Business Economics-I	100	25	75	5	4
Total			**600**	**125**	**475**	**27**	**22**

#The marks split between formal test and co-curricular activities may be decided by the University concerned
@ Syllabus size shall be in accordance with the No. of teaching hours.
*HVPE may be taught by Telugu teachers

B.Com - Semester – II

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1.	First Language	English	100	25	75	4	3
2.	Second Language	(Tel/Hindi/Urdu/Sans)	100	25	75	4	3
3.	Foundation Course -3	ICT-1 (Information & communication Technology)	50	---	50	2	2
4.	Foundation Course-4	Communication & Soft Skills-1	50	---	50	2	2
5.	DSC 1 B	Fundamentals of Accounting-II	100	25	75	5	4
6.	DSC 2 B	Business Environment	100	25	75	5	4
7.	DSC 3 B	Business Economics-II	100	25	75	5	4
Total			**600**	**125**	**475**	**27**	**22**

B.Com- Semester – III

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1.	First Language	English	100	25	75	4	3
2.	Second Language	(Tel/Hindi/Urdu/Sans)	100	25	75	4	3
3.	Foundation Course- 5	ICT-2 (Information & communication Technology)	50	---	50	2	2
4.	Foundation Course- 6	Communication & Soft Skills-2	50	---	50	2	2
5.	DSC 1 C	Corporate Accounting	100	25	75	5	4
6.	DSC 2 C	Business Statistics	100	25	75	5	4
7.	DSC 3 C	Banking Theory & Practice	100	25	75	5	4
Total			**600**	**125**	**475**	**27**	**22**

B.Com -Semester – IV

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1.	Foundation Course- 7	Communication & Soft Skills-3	50	---	50	2	2
2.	Foundation Course- 8	Analytical Skills*	50	---	50	2	2
3.	Foundation Course- 9	Entrepreneurship	50	---	50	2	2
4.	Foundation Course- 10	Leadership Education**	50	---	50	2	2
5.	DSC 1 D	Accounting for Service organizations	100	25	75	5	4
6.	DSC 2 D	Business Laws	100	25	75	5	4
7.	DSC 3 D	Income Tax	100	25	75	5	4
Total			**500**	**75**	**425**	**23**	**20**

* To be taught by Maths/Statistics Teachers (and partly by English teachers)
** To be taught by Telugu Teachers

Table-5: B.Com -Semester – V

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1	DSC 1 E	5.2 Cost Accounting	100	25	75	5	4
2.	DSC 2 E	5.3 Indirect Taxes	100	25	75	5	4
3.	DSC 3 E	5.4 Commercial Geography	100	25	75	5	4
4.	Elective-DSC 1F/Inter-disp.	***Cluster Electives -1*** ***1. E-Commerce*** 5.5 e-Commerce 5.6Business Networks 5.7 **Project Work:** Working with Organizations on e-Commerce activities, viz., Amazon.com., Flipkart, etc. /Online Operations in Banks ***2. Retailing*** 5.5 Purchase Management 5.6 Stores Management 5.7 **Project Work:** Survey on Rural Producers/Retailing Practices (Kirana) ***3. Corporate Accounting*** 5.5 Accounting & Auditing Standards 5.6 Accounting for Government Entities 5.7 **Project Work:** Application of Accounting & Auditing Standards in Companies /Internship in Govt. Depts. (Treasury, Local Bodies, Public Utilities, Govt. Corporations, etc.) ***4. Security Market Operations*** 5.5 Financial Markets 5.6 Stock Market Operations 5.7 **Project Work:** Survey on Investment behaviour/Working with on Stock issues, Share transfers, Documentation, Commodity trading, Derivatives, etc. ***5. Banking & Financial Services*** 5.5 Central Banking 5.6 Rural and Farm Credit 5.7 **Project Work:** Rural Credit survey/Banking operations/Credit Appraisal ***6. Taxation*** 5.5Assessment of Tax: Individual, HUF and Partnership 5.6 Corporate Taxation 5.7 **Project Work:** Working on Tax Filing Procedures & Documentation with IT Dept/Auditor/Tax Consultant	100	25	75	5	4
5.	Elective-DSC 2F /Inter-disp.		100	25	75	5	4
6.	Elective-DSC 3F/Inter-disp.		100	25	75	5	4

		7. Insurance 5.5 Life Insurance 5.6 Non- Life Insurance 5.7 **Project Work:** Working with Insurance Companies/Development Officers/Agents on Policies & Documentation. ***8. Logistics & Supply Chain Management*** 5.5 Logistics Management - Surface 5.6Logistics Management - Air and Sea 5.7**Project Work:** Internship in Transport Organizations/ Railways/Ports /Tour Operators (on Goods, Parcel and Courier Services) ***9. Advertising and Sales Promotion*** 5.5 Advertising and Media Planning 5.6 Brand Management 5.7 **Project Work:** Working with Advertising Agencies/ Survey in Business units **10. Computer Applications** 5.5 Database Management & Report Generator 5.6 Management Information system 5.7 Project Work: Working on Debase Applications & Report generations and Documentation / Designing MIS Systems in different types of business units.					
Total			**600**			**30**	**24**

Table-6: B.Com- Semester – VI

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1.	DSC 1 G	6.2 Marketing	100	25	75	5	4
2.	DSC 2 G	6.3 Auditing	100	25	75	5	4
3.	DSC 3 G	6.4 Management Accounting	100	25	75	5	4
4.	Elective-DSC 1 H/Inter-disp./Gen. Elec.	**Cluster Electives -2** ***1A. e-Commerce*** 6.5 e-Payments System 6.6 Social Media and e-Marketing 6.7 **Project Work:** Working with Organizations on Tele-marketing /e-Shopping Activities	100	25	75	5	4
5.	Elective-DSC 2H/Inter-disp./Gen. Elec.		100	25	75	5	4
6.	Elective-DSC 3H/Inter-disp./Gen. Elec.	***2A. Retailing*** 6.5 Agricultural & Rural Marketing 6.6 Warehouse Management 6.7 **Project Work:** Survey on Hawkers/ Working with Warehouses ***3A. Corporate Accounting*** 6.5 Financial Reporting 6.6 Emerging Areas in Accounting 6.7 **Project Work:** Financial Reporting practices in Companies/ Survey on Human Resource/ Environmental Accounting. ***4A. Security Market Operations*** 6.5 Derivatives Trading 6.6 Stock Market Regulatory Framework 6.7 **Project Work:** Internship in Stock Exchanges/ Mutual Funds /Working with Stock Brokers ***5A. Banking & Financial Services*** 6.5 Financial Services 6.6 Marketing of Financial Services 6.7 **Project Work:** Working with Financial Services Firms on Documentation for Sanction of Loans and financial Services **6A. Taxation** 6.5 Service Tax & VAT 6.6 Tax Planning and Management 6.7 **Project Work:** Internship on Tax Planning Practices in Business Units ***7A. Insurance*** 6.5 Marketing of Insurance Services 6.6 Insurance Regulatory Framework	100	25	75	5	4

		6.7 **Project Work: S**urvey on Settlement of Claims and Customer Care ***8A. Logistics & Supply Chain Management*** 6.5 Supply Chain Management - Products 6.6 Supply Chain Management - Services 6.7 **Project Work:** Internship with Freight Operators/ Supply Chain Management Practices in Business Units ***9A. Advertising and Sales Promotion*** 6.5 Sales Promotion 6.6 Direct Marketing 6.7 **Project work:** Survey with Customers/Sales Force/Middlemen **10A. Computer Applications** 6.5 e-Commerce Applications 6.6 Enterprise Resource Planning 6.7 Project Work: Working on the applications of ERP packages in Companies / Internship/Projects in e-Commerce Companies on the Design and Creation of websites.					
Total			**600**			**30**	**24**
Grand Total						**164**	**134**

Note:

*1. Titles of a few Electives Streams are given for DSC- F (1F, 2F & 3F combined) at V Semester and the same titles are repeated for DSC – H (1H, 2H & 3H combined). Each Elective Stream consists of two theory papers and one project work for each semester. The total for V & VI semesters will be four theory papers and two project works under each stream. A student has to select O**ne Stream of Elective consisting of four theory papers and two projects** (together for V & VI semesters). That means, the student will continue the same elective in the VI semester also.*

*2. The colleges have to **implement original project work** which may consist of field survey/internship/case study/practical training also for the third respective elective papers in V & VI semester.*

B.Com. Detailed Syllabi w.e.f. 2015-16

Semester - I

DSC 1A - Fundamentals of Accounting-I

Unit-I – Introduction to Accounting
Need for Accounting – Definition – Objectives, Advantages – Book keeping and Accounting– Accounting concepts and conventions - Accounting Cycle - Classification of Accounts and its rules - Double Entry Book-keeping - Journalization - Posting to Ledgers, Balancing of ledger Accounts (problems).

Unit –II: Subsidiary Books:
Types of Subsidiary Books - Cash Book, Three-column Cash Book- Petty cash Book (Problems).

Unit-III: Trail Balance and Rectification of Errors:
Preparation of Trail balance - Errors – Meaning – Types of Errors – Rectification of Errors (Problems)

Unit-IV- Bank Reconciliation Statement:
Need for bank reconciliation - Reasons for difference between Cash Book and Pass Book Balances- Preparation of Bank Reconciliation Statement- Problems on both favorable and unfavourable balances.

Unit -V: Final Accounts:
Preparation of Final Accounts: Trading account – Profit and Loss account – Balance Sheet – Final Accounts with adjustments (Problems).

Reference Books

1. T.S.Reddy & A. Murthy, Financial Accounting , Margham Publications
2. R L Gupta & V. K Gupta, Principles and Practice of Accounting, Sultan Chand & Sons
3. S.P. Jain & K.L Narang, Accountancy-I, Kalyani Publishers
4. Tulasian, Accountancy -I, Tata McGraw Hill Co.
5. V.K.Goyal, Financial Accounting, Excel Books
6. K. Arunjothi, Fundamentals of Accounting; Maruthi Publications

DSC 2 A - Business Organization

Unit-I – Introduction

Concepts of Business, Trade , Industry and Commerce – Features of Business -Trade Classification - Aids to Trade – Industry – Classification – Relationship of Trade, Industry and Commerce.

Unit II- Business Functions and Entrepreneurship

Functions of Business and their relationship - Factors influencing the choice of suitable form of organization – Meaning of Entrepreneurship – Characteristics of a good entrepreneur - Types – Functions of Entrepreneurship.

Unit –III – Forms of Business Organizations

Sole Proprietorship – Meaning – Characteristics – Advantages and Disadvantages – Partnership - Meaning – Characteristics- Kinds of partners – Advantages and Disadvantages – Partnership Deed – Hindu-undivided Family – Cooperative Societies.

Unit-IV- Joint Stock Company

Joint Stock Company – Meaning – Characteristics –Advantages – Kinds of Companies - Differences between Private Ltd and Public Ltd Companies.

Unit-V- Company Incorporation

Preparation of important Documents for incorporation of Company – Memorandum of Association – Articles of Association – Differences Between Memorandum of Association and Articles of Association - Prospectus and its contents.

Reference Books

1. C.D.Balaji and G. Prasad, Business Organization - Margham Publications, Chennai.
2. R.K.Sharma and Shashi K Gupta, Business Organization - Kalyani Publications.
3. C.B.Guptha, Industrial Organization and Management, Sultan Chand.
4. Y.K.Bushan, Business organization and Management, Sultan Chand.
5. Sherlekar, Business Organization and Management, Himalaya Publications.

DSC 3A - Business Economics-I

Unit-I- Introduction
Meaning and Definitions of Business Economics - Nature and scope of Business Economics- Micro and Macro Economics and their differences.

Unit-II- Demand Analysis
Meaning and Definition of Demand - Determinants of Demand -- Demand function – Law of demand- Demand Curve - Exceptions to Law of Demand.

Unit –III- Elasticity of Demand
Meaning and Definition of Elasticity of Demand – Types of Elasticity of Demand – Measurements of Price elasticity of demand – Total outlay Method – Point Method – Arc Method.

Unit – IV- Cost and Revenue Analysis
Classification of Costs – Total - Average – Marginal and Cost function – Long-run – Short-run – Total Revenue - Average revenue – Marginal Revenue.

Unit-V- Break-Even Analysis
Type of Costs – Fixed Cost – Semi-variable Cost – Variable Cost– Cost behaviour - Breakeven Analysis - Its Uses and limitations.

Reference Books

1. S.Sankaran, Business Economics, Margham Publications, Chennai.
2. Business Economics - Kalyani Publications.
3. Business Economics – Himalaya Publishing House.
4. Aryasri and Murthy Business Economics , Tata McGraw Hill.
5. Business Economics, Maruthi Publications.

Semester - II

DSC 1B – Fundamentals of Accounting-II

Unit-I: **Depreciation**
Meaning of Depreciation - Methods of Depreciation: Straight line – Written down Value – Sum of the Years' Digits - Annuity and Depletion (Problems).

Unit-II: **Provisions and Reserves**
Meaning – Provision vs. Reserve – Preparation of Bad debts Account – Provision for Bad and doubtful debts – Provision for Discount on Debtors – Provision for discount on creditors - Repairs and Renewals Reserve A/c (Problems).

Unit-III: Bills of Exchange
Meaning of Bill –Features of bill – Parties in the Bill – Discounting of Bill – Renewal of Bill – Entries in the books of Drawer and Drawee (Problems).

Unit-IV: **Consignment Accounts**
Consignment - Features - Proforma invoice - Account sales – Del-credre Commission - Accounting treatment in the books of consigner and consignee - Valuation of closing stock - Normal and Abnormal losses (Problems).

Unit-V: **Joint Venture Accounts**
Joint venture - Features - Differences between Joint-venture and consignment – Accounting procedure - Methods of keeping records (Problems).

Reference Books:

1. R.L. Gupta & V.K. Gupta, Principles and Practice of Accounting, Sultan Chand
2. T. S. Reddy and A. Murthy - Financial Accounting, Margham Publications.
3. S.P. Jain & K.L Narang, Accountancy-I, Kalyani Publishers.
4. Tulsan, Accountancy-I, Tata McGraw Hill Co.
5. V.K. Goyal, Financial Accounting, Excel Books
6. T.S. Grewal, Introduction to Accountancy, Sultan Chand & Co.
7. Haneef and Mukherjee, Accountancy-I, Tata McGraw Hill
8. Arulanandam, Advanced Accountancy, Himalaya Publishers
9. S.N.Maheshwari & V.L.Maheswari, Advanced Accountancy-I, Vikas Publishers.

DSC 2 B: Business Environment

Unit – I: Overview of Business Environment

Business Environment – Meaning – Macro and Micro Dimensions of Business Environment – Economic – Political – Social – Technological – Legal – Ecological – Cultural – Demographic – Changing Scenario and implications – Indian Perspective – Global perspective.

Unit – II: Economic Growth

Meaning of Economic growth – Factors Influencing Development – Balanced Regional Development.

Unit – III - Development and Planning

Rostow's stages of economic development - Meaning – Types of plans – Main objects of planning in India – NITI Ayog and National Development Council – Five year plans.

Unit – IV : Economic Policies

Economic Reforms and New Economic Policy – New Industrial Policy – Competition Law – Fiscal Policy – Objectives and Limitations – Union budget – Structure and importance of Union budget – Monetary policy and RBI.

Unit – V -Social, Political and Legal Environment

Concept of Social Justice - Schemes - Political Stability - Leal Changes.

Suggested Readings:

1. Rosy Joshi and Sangam Kapoor : Business Environment.
2. Francis Cherunilam : Business Environment.
3. S.K. Mishra and V.K. Puri : Economic Environment of Business.
4. K. Aswathappa : Essentials of Business Environment.

DSC 3 B - Business Economics-II

Unit-I: Production and Costs: Techniques of Maximization of output, Minimization of costs and Maximization of profit - Scale of production - Economies and Dis-economies of Scale - Costs of Production – Cobb-Douglas Production Function.

Unit-II: Market Structure-I: Concept of Market - Market structure - Characteristics - Perfect competition -characteristics equilibrium price - profit maximizing output in the short and long run Monopoly- characteristics - Profit maximizing out-put in the short and long run - Defects of Monopoly – Distinction between Perfect competition and Monopoly.

Unit-III Market Structure-II: Monopolistic Competition - Characteristics - Product differentiation - Profit maximization - Price and output in the short and long - run – Oligopoly - characteristics - Price rigidity - Kinked Demand Curve - Distribution - Concepts - Marginal Productivity - Theory of Distribution.

Unit-IV National Income And Economic Systems: National Income - Definition Measurement - GDP - Meaning Fiscal deficit - Economic systems - Socialism - Mixed Economic System - Free Market economy.

Unit-V Structural Reforms: Concepts of Economic liberalization, Privatization, Globalization - WTO Objectives Agreements - Functions - Trade cycles - Meaning - Phases - Benefits of International Trade - Balance of Trade and Balance of payments.

Reference Books:

1. Aryasri and Murthy, Business Economics, Tata McGraw Hill
2. H.L Ahuja, Business Economics, Sultan Chand & Sons
3. KPM Sundaram, Micro Economics
4. Mankiw, Principles of Economics, Cengage Publications
5. Mithani, Fundamentals of Business Economics, Himalaya Publishing House
6. DAR Subrahmanyam &V Hari Leela, A Text Book on Business Economics, Maruthi Publishers.
7. A.V. R. Chary, Business Economics, Kalyani Publishers, Hyderabad.

Semester - III

DSC 1 C - Corporate Accounting

Unit-I:

Accounting for Share Capital - Issue, forfeiture and reissue of forfeited shares- concept & process of book building - Issue of rights and bonus shares - Buyback of shares (preparation of Journal and Ledger).

Unit-II:

Issue and Redemption of Debentures - Employee Stock Options – Accounting Treatment for Convertible and Non-Convertible debentures (preparation of Journal and Ledger).

Unit –III:

Valuation of Goodwill and Shares: Need and methods - Normal Profit Method, Super Profits Method – Capitalization Method - Valuation of shares - Need for Valuation - Methods of Valuation - Net assets method, Yield basis method, Fair value method (including problems).

UNIT – IV:

Company Final Accounts: Preparation of Final Accounts – Adjustments relating to preparation of final accounts – Profit and loss account and balance sheet – Preparation of final accounts using computers (including problems).

Unit –V

Provisions of the Companies Act, 2013 relating to issues of shares and debentures - Book Building- Preparation of Balance Sheet and Profit and Loss Account – Schedule-III.

Reference Books:

1. Corporate Accounting – Haneef & Mukherji,
2. Corporate Accounting – RL Gupta & Radha swami
3. Corporate Accounting – P.C. Tulsian
4. Advanced Accountancy: Jain and Narang
5. Advanced Accountancy : R.L. Gupta and M.Radhaswamy, S Chand.
6. Advanced Accountancy : Chakraborthy
7. Modern Accounting: A. Mukherjee, M. Hanife Volume-II McGraw Hill
8. Accounting standards and Corporate Accounting Practices: T.P. Ghosh Taxman
9. Corporate Accounting: S.N. Maheswari, S.R. Maheswari, Vikas Publishing House.
10. Advanced Accountancy: Arutanandam, Raman, Himalaya Publishing House.
11. Advanced Accounts: M.C. Shukla, T.S. Grewal, S.C. Gupta, S. Chand & Company Ltd.,
12. Management Accounting: Shashi K. Gupta, R.K. Sharma, Kalyani Publishers.

DSC 2C - Business Statistics

Unit 1: Introduction to Statistics:
Definition, importance and limitations of statistics - Collection of data - Schedule and questionnaire – Frequency distribution – Tabulation -Diagrammatic and graphic presentation of data using Computers (Excel).

Unit 2: Measures of Central Tendency:
Characteristics of measures of Central Tendency-Types of Averages – Arithmetic Mean, Geometric Mean, Harmonic Mean, Median, Mode, Deciles, Percentiles, Properties of averages and their applications.

Unit 3: Measures of dispersion and Skewness:
Properties of dispersion-Range-Quartile Deviation –Mean Deviation-Standard Deviation-Coefficient of Variation-Skewness definition-Karl Pearson's and Bowley's Measures of skewness-Normal Distribution.

Unit 4: Measures of Relation:
Meaning and use of correlation – Types of correlation-Karlpearson's correlation coefficient – Spearman's Rank correlation-probable error-Calculation of Correlation by Using Computers.
Regression analysis comparison between correlation and Regression – Regression Equations-Interpretation of Regression Co-efficient.

Unit 5: Analysis of Time Series & Index Numbers:
Components of Time series- Measurement of trend and Seasonal Variations – Index Numbers-Methods of Construction of Index Numbers – Price Index Numbers – Quantity Index Numbers – Tests of Adequacy of Index Numbers – Cost of Index Numbers-Limitations of Index Numbers – Use of Computer Software.

Suggested Readings:

1. Business Statistics — Reddy, C.R Deep Publications.
2. Statistics-Problems and Solutions — Kapoor V.K.
3. Fundamentals of Statistics — Elhance.D.N
4. Statistical Methods — Gupta S.P
5. Statistics — Gupta B.N.
6. Fundamentals of Statistics — Gupta S.C
7. Statistics-Theory, Methods and Applications — Sancheti,D.C. &Kapoor V.K
8. Business Statistics — J.K.Sharma
9. Business Statistics — Bharat Jhunjhunwala
10. Business Statistics — R.S.Bharadwaj

DSC 3C - Banking Theory & Practice

Unit-I: Introduction

Meaning & Definition of Bank – Functions of Commercial Banks – Kinds of Banks - Central Banking Vs. Commercial Banking.

Unit-II: Banking Systems

Unit Banking , Branch Banking, Investment Banking- Innovations in banking – E banking - Online and Offshore Banking , Internet Banking - Anywhere Banking - ATMs - RTGS.

Unit-III: Banking Development

Indigenous Banking - Cooperative Banks, Regional Rural banks, SIDBI, NABARD - EXIM Bank.

Unit-IV: Banker and Customer

Meaning and Definition of Banker and customer – Types of Customers - General Relationship and Special Relationship between Banker and Customer - KYC Norms.

Unit-V: Collecting Banker and Paying Banker

Concepts - Duties & Responsibilities of Collecting Banker – Holder for Value – Holder in Due Course – Statutory Protection to Collecting Banker - Responsibilities of Paying Banker - Payment Gateways.

Books for Reference

1. Banking Theory: Law & Practice : K P M Sundram and V L Varsheney
2. Banking Theory, Law and Practice : B. Santhanam; Margam Publications
3. Banking and Financial Systems : Aryasri
4. .Introduction to Banking : Vijaya Raghavan
5. Indian Financial System : M.Y.Khan
6. Indian Financial System : Murthy & Venugopal

Semester - IV

DSC 1D- Accounting for Service Organizations

Unit-I: Non-Trading/ Service Organizations:
Concept - Types of Service Organizations – Section (8) and other Provisions of Companies Act, 2013.

Unit – II Electricity Supply Companies:
Accounts of Electricity supply companies: Double Accounting system – Revenue Account – Net Revenue Account – Capital Account – General Balance Sheet (including problems).

Unit – III - Bank Accounts
Bank Accounts – Books and Registers to be maintained by Banks – Banking Regulation Act, 1969 - Legal Provisions Relating to preparation of Final Accounts (including problems).

Unit-IV: Insurance Companies
Life Insurance Companies –Preparation of Revenue Account, Profit and Loss Account, Balance Sheet (including problems) – LIC Act, 1956.

Unit – V: General Insurance
Principles – Preparation of final accounts – with special reference to fire and marine insurance (including problems) – GIC Act, 1972.

Suggested Readings

1. Corporate Accounting – RL Gupta & M. Radha Swami
2. Corporate Accounting – P.C. Tulsian
3. Company Accounts : Monga, Girish Ahuja and Shok Sehagal
4. Advanced Accountancy: Jain and Narang
5. Advanced Accountancy : R.K. Gupta and M. Radhaswamy
6. Advanced Accountancy : Chakraborty
7. Advanced Accountancy: S.P. Iyengar
8. Modern Accounting: A. Mukherjee, M. Hanife McGraw Hill Company Ltd., New Delhi.
9. Accounting standards and Corporate Accounting Practices: T.P. Ghosh Taxman
10. Corporate Accounting: S.N. Maheswari, S.R. Maheswari, Vikas Publishing.
11. Advanced Accountancy: Arutanandam, Raman, Himalaya Publishing House.
12. Advanced Accounts: M.C. Shukla, T.S. Grewal, S.C. Gupta, S. Chand.

DSC 2D - Business Laws

Unit-1 Contract

Meaning and Definition of Contract-Essential elements of valid Contract -Valid, Void and Voidable Contracts - Indian Contract Act, 1872.

Unit-2 Offer and Acceptance

Definition of Valid Offer, Acceptance and Consideration -Essential elements of a Valid Offer, Acceptance and Consideration.

Unit-3 Capacity of the Parties and Contingent Contract

Rules regarding to Minors contracts - Rules relating to contingent contracts - Different modes of discharge of contracts-Rules relating to remedies to breach of contract.

Unit-4 Sale of Goods Act 1930

Contract of sale – Sale and agreement to sell – Implied conditions and warranties – Rights of unpaid vendor.

Unit-5:

Cyber Law and Contract Procedures - Digital Signature - Safety Mechanisms.

Suggested Readings:

1. J. Jayasankar, Business Laws, Margham Publication. Chennai -17
2. Kapoor ND, Mercentile Law , Sultan Chand
3. Balachandram V, Business law Tata
4. Tulsian , Business Law Tata
5. Pillai Bhagavathi, Business Law , S.Chand.
6. Business Laws, Maruthi Publishers

DSC 3D - Income Tax

Unit-I

Introduction: Income Tax Law – Basic concepts: Income, Person, Assesse, Assessment year, Agricultural Income, Capital and revenue, Residential status, Income exempt from tax (theory only).

Unit-II

Income from salary: Allowances, perquisites, profits in lieu of salary, deductions from salary income, computation of salary income and qualified savings eligible for deduction u/s 80C (including problems).

Unit-III

Income from House Property: Annual value, let-out/self occupied/deemed to be let-out house, deductions from annual value - computation of income from house property (including problems).

Unit-IV

Income from Capital Gains – Income from other sources – (from Individual point of view) - chargeability – and assessment (including problems).

Unit-V:

Computation of total income of an individual – Deductions under section - 80 (including problems).

Reference Books:

1. Dr. Vinod; K. Singhania; Direct Taxes – Law and Practice, Taxman Publications
2. B.B. Lal; Direct Taxes; Konark Publications
3. Dr. Mehrotra and Dr. Goyal; Direct Taxes – Law and Practice; Sahitya Bhavan Publication.
4. Gaur and Narang; Income Tax, Kalyani Publishers, New Delhi.

Semester - V

DSC - 1E 5.2 Cost Accounting

Unit-I:Introduction: Distinguish between Financial Accounting, Cost Accounting and management accounting - Cost Concepts and Classification – Cost Centre and Cost Unit – Preparation of Cost Sheet.

Unit-II: Elements of Cost: Materials: Material control – Selective control, ABC technique – Methods of pricing issues – FIFO, LIFO, Weighted average, Base stock methods, choice of method (including problems).

Unit-III: Labour and Overheads: Labour: Control of labor costs – time keeping and time booking – Idle time –Methods of remuneration – labour incentives schemes - Overheads: Allocation and apportionment of overheads – Machine hour rate.

Unit-IV: Methods of Costing: Job costing – Process costing - treatment of normal and abnormal process losses – preparation of process cost accounts – treatment of waste and scrap, joint products and by products (including problems).

Unit -V: Costing Techniques: Marginal Costing – Standard costing – Variance Analysis (including problems).

References:

1. S.P. Jain and K.L. Narang – Advanced Cost Accounting, Kalyani Publishers, Ludhiana.
2. M.N. Aurora – A test book of Cost Accounting, Vikas Publishing House Pvt. Ltd.
3. S.P. Iyengar – Cost Accounting, Sultan Chand & Sons.
4. Nigam & Sharma – Cost Accounting Principles and Applications, S.Chand & Sons.
5. S.N .Maheswari – Principles of Management Accounting.
6. I.M .Pandey – Management Accounting, Vikas Publishing House Pvt. Ltd.
7. Sharma & Shashi Gupta – Management Accounting, Kalyani Publishers. Ludhiana.

DSC 2E 5.3 Indirect Taxes

Unit –I: Central Sales Tax/G.S.T (Goods And Services Tax): Objectives of CST Act, Dealer-Business-Sales-Goods-Declared goods, Turnover - Sale Price - Sales Exempt from Central Sales Tax, Interstate and Intra state sale, sales in the course of imports and exports, registration under CST Act.

Unit- II: Customs Act: Types of Custom Duties- Valuation for Customs Duty- Tariff Value- Customs Value- Methods of Valuation for Customs - Problems on Custom Duty Assessment.

Unit –III: Central Excise: Procedures relating to Levy, Valuation and Collection of Duty, Types of Excise Duties- Cenvat Credit- Classification of Excisable Goods- Valuation of Excisable Goods- Central Excise Procedures (including problems).

Unit –IV: Service Tax: Features of Service Tax- Levy and Collection - Service Tax Administration- Exemptions from Service Tax - Taxable Services- Determination of Service Tax Liability (including problems)

Unit -V: VAT: Concept and Principles - Calculation of VAT Liability including input Tax Credits, Small Dealers and Composition Scheme, VAT Procedures.

References:

1. Customs Law Manual and Customs Tariff of India- R K Jain
2. Central Excise Manual and Central Excise Tariff- Taxman's
3. CENVAT Law and Procedure- Taxman's
4. Income Tax Law including VAT/Service Tax- T N Manoharan, Snow White Publications
5. Direct taxes Law & Practice – Vinodh Singhania, Kapil Singhania, Taxman.
6. Direct Taxes- H C Mehrotra and Goyal, Sahithya Bhavan Publications.
7. Direct Taxes- Gaur and Narang, Kalyani Publishers, Ludhiana.

DSC 3E 5.4 Commercial Geography

Unit –I: The Earth: Internal structure of the Earth – Latitude – Longitude – Realms of the Earth – Evolution of the Earth – Environmental pollution - Global Warming - Measures to be taken to protect the Earth.

Unit -II: India – Agriculture: Land Use - Soils - Major crops – Food and Non-food Crops – Importance of Agriculture – Problems in Agriculture – Agriculture Development.

Unit -III: India – Forestry: Forests – Status of Forests in Andhra Pradesh – Forest (Conservation) Act, 1980 – Compensatory Afforestation Fund (CAF) Bill, 2015 - Forest Rights Act, 2006 and its Relevance – Need for protection of Forestry.

Unit -IV: India – Minerals and Mining: Minerals – Renewable and non Renewable – Use of Minerals – Mines – Coal, Barites, etc. – Singareni Coal mines and Mangampeta Barites - District-wise Profile.

Unit-V: India – Water Resources – Rivers: Water resources - Rationality and equitable use of water – Protection measures - Rivers - Perennial and peninsular Rivers - Interlinking of Rivers - Experience of India and Andhra Pradesh.

References:

1. Shabiar Ahmad; Quazi ,Natural Resource Consumption and Environment Management, APH Publishing Corporation.
2. Tarachand, Economic and Commercial Geography of India, Vikas Publishing House.
3. Dr. S. Sankaran, Commercial Geography, Margam Publications, Chennai.
4. C. B. Memoria, Commercial Geography, Lal Agarwal & Co.
5. C. B. Memoria, Economic and Commercial Geography, Lal Agarwal & Co.
6. Vinod N. Patel, Commercial Geography, Oxford Book Company

Cluster Elective -1: E-Commerce

DSC F 5.5 e-Commerce

Unit-I: e-Commerce: Features of Electronic Commerce - Distinction between e-Commerce and e-Business - Types of Business Models: B2B, B2C, C2C - Benefits and Limitations of e-Commerce - Apps.

Unit-II: **e-Business Applications:** Integration and e-Business suits - ERP, e-SCM, e-CRM - Methods and benefits of e-Payment Systems –e-Marketing – Applications and issues

Unit-III: **e-Business on different Fields**: e-Tourism – e-Recruitment – e- Real Estate – e-Stock Market – e-Music/Movies - e-Publishing and e-Books.

Unit-IV: **Concept of Online Education:** Process - Methods - e-Content development and Deliveries - Major technologies used in e-Education - Online Testing - Methods - Future Trends.

Unit-V: Mobile Commerce: Ticketing - Me-Seva; Government and Consumer Services – e-Retailing - e-Groceries – Security challenges - Case Studies.

References:

1. Turban E. Lee J., King D. and Chung H.M: Electronic commerce-a Managerial Perspective, Prentice-Hall International, Inc.
2. Bhatia V., E-commerce, Khanna Book Pub. Co. (P) Ltd., Delhi.
3. Daniel Amor, E Business R (Evolution), Pearson Education.
4. Krishnamurthy, E-Commerce Management, Vikas Publishing House.
5. David Whiteley, E-Commerce: Strategy, Technologies and Applications, Tata McGraw Hill.
6. P. T. Joseph, E-Commerce: A Managerial Perspectives, Tata McGraw Hill.

DSC F 5.6 Business Networks

Unit-I: Business Forms: Interrelation among Stakeholders – Business and Government – Business and Society: Social Network and Facebook.

Unit-II: Business Networking through ICT: Basic concepts – Uses and Application of Business Networks – Different Layers of Business Networks – Internet and Business Networks – Network Security.

Unit-III: Business Networking Systems and Devices: Communication Satellites – Servers – Cloud Computing – Sharing – Spectrum – Commercial issues.

Unit-IV: Customer Relationship Management: Establishing Network connection with customers – Forward and Backward Integration – Customer Data Base – Creation and Maintenance – Legal and Ethical Issues.

Unit-V: Business Analytics: Master Data Management – Data Warehousing and Mining – Data Integration – OLTP and OLAP.

References:

1. Jerry, FitzGerald and Alan Dennis, Business Data Communications and Networking, John Wiley & Sons.
2. Tanenbaum, A. S., Computer Networks, Pearson Education.
3. David A Stamper, Business Data Communications. Addison Wesley.
4.Business Analytics – Methods, Models and Decisions, James R. Evans, Prentice Hall.
5.Business Analytics - An Application Focus, Purba Halady Rao, PHI learning
6. R.N Prasad and Seema Acharya, Fundaments of Business Analytics, Wiley India.

5.7: Project work

Cluster Elective – 2: Retailing
DSC F 5.5 Purchase Management

Unit-I: Introduction: Purchase Function - Supply Management – Sources of Purchase: Local vs. Global - Negotiation & Bargaining - Purchasing Methods - e-Procurement –DGS & D.

Unit-II: **Purchasing Function**: Right Quantity - Economic Order Quantity - Re-order Levels - ABC Analysis - Right Price, Time - Tendering: Single, Limited, Open, Global tenders.

Unit-III: **Vendor Analysis**: Identification of vendor – Selection - Criteria and Methodology of evaluation - Vendor Rating – Maintenance of Vendor relations.

Unit-IV: **Buyer-Supplier Relationships**: Transformation of buyer-supplier relationships - Developing and managing collaborative and alliance relationships – joint problem solving, Information sharing.

Unit-V: Supply Chain Management: JIT in the supply management - Cross-Functional Teams: Cross-functional teams and supply management - challenges of cross-functional teams, prerequisites to success.

References:

1. Dobler & Burt, Purchasing and Supply Management, McGraw Hill.
2. P. Gopala Krishan, Purchasing and Materials Management, Tata McGraw-Hill Education.
3. L.N. Aggarwal & Parag Diwan, Management & Production Systems, National Publishing House.
4. N.G. Nair, Production and Operations Management, Tata McGraw Hill Publishing Co. Ltd.
5. Gopalakrishnan P. & Sundaresan. M., Materials Management-An Integrated Approach, PHI.

DSC F 5.6 Stores Management

Unit-I: Stores Function: Layout and Organization - Stores Responsibilities - Relationships with Other Departments - Logistics - Supply Chain - Coding of materials - Methods of Coding

Unit-II: Material Receipt and Issue: Receipts from Suppliers - Inspection - Authorization of issues - Methods of issue - Records and Systems - Manual Systems - Computerized Systems - Recent Developments.

Unit-III: Stock Control Techniques: Approaches to Control - ABC Analysis - Provision of Safety Stock - Stocktaking Procedure - Obsolescence and Redundancy - Prevention of Deterioration - Stock Checking.

Unit-IV: Stores Operations: Storehouse Location - Centralization of Storage - Measurement of Stores efficiency - Health and Safety directives on stores operations - Manual and Mechanical lifting - Control of Substances Hazardous to Health Regulations - Storage Equipment.

Unit-V: Procedure Manuals: Need for Manuals - Preparation of the Manual - Contents of the Manual - Publication and Distribution - Implementation of the Manuals.

References:

1.Jessop David & Morrison Alex, Storage and Supply of Materials, Pearson Education Ltd. England.

2.Saleemi N.A., Store keeping and Stock Control Simplified, Saleemi Publications Ltd., Nairobi.

3. Gopalakrishnan P. & Sundaresan. M., Materials Management-An Integrated Approach, PHI.

4. P. Gopala Krishan, Purchasing and Materials Management, Tata McGraw-Hill Education.

5.7: Project work

Cluster Elective-3: Corporate Accounting

DSC F 5.5 Accounting & Auditing Standards

Unit-I: Introduction: Significance of Accounting Standards - National and International Accounting Standards - Accounting Standards in India.

Unit-II: Accounting Standards (AS-1 to AS-16): AS-1: Disclosure of Accounting policies – AS-2: Valuation of inventories –AS-3: Cash flow statement – AS-4: Contingencies in balance sheet – AS-5: Net profit or loss, prior period items and changes – AS-6: Depreciation Accounting – AS-7: Construction Contracts – AS-9: Revenue Recognition – AS 10: Accounting for Fixed assets - AS-11: Effects of changes in foreign exchange rates- AS-12: Accounting for government grants – **AS-13: Accounting for investments** – AS-14: Accounting for Amalgamation – AS-15: Employee benefits – AS-16: Borrowing costs .

Unit-III: Accounting Standards (AS17 to AS-32): – AS-17: Segment reporting – AS-18: Related party disclosures – AS-19: Leases – AS-20: Earning per share - AS-21: Consolidated financial statements – AS-22: Accounting for taxes – AS-23: Accounting for investments – AS-24: Discontinuing operations – AS-25: Interim Financial Reporting – AS-26: Intangible assets – AS-27: Financial reporting of interests in joint ventures – AS-28: Impairment of assets – AS-29: Provisions, Contingent liabilities and assets; AS-30: Financial Instruments: Recognition and Measurement; AS-31: Financial Instruments: Presentation – AS-32:Financial Instruments: Disclosures.

Unit-IV: Auditing Standards: Procedure - International Federation of Accountants - Auditing and Assurance Standards Board - Indian Auditing Standards (issued so far) Overview.

Unit-V: International Financial Reporting Standards (IFRS): Origin - Procedure - International Accounting Standards Board - Adoption in India.

References:

1. Taxman's Students' Guide to Accounting Standards, D. S. Rawat, Taxman Publications.
2. Compendium of Statements and Standards on Accounting, The Institute of Chartered Accountants of India, New Delhi.
3. British Accounting Standards, Ronal Leach and Edward Stamp, Woodhead Faulkner Ltd, Cambridge.
4. T. P. Ghosh, Accounting Standards and Corporate Accounting Practices, Taxman Publications.

DSC F 5.6 Accounting for Government Entities

Unit-I: General Principles - Government Accounting System - Consolidated Fund of India - Comparison with Commercial Accounting system.

Unit-II: Role of Comptroller and Auditor General of India - Role of Public Accounts Committee, Review of Accounts - Civil and Commercial Entities.

Unit-III: Government Accounting Standards issued by Government Accounting Standards Advisory Board (GASAB) - Adoption and Review.

Unit-IV: Financial Reporting in Public Sector Undertakings and Government Companies.

Unit-V: Case Studies: Railway Accounts - Defense Accounts - CPWD Accounts, etc.

References:

1. Jain, S.P., Narang, K.L., Advanced Accountancy (Vol-1), Kalyani Publishers, Ludhiana.
2. Paul Marcus Fischer, William James Taylor & Rita Hartung Cheng, Advanced Accounting, Cengage Learning, USA.
3. K.K. Bhardwaj, Public Accounting and Auditing (office of the Comptroller and Auditor General of India), Mittal Publications, New Delhi.
4. Mortimer A. Dittenhofer, Applying Government Accounting Principles, LexisNexis.
5. Warren Ruppel, Governmental Accounting: Made Easy, John Wiley & Sons, INC., USA.
6. A Mukherjee & M. Hanif, Modern Accountancy, Tata McGraw Hill Publishing Company Limited, New Delhi.
7. K. B. Verma, Reading in Indian Railway Finance, Academic Foundation, Delhi.

5.7: Project work

Cluster Elective -4: Security Market Operations

DSC F 5.5 Financial Markets

Unit-I: **Financial Markets**: Financial Instruments - Intermediaries - Services - Structure of Financial Market in India.

Unit-II: **Capital Market**: Role, Evolution in India - Future Trends - Primary Market - Issue of Capital: Process, Pricing, Methods of Issue, Book-building - Managing Shareholders Relations.

Unit-III: Secondary Market: Growth, Development, Regulation - Stock Exchange Mechanism: Trading, Settlement - Carry Forward, Badla system - Insider Trading, Price Rigging.

Unit-IV: **Players on Stock Exchange**: Investors, Speculators, Market Makers, Bulls, Bears, Stags - Stock Exchange Regulations - Stock Indices - Regulations and Regulatory Agencies (SEBI).

Unit-V: **Bond Market in India:** Bond Market and its Interface with Equity Market and Debt Market - Mutual Funds.

References:

1. Gupta, L.C: Stock Exchange Trading in India; Society for Capital Market Research and Development, Delhi.
2. Bhole, I.M., Financial Institutions and Market, Tata McGraw Hill.
3. Vasant Desai, Indian Financial System, Himalaya Publishing House.
4. Pathak, Bharati V., Indian Financial System: Markets, Institutions and Services, Pearson Education (Singapore), New Delhi.
5. Gordon E. & K. Natarajan, “Financial Markets and Services”, Himalaya Publishing House, New Delhi.

DSC F 5.6 Stock Market Operations

Unit-I: **Listing of Securities:** Merits and demerits - Listing requirements, Procedure, Fee - Listing of rights issue, bonus issue, further issue - Listing conditions of BSE and NSE- Delisting.

Unit-II: Indian Stock Exchanges: BSE – NSE - BOLT System – Demat and Electronic transfer of Securities – Institutional segment – RETDEBT market (RDM).

Unit-III: Trading System: Different trading systems - NEAT system, Market types, Order Types - Order management, Trade Management, Auction Internet Broking.

Unit-IV: Clearing and Settlement: Transaction cycle - Settlement process and agencies - Risks in settlement – Securities and Funds settlement - De-mat settlement – Shortages handling - Identification Number.

Unit-V: Stock Market Indices: Purpose and Considerations in developing index - Stock market indices in India - BSE Sensex - Scrip selection criteria - Construction – NSE indices – S&P CNX Nifty – OTCEI.

References:

1. Punithavathy Pandian, Security Analysis and Portfolio Management, Vikas Publishing House, New Delhi.
2. V. A. Avadhani, Investment and Securities Market in India, Himalaya Publishing House.
3. Prasanna Chandra, Security Analysis and Portfolio Management, Tata McGraw-Hill.
4. Sanjeev Agarwal, A Guide to Indian Capital Market, Bharat Publishers
5. Ravi Puliani and Mahesh Puliani, Manual of SEBI, Bharat Publication

5.7: Project work

Cluster Elective -5: Banking and Financial Services

DSC F 5.5 Central Banking

Unit-I: Introduction: Evolution and Functions of Central Bank - Development of Central Banks in Developed and Developing countries - Trends in Central Bank Functions.

Unit-II: Central banking in India: Reserve Bank of India - Constitution and Governance, Recent Developments, RBI Act. - Interface between RBI and Banks.

Unit-III: Monetary and Credit Policies: Monetary policy statements of RBI - CRR - SLR - Repo Rates - Reverse Repo Rates - Currency in circulation - Credit control measures.

Unit-IV: Inflation and price control by BRI: Intervention mechanisms - Exchange rate stability - Rupee value - Controlling measures.

Unit-V: **Supervision and Regulation**: Supervision of Banks - Basle Norms, Prudential Norms, Effect of liberalization and Globalization - Checking of money laundering and frauds.

References:

1. Reserve Bank of India Publication, Functions and Working of the RBI.
2. Vasant Desai, Central Banking and Economic Development, Himalaya Publishing.
3. S. Panandikar, Banking in India, Orient Longman.
4. Reserve Bank of India Publication, Report on Trends and Progress of Banking in India.
5. Annual Reports of Reserve Bank of India.
6. Rita Swami, Indian Banking System, International Publishing House Pt. Ltd..
7. S.V. Joshi, C.P. Rodrigues and Azhar Khan, Indian Banking System, MacMillan Publishing.

DSC F 5.6 Rural and Farm Credit

Unit-I: Rural Credit: Objectives and Significance of Rural credit - Classification of rural credit - General Credit Card (GCC) – Financial Inclusion - Rupay Card.

Unit-II: Rural Credit Agencies: Institutional and Non-institutional Agencies for financing agriculture and Rural development - Self-Help Groups (SHG) - Financing for Rural Industries.

Unit-III: Farm Credit: Scope - Importance of farm credit - Principles of Farm Credit - Cost of Credit - Types - problems and remedial measures - Kisan Credit Card (KCC) Scheme.

Unit-IV: Sources of Farm Credit: Cooperative Credit: PACS - APCOB - NABARD - Lead Bank Scheme - Role of Commercial and Regional Rural Banks - Problems of recovery and over dues.

Unit-V: Farm Credit Analysis: Eligibility Conditions - Analysis of 3 R's (Return, Repayment Capacity and Risk-bearing Capacity) - Analysis of 3 C's of Credit (Character, Capacity and Capital) - Crop index reflecting use and farm credit - Rural Credit Survey Reports..

References:

1. National Bank of Agricultural and Rural Development (NABARD) Annual report.
2. Economic Survey, Government of India.
3. Rural Development, Sundaram I.S., Himalaya Publishing House, Mumbai.
4. Rural Credit in India, C.S.Rayudu, Mittal Publications.
5. Farm Credit and Co-operatives in India, Tiruloati V., Naidu. V T Naidu, Vora & Co. Pub. Ltd.

5.7: Project work

Cluster Elective -6: Taxation

DSC F 5.5 Assessment of Tax: Individual, HUF and Partnership

Unit-I: **Deductions u/s 80:** Basic rules of deductions, deductions in computing total income.

Unit-II: Set off and Carry forward of Losses: Set off of loss from one source against income from another source, carry forward and set off of losses - brought forward of losses.

Unit-III: **Assessment of Individuals:** Computation of Total income of Individuals and Tax liability - Rates of Income tax.

Unit-IV: Assessment of Tax of HUF: Computation of Gross Total Income and Total Income of a Hindu Undivided Family - Rates of Income tax.

Unit-V: Assessment of Tax of Partnership: Computation of Gross Total Income and Total Income of Partnership Firm - Deductions U/S 80.

References:

1. H C Meharotra & S P Goyal, Income Tax Law & Accounts: Sahitya Bhavan Publications.
2. Vinod. K. Singhania; Direct Taxes – Law and Practice, Taxman Publications
3. B.B. Lal, Direct Taxes, Konark Publications.
4. Vinod K Singhania, Students' Guide to Income Tax, Taxman Publication.

DSC F 5.6 Corporate Taxation

Unit-I: Tax Provisions of Companies: Income from Business or Profession, Tax Provisions for certain types of businesses.

Unit-II: Tax Provisions of Companies: Capital Gains, Income from Other Sources - Tax Provisions for Off shore and Special Tax Zones.

Unit-III: Computation of Taxable Income: Computation of Gross Total Income - Deductions - Carry-forward and set-off of losses - Minimum Alternative Tax (MAT).

Unit-IV: Filing of Return and Assessment: Procedure for Filing Returns, e-Filing, Assessment, Reassessment and Settlement of Cases, Special Procedure for Assessment of Search Cases.

Unit-V: Tax Authorities and Administration: Powers and Duties – Appeals and Revisions - Tax Administration - Collection of Tax at Source – Advance payment of Tax – Recovery and Refund of Tax – Penalties, Offences and Prosecution.

References:

1. T.S.Reddy & Y.Hari Prasad Reddy, Income Tax Theory, Law and Practice, Margham Publications, Chennai.
2. Vinod K Singhania, Students' Guide to Income Tax, Taxman Publication.
3. R. Bupathy, A study on Income Tax & CST, Prime Knowledge Series, Chennai.
4. Mehrotra & Sr. Goyal, Income tax Law and Accounts, Sahitya Bhavan Publication
5. Vinod. K. Singhania; Direct Taxes – Law and Practice, Taxman Publications

5.7: Project work

Cluster Elective -7: Insurance

DSC F 5.5 Life Insurance

Unit-I: Principles of Life Insurance: Life Insurance Products - Pensions and Annuities - Risk Assessment and Underwriting - Premium Setting- Product Development - Tax planning.

Unit-II: Principal of Utmost Good Faith: Insurable Interest, Medical Examination - Age proof, Special reports - Premium payment - Lapse and revival – Premium, Surrender Value, Non-Forfeiture Option - Assignment Nomination Loans – Surrenders - Foreclosure.

Unit-III: Features of Life insurance contract: Types of Policies – Investment of funds – Bonus option – Annuity Contracts - Group Insurance – Group Gratuity Schemes - Group Superannuation Schemes, Social Security Schemes, etc.

.

Unit-IV: Plans of Life Insurance: Types of Plans: Basic - Popular Plans - Convertible - Joint Life Policies - Children‘s Plans - Educational Annuity Plans - Variable Insurance Plans – Riders - For Handicapped, etc.

Unit-V: Policy Claims: Maturity claims, Survival Benefits, Death Claims, Claim concession - Procedures - Problems in claim settlement - Consumer Protection Act relating to life insurance and insurance claims.

References:

1. G. S. Pande, Insurance – Principles and Practices of Insurance, Himalaya Publishing.
2. C. Gopalkrishna, Insurance – Principles and Practices, Sterling Publishers Private Ltd.
3. G. R. Desai, Life Insurance in India, MacMillan India.
4. M. N. Mishra, Insurance Principles and Practices, Chand & Co, New Delhi.
5. M.N.Mishra, Modern Concepts of Insurance, S.Chand & Co.
6. P.S. Palandi, Insurance in India, Response Books – Sagar Publications.
7. Taxman, Insurance Law Manual.

DSC F 5.6 Non-Life Insurance

Unit-I: Introduction: General Insurance Corporation Act - Areas of General Insurance - Structure - Classification - Salient features of Indian general insurance market.

Unit-II: **Motor Insurance**: Motor Vehicles Act 1988 - Requirements for compulsory third party insurance - Certificate of insurance – Liability without fault – Compensation on structure formula basis - Hit and Run Accidents.

Unit-III: **Fire Insurance**: Features – Kinds of policies – Policy conditions – Payment of claims – Standard Fire and Special peril Policy - Documentation - Cover Note - Calculation of premium.

Unit-IV: Marine Insurance: Contract of Marine Insurance – Classes of policies – Function of Marine insurance - Policy conditions – Marine Losses - Insurance intermediaries.

Unit-V: **Agriculture Insurance**: Types of agricultural insurances - Crop insurance - Problems of crop insurance - Crop Insurance vs Agricultural relief - Considerations in Crop insurance - Live Stock Insurance.

References:

1. M. N. Mishra, Insurance Principles and Practices, Chand & Co, New Delhi.
2. M.N.Mishra, Modern Concepts of Insurance, S.Chand & Co.
3. P.S. Palandi, Insurance in India, Response Books – Sagar Publications.
4. C. Gopalkrishna, Insurance – Principles and Practices, Sterling Publishers Private Ltd.
5. G. R. Desai, Life Insurance in India, MacMillan India.

5.7: Project work

Cluster Elective -8: Logistics and Supply Chain Management

DSC F 5.5 Logistics Management - Surface

Unit-1: Logistics: Logistics and Physical Distribution - Functions of Logistics Management - Structure of logistics - Logistics Costs - Customer Service –Logistics in 21st Century.

Unit-II: Logistics and Customer Relationship Management: Customer Service as a Link between Logistics and Marketing - Customer Service and Customer Retention – Integrating Logistics and Customer Relationship Management.

Unit-Ill: Managing the Lead Time: Role of Time in Competitive Advantage - P:D Ratios and Lead Time Gap - Time-based Mapping - Managing Timeliness in the Logistics Pipeline -Methods for implementing Time based practices.

Unit-IV: Transport Operations: Means of Surface Transport: Rail – Road – Network connections – Problems of Surface transport.

Unit-V: Logistics International Scenario: Drivers and Logistics implications of Internationalization - Trend towards Internationalization - Organizing for International Logistics - Challenges of International Logistics - General Tendencies.

References:

1. Shailesh Kasande, Materials and logistics Management, Nirali Prakashan
2. L. C. Jhamb, Materials and logistics Management, Everest Publishing House.
3. Purchasing and Supply Management - Dobler and Burt, McGraw Hill Company
4. Purchasing and Inventory Management - K S Menon, Shroff Publishers.
4. Introduction to Materials Management – J R Tony Arnold, Prentice Hall
7. Logistics & Supply Chain Management – Martin Christopher, Prentice Hall.

DSC F 5.6 Logistics Management - Air and Sea

Unit 1: Airline Logistics: History - Regulatory Bodies - Navigation systems - Air Transport System - Operations - Civil Aviation - Safety and Security - Industry regulations.

Unit II: Air Cargo: Air freight - Exports and Imports - Documentation - Cargo Operations Process - Air-way bill - Consignee controlled cargo - Customs clearance - Routing Instructions - Future trends.

Unit -III: Sea Cargo: Shipping Liners - Advices - Booking - Containerization -Container Numbering - Process flow - Shipping Sales - Leads - Quotations - Customer Service.

Unit IV: Shipping Operations: Volume/Weight calculations - Shipment Planning - Preparing and loading containers- Types of Container services - FCL - LCL - Container de-stuffing.

Unit V: Documentation: Bill of Lading - MBL - HBL - CY - CFS - Sea Way bill - Multimodel Transport Document (MTD) - Invoicing - Release of cargo - Consortium.

References:

1. Peter S. Smith (Faber), Air freight: Operations, Marketing and Economics, Research and Development Bureau, Illinois Central System.

2. P.S.Senguttavan, Fundamental of Air Transport Management, Excel Books.

3. John F. Wilson (Harlow: Longman), Carriage of goods by Sea, Longman

4. Yuen Ha Lun, Kee Hung Lai, Tai Chiu Edwin Cheng (Springer), Shipping and Logistics Management, Springer

5. Alan Rushton, Phil Croucher & Peter Baker (CILT), Logistics and Distribution Management, Kogan Page Ltd.

5.7: Project work

Cluster Elective -9: Advertising and Sales Promotion

DSC F 5.5 Advertising and Media Planning

Unit-I: **Advertising Functions:** Types of Advertising - Economic and Social aspects of advertising - Advertising process - Advertising objectives and Budget.

Unit- II: **Consumer Behaviour:** Consumer decision making process – Consumer perception process - Consumer Choices - Consumer surplus.

Unit- III: **Creativity Advertising:** Creative thinking – Process – Appeals – Copy Writing – Print Copy elements, Headlines – body Copy – Slogan elements of design and principles of design.

Unit- IV: **Media Planning and Strategy**: Market Analysis - Development of Media Plan - Implementing Media Strategies, Media Mix and Target Market Coverage - Media Reach and Frequency - Scheduling.

Unit-V: Designing Print Advertisement: Print Format Lay-out – Designing page – Working with visuals – Print and Electronic Media - Present trends - Class Vs. Mass media.

References:

1. Chunawalla & K.C.Sethia, Foundation of Advertising Theory & Practice, Himalaya Publishing House, New Delhi.
2. William H. Bolew, Advertising, John Wiley & Sons, New York.
3. Asker, David and Myers John G., Advertising Management, Prentice Hall of India, New Delhi.
4. Aaker David A, Batra Rajeev, Myers G., Advertising Management, PHI, New Delhi.
5. Sundage, Fryburger, Rotzoll, Advertising Theory and Practice, AITBS, New Delhi.

5.7: Project work

DSC F 5.6 Brand Management

Unit-I:Brand Concept: Brands vs. Products, Benefits of branding; Brand attributes, Significance of branding to consumers and Firms, selecting brand names - Brand life cycle - Brand loyalty.

Unit-II: Brand Equity: Cost, Price and Consumer Based methods - Sustaining Brand Equity - Brand Personality - Formulation - Brand Image vs. Brand Personality - Brand Reinforcement, Brand Revitalization.

Unit-III: **Brand Building and Positioning**: Brand Positioning vs. Brand Building - Brand knowledge, Brand hierarchy, Strategy, Extension and Transfer, Managing brand over time.

Unit-IV: Brand Portfolios and Segmentation: Identifying and establishing brand portfolio - Brand Segmentation - Portfolio and Brand values - Evaluation and Revision.

Unit-V: Branding in Different Sectors: Agriculture - Education - Health - Tourism - Hospitality and other services - Role of e-Communities in Brand Management.

References:

1. Aaker, David, Managing Brand Equity, Prentice Hall of India.
2. Brand Positioning Strategies for Competitive Advantage -Subrato Sen Gupta
3. Kumar, Ramesh, Managing Indian Brands, Vikas Publishing House, Delhi.
4. Keller K. L., Strategic Brand Management, 2nd Edition, Pearson Education.
5. Strategic Brand Management - Kevin Lane Keller, Prentice Hall.
6. Branding Concepts and Process - Debashish Pati, McMillan Publishers.
7. Successful Branding - Pran K Choudhary, University Press, New Delhi.

Cluster Elective -10: Computer Applications

DSC F 5.5 Database Management & Report Generator

Unit-I: MS Word: Formatting Text and Documents - Working with Headers, Footers and Footnotes – Tabs -Tables and Sorting - Working with graphs - Templates, Wizards and sample documents.

Unit-II: Power Point Basics: Creating Presentations; working with text in Power Point -Working with Graphs & Multimedia – Model presentations.

Unit-III: MS Excel: Features – Formatting in Excel – Tips and Techniques – Charts preparation – Using Excel worksheets as Data bases.

Unit-IV: Dbase Management: Creating Databases – Tables - Entering and Editing Data – Printing of Reports – Working with Access – Model Presentations.

Unit-V: Relational Databases – Expressions – Macros and other Automations – Graphics in Databases – Customized reports generation – Problems – Model Reports,

References:

1. Mansfield R: Working with Microsoft Office T.M.H.Osborne.
2. Paneerselvam: Database Management Systems, PHI.
3. David Kruglinski, Osborne, Data Management System McGraw Hill Publication.
4. Shgirley Neal and Kenneth LC Trunik Database Management Systems in Business – PHI.
5. Godeon C. EVEREST, Database Management – McGraw Hill Book Company.
6. MARTIN, Database Management – Prentice Hall of India, New Delhi.
7. Bipin C. Desai, “An Introduction to Database Systems”, Galgotia Publications.

DSC F 5.6 Management Information System

Unit-I: MIS: Types of Management Systems - Hardware support for MIS - Decision Making Process, System Approach to Problem Solving, Structure of Management Information System - Trends in MIS.

Unit-II: MIS and Business Process Outsourcing: Business Process Outsourcing - Improving a process in BPO, Object Oriented methodology, BPO – Current Focus - Managing the E-enterprise, Organization of Business in an e-Enterprise, e-Business, e-Commerce, e-Collaboration.

Unit-III: Decision Support Systems: Deterministic Systems, Marketing Information System – Financial Information System – Human Resource Information System - Operations Management Systems - Knowledge Management System.

Unit IV: Database Management Systems: Data Models – Design of Database – Implementation – DGMS – Design of MIS and DSS Systems.

Unit-V: MIS and Case Development: Designing MIS for a College – University – Business Unit-Service Organization – NGOs.

References:

1. Jawadekar, Management Information System, Tata McGraw Hill, New Delhi.
2. C.S.V. Murthy, Management Information System, Himalaya Publishing House, Mumbai.
3. Keen Peter G.W.: Decision Support System: An Organizational Perspective, Addison-Wesley Pub.
4. G.V.Satya Sekhar, Management Information System**,** Excel Books, New Delhi.
5. Turban, Efrain Decision Support and Expert Systems – Management Perspective - McMillan Publishing Company, New York.
6. Sadagopan: Management Information Systems, Prentice Hall of India, New Delhi
7. Nirmalya Bagchi, Management Information Systems, Vikas Publishing House Pvt. Ltd

5.7: Project work

Semester VI

DSC 1 G 6.2 Marketing

Unit-I: **Introduction:** Concepts of Marketing: Product Concept – Selling Concept - Societal Marketing Concept – Marketing Mix - 4 P's of Marketing – Marketing Environment.

Unit-II: **Consumer Markets and Buyer Behaviour:** Buying Decision Process – Stages – Buying Behaviour – Market Segmentation – Selecting Segments – Advantages of Segmentation.

Unit-III: Product Management: Product Life Cycle - New products, Product mix and Product line decisions - Design, Branding, Packaging and Labeling.

Unit-IV: Pricing Decision: Factors influencing price determination, Pricing strategies: Skimming and Penetration pricing.

Unit-V: Promotion and Distribution: Promotion Mix - Advertising - Publicity – Public relations - Personal selling and Direct marketing - Distribution Channels – Online marketing- Global marketing.

References:

1. Philip Kotler, Marketing Management, Prentice Hall of India.
2. Philip Kotler & Gary Armstrong, Principles of Marketing, Pearson Prentice Hall
3. Stanton J. William & Charles Futrel, Fundamentals of Marketing, McGraw Hill Company
4. V.S. Ramaswamy S. Nama Kumari, Marketing Management – Planning, McMillan

DSC 2G 6.3 Auditing

Unit-I: Auditing: Meaning – Objectives – Importance of Auditing – Auditing as a Vigil Mechanism – Role of Auditor in checking corporate frauds.

Unit-II: Types of Audit: Based on Ownership and time - Independent, Financial, Internal, Cost, Tax, Government, Secretarial audits.

Unit-III: Planning of Audit: Steps to be taken at the commencement of a new audit - Audit programme - Audit note book - Internal check, internal audit and internal control.

Unit-IV: Vouching and Investigation: Vouching of cash and trading transactions - Investigation, Auditing vs. Investigation

Unit-V: Company Audit and Auditors Report: Auditor's Qualifications – Appointment and Reappointment – Rights, duties, liabilities and disqualifications - Audit report: Contents – Preparation - Relevant Provisions of Companies Act, 2013.

References:

1. S.Vengadamani, "Practical Auditing", Margham Publications, Chennai.
2. Ghatalia, "Principles of Auditing", Allied Publishers Pvt. Ltd., New Delhi.
3. Pradeesh Kumar, Baldev Sachdeva & Jagwant Singh, "Auditing Theory and Practice, Kalyani Publications, Ludhiana.
4. N.D. Kapoor, "Auditing", S. Chand, New Delhi.
5. R.G. Saxena, "Principles and Practice of Auditing", Himalaya Publishing House, New Delhi.
6. Jagadesh Prakesh, "Principles and Practices of Auditing" Kalyani Publications, Ludhiana.
7. Kamal Gupta and Ashok Gupta, "Fundamentals of Auditing", Tata McGraw Hill
8. B.N. Tondan, "Practical Auditing", S.Chand, New Delhi.

DSC 3G 6.4 Management Accounting

Unit–I: Management Accounting: Interface with Financial Accounting and Cost Accounting - Financial Statement analysis and interpretation: Comparative analysis – Common size analysis and trend analysis (including problems).

Unit–II: Ratio Analysis: Classification, Importance and limitations - Analysis and interpretation of Accounting ratios - Liquidity, profitability, activity and solvency ratios (including problems).

Unit–III: Fund Flow Statement: Concept of fund: Preparation of funds flow statement. Uses and limitations of funds flow analysis (including problems).

Unit–IV: Cash Flow Statement: Concept of cash flow – Preparation of cash flow statement - Uses and limitations of cash flow analysis (including problems).

Unit–V: Break-Even Analysis and Decision Making: Calculation of Break-even point - Uses and limitations - Margin of safety – Make/Buy Decision - Lease/own Decision (including Problems).

References:

1. S.N. Maheswari, A Textbook of Accounting for Management, S. Chand Publishing, New Delhi.
2. I.M Pandey, "Management Accounting", Vikas Publishing House, New Delhi,
3. Shashi K. Gupta & R.K. Sharma, "Management Accounting: Principles and Practice", Kalyani Publishers, Ludhiana.
4. Jawahar Lal, Accounting for Management, Himalaya Publishing House, New Delhi.
5. Charles T. Horngren, et.al, "Introduction to Management Accounting" Person EducationIndia, New Delhi, 2002.
6. Murthy & Guruswamy – Management Accounting, Tata McGraw Hill, New Delhi.
7. Dr. Kulsreshtha & Gupta – Practical problems in Management Accounting.
8. Bhattacharya, D., "Management Accounting", Pearson Education India, New Delhi.
9. S.P. Gupta – Management Accounting, S. Chand Publishing, New Delhi.

Cluster Elective -1A: E-Commerce

DSC H 6.5 e-Payments System

Unit-I: e-Cash and Virtual Money: Electronic Data Interchange (EDI) - NEFT/RTGS/Electronic Payment modes - Foundations of e-Cash and Issues; Security, Anonymity, Untraceability, Virtual currencies, Bitcoin.

Unit-II: Automated Clearing and Settlement: Process of Real Time Gross Settlement System - Net Settlement -ATM Networks - Fedwire, CHIPS and SWIFT.

Unit-III: e-Payment Security and Digital Signature: Cryptographic Methods - Hash functions - Public/Private Key methods: RSA - Digital Signatures - Certification Process - Digital identity Documents and Remote Authentication.

Unit-IV: **Mobile Payments:** Wireless payments, Digital Wallets, Google Wallet – Obopay - Security Challenges.

Unit-V: Electronic Invoice and Payment System: Electronic Statement Delivery - EIPP providers - Biller service providers - Customer service providers - Reconciliation through Bank -Invoice Paper elimination - Scan-based trading (SBT).

References:

1. Domonique Rambure and Alec Nacamuli, "Payment Systems: From the Salt Mines to the Board Room", Palgrave MacMillan.
2. Weidong Kou, *"Payment Technologies for E-Commerce"*. Springer, Germany.
3. Donal O'Mahony, Michael Peirce and Hitesh Tewari, "Electronic Payment Systems", Artech House, Inc.
4. M. H. Sherif, Protocols for Secure Electronic Commerce, Boca Raton, Fla, CRC Press.

DSC H 6.6 Social Media and e-Marketing

Unit-I: Social Media: Career in Social Media Marketing - Strategic Marketing - Social media Planning process - Campaigns (tactics and results).

Unit-II: Social Consumers: Social media marketing segments - Digital consumers - Digital communities - Online communities - Strong & Weak Ties - Social Community - Social Publishing.

Unit-III: Social Media Sites: Face book - Twitter - LinkedIn - YouTube and their Operations - Data mining and Social Media - Role of Social Media in Marketing Research - Social Media and Privacy/Ethics.

Unit-IV: e-Marketing: Objectives, Online Advertising - Distribution in e-Marketing, Lead Generation Platform - Customer Service mechanism - Relationship Building medium.

Unit-V: **Methods of e-Marketing**: Advertising Techniques, Selling Methods, Sales Promotion - Public Relations - Sponsorship, Merchandising, Teleconferencing - Chatting.

References:

1. Chaffey, D., e-Marketing Excellence: Planning and Optimizing Your Digital Marketing, Burlington: Elsevier.

2. Hanson, W. A. & Kalyanam, K., Internet Marketing & e-Commerce, Thomson Southwestern, Mason, Ohio.

5. Harris, L., Marketing the e-Business, Hoboken: Taylor & Francis.

6. Krishnamurthy, S., Contemporary research in e-Marketing, Hershey, PA: Idea Group Publication.

7. Stephen Dann & Susan Dann, E-Marketing: Theory and Application, Macmillan, New York.

8. Seth Godin, E-Marketing, Berkley Publishing Group.

9. Irvine Clarke & Theresa B. Flaherty Advances in Electronic Marketing, Idea Group Publishing, Hershey.

6.7: Project work

Cluster Elective -2A: Retailing

DSC H 6.5 Agricultural and Rural Marketing

Unit-I Concept of Rural Market: Rural market Characteristics - Rural markets and Environmental factors - Agricultural Market Yards.

Unit-II Rural Consumer Behaviour: Rural vs. Urban Consumer – Relevance of Marketing mix for Rural market/Consumers - Problems in rural market - Life Style Marketing – Rural market Segmentation.

Unit-III: Agricultural Marketing: Problems and Challenges in Agriculture Marketing - Market Yards - Support prices - Rural Warehousing.

Unit-IV: Agriculture Support Mechanism: Role of CCI, Tobacco Board, Spices Board, Coffee Board, Tea Board - Agriculture Price Commission.

Unit-V: **Export potential for Agro-products:** Role of Government and Non-Govt. Agencies in the development of rural and agricultural Marketing - Strategies for supply of Seed, Fertilizers, Pesticides, Farm Equipment.

References:

1. C.S.G.Krishnamacharyulu & Lalitha Ramakrishnan, "Rural Marketing: Text and Cases", Pearson Education, New Delhi.
2. Awadhesh Kumar Singh & Satyaprakash Pandey, Rural Marketing: Indian Perspective, New Age International Publishers, New Delhi.
3. Mamoria, C.B. & Badri Vishal: Agriculture Problems in India
4. Arora, R.C., "Integrated Rural Development", S. Chand Limited, New Delhi.
5. Gopalaswamy, T.P., "Rural Marketing: Environment, Problems and Strategies, Vikas Publishing House Pvt. Ltd., New Delhi.
6. Bedi & Bedi, "Rural Marketing", Himalaya Publishing House, New Delhi.

DSC H 6.6 Warehouse Management

Unit-I: **Concept of Warehouse**: Functions of Warehouses - Warehousing Cost - Warehousing Management Systems (WMS) - Strategic planning for Warehousing - Supply Chain and Warehousing.

Unit-II: Role of Warehousing in Retail: Challenges in retail warehousing, Warehousing in fashion retail - Retail product tracking in warehouse using RFID - Role of government in warehousing - Warehousing and Supply Chain.

Unit-III: Warehouse Operations: Structure - Inventory Receiving - Picking - Locating - Dispatching Maintenance - Security and Safety - Records Maintenance.

Unit-IV: **Health and Safety Perspective**: Health and Safety Risks at Warehouse, Assessment of Risks, Management of Health and Safety risks - Bar Code Scanners, Wireless LAN, Mobile Computers, Radio Frequency Identification (RFID).

Unit-V: Warehousing Practices: FCI, CWC, Reliance - Wal-Mart - KFC - ICT Applications in Warehouse - World-class Warehousing.

References:

1. Edward H. Frazelle, World Class Warehousing and Material Handling.
2. Gwynne Richards, Warehouse Management: A Complete guide to improving efficiency and minimizing costs in the modern warehouse, Kogan Page, London.
3. Stuart Emmett, Excellence in Warehouse Management: How to Minimize costs and Maximize Value, John Wiley & Sons, Ltd., London.
4. James A. Tompkins & Jerry D. Smith, The Warehouse Management Handbook, Tompkins Press, North Carolina.
5. David E. Mulcahy & Joachim Sydow, Supply Chain Logistics Program for Warehouse Management, CRC Press, New York.

6.7: Project work

Cluster Elective -3A: Corporate Accounting

DSC H 6.5 Financial Reporting

Unit-I: Corporate Financial Reporting: Issues and problems of financial statements - Balance sheet and profit and loss account - Recent trends in reporting.

Unit-II: Consolidated Financial Statements: Purposes of consolidated financial statements - Consolidation procedures – Minority interests, Goodwill, Treatment of pre- acquisition and post-acquisition profits.

Unit-III: Companies Act 2013 - Reporting requirements - National Finical Reporting Authority (NFRA).

Unit-IV: Companies Act, 2013 - Board of Directors - Director's Report - Business Responsibility report - Corporate Governance Reporting - Corporate Social Responsibility reporting.

Unit-V: Developments in Financial Reporting: Value Added Statements: Economic Added Value, Market Value - Shareholders' Value - Human Resource Reporting – Reporting on Price Level changes.

References:

1. P.C. Tulsian & Bharat Tulsian, Financial Reporting, S. Chand, New Delhi.
2. RSN Pillai, Bhagirathi & S. Uma, Fundamentals of Advanced Accounting, Vol.1, S.Chand, New Delhi.
3. Nehru J. Financial Reporting by diversified Companies, Vision Books, New Delhi.
4. Hawkins David, Financial Statements Corporations, Dow Jones- Irwin Homewood.
5. Paul Marcus Fischer, William James Taylor & Rita Hartung Cheng, Advanced Accounting, Cengage Learning, USA.
6. Maheswari S N., Maheswari S K., Corporate Accounting, Vikas Publishing House Pvt. Ltd., New Delhi.
7. S.K.Gupta, Financial Analysis and Reporting, Kalyani Publishers, Ludhiana.

DSC H 6.6 Emerging Areas in Accounting

Unit-I: Human Resource Accounting: Methods: Cost approach - Replacement cost approach - Present value of future earnings approach – Expense model - Model on human resource accounting (including problems).

Unit-II: Social Accounting: Rationale for Social Accounting - Qualitative and quantitative social accounting disclosures - Evaluation of social accounting reports.

Unit-III: Inflation Accounting: Historical Cost basis of Financial statements – Limitations – Evolution of Inflation accounting - Constant-rupee accounting - International standard for hyperinflationary accounting (including problems)

Unit-IV: Environmental Accounting: Qualitative and quantitative Environmental accounting disclosures - Evaluation of Environmental accounting reports - Green Accounting - Concept and implementation.

Unit-V: Special Areas in Accounting: Intrinsic Value Accounting – Resource Consumption Accounting – Forensic Accounting – Fund Accounting – Hedge Accounting.

References:

1. Gupta R. L. – Advanced Financial Accounting – S. Chand & Sons

2. Shukla and Grewal: Advanced Accounts, S. Chand & Ltd. New Delhi.

3. Jain and Narang: Advanced Accounts, Kalyani Publishers, Ludhiana.

4. Gupta, Shashi K. & Sharma, R.K., Management Accounting: Principles and Practice, Kalyani Publishers, Ludhiana.
5. L. S. Porwal : Accounting Theory, Tata McGraw Hill

6. S. N. Maheshwari : Corporate Accounting,Vikas Publishing House Pvt. Lit. New Delhi.

7. Ashok Sehgal& Dr. Deepak Sehgal: Advanced Accounting, Taxmen, New Delhi.

8. Mukherji and Hanif - Modern Accounts, Vol. I and II, Tata McGraw Hill.

9. R. L. Gupta & V. K. Gupta - Advanced Accounting, Sultan Chand, New Delhi.

6.7: Project work

Cluster Elective -4A: Security Market Operations

DSC H 6.5 Derivatives Trading

Unit-I: Derivatives: Forward and Futures Contracts – Options – Swaps – Types of Traders – OTC and Exchange Traded Securities - Risks in Derivatives.

Unit-II: Futures Contract: Specifications - Margin Requirements – Marking to Market – Types of Futures - Relationship between Future, Forward and Spot Prices - Futures Trading and operations.

Unit-III: Options: Types: Call and Put – American and European – Intrinsic value and Time value of Options – Option payoff – Futures vs. Options - Trading operations.

Unit-IV: Swaps: Types: Interest Rate – Currency – Role of financial intermediaries in Swaps trading - Credit Risk - Swaps trading in India.

Unit-V: Derivatives Trading in India: Regulations - Framework – Exchange trading in Derivatives – Stock Futures and Index futures in NSE – Interest Rate Derivatives.

References:

1. John.C.Hull, Options, Futures and other Derivative Securities, PHI Learning.
2. Keith Redhead, Financial Derivatives: An Introduction to Futures, Forwards, Options and Swaps, PHI Learning.
3. Stulz, Risk Management and Derivatives, Cengage Learning.
4. Varma, Derivatives and Risk Management.
5. David Dubofsky, 'Option and Financial Futures – Valuation and Uses, McGraw Hill
6. S.L.Gupta, Financial Derivatives- Theory, Concepts and Practice, Prentice Hall of India.

DSC H 6.6 Stock Market Regulatory Framework

Unit-I: Stock Market Regulations: Regulations of Companies Act, 2013 - Registrar of Companies - Powers and Functions - Securities Contract and Regulations Act.

Unit-II: **Stock Exchanges**: Listing of Securities - Conditions - Listing Agreement - Problems in Implementation.

Unit-III: **Securities Exchange Board of India**: SEBI Act - SEBI Guidelines on Initial Public Offerings - Investors' Protection.

Unit-IV: Legal Process of Company: Expansion and Restructuring - Takeover, Amalgamation and Merger – Regulations - Repurchase of own company shares - consequences of non-compliance with the rules.

Unit-V: **Function of Dealers:** Investment advisors and representatives in the capital market - Statutory control on Dealers - Common law and statutory liabilities for malpractices.

References:

1. E. Gordon & H. Natarajan, Capital Market in India, Himalaya publishing House,
2. H.R. Machiraju, Indian Financial system, Vikas publishing House Pvt, Ltd
3. Sanjeev Agarwal, Guide to Indian Capital Market, Bharat Law House
4. V.L. Iyer, SEBI practice Manual, Taxman Allied Service (P) Ltd
5. M.Y. Khan, Indian Financial Systems, Tata McGraw Hill,
6. SEBI Manual, Taxman

6.7: Project work

Cluster Elective -5A: Banking and Financial Services

DSC H 6.5 Financial Services

Unit-I: Financial Services: Role of Financial Services - Banking and Non Banking Companies – Activities of Non Banking Finance Companies- Fund Based Activities - Fee Based Activities .

Unit-II: Merchant Banking Services: Scope and importance of merchant banking services - Venture Capital - Securitization - Demat services - Commercial Paper.

Unit-III: Leasing and Hire-Purchase: Types of Lease, Documentation and Legal aspects – Fixation of Rentals and Evaluation - Hire Purchasing- Securitization of debts - House Finance.

Unit-IV: **Credit Rating**: Purpose – Types – Credit Rating Symbols – Agencies: CRISIL and CARE – Equity Assessment vs. Grading – Mutual funds.

Unit-V: Other Financial Services: Factoring and Forfaeiting - Procedural and financial aspects - Installment System - Credit Cards - Central Depository Systems: NSDL, CSDL.

References:

1. B. Santhanam, Financial Services, Margham Publication, Chennai.

2.M.Y. Khan, Financial Services, Tata McGraw – Hill, New Delhi.

3. Machendra Raja, Financial Services, S.Chand Publishers, New Delhi.

4. V. A. Avdhani, Marketing of Financial Services.

5. Machiraji, “Indian Financial System”, Vikas Publishers.

6. Sandeep Goel, Financial Services, PHI Learning.

7. L.M. Bhole, Financial Institutions and Markets, Tata McGraw Hill.

8. SEBI Guidelines, Bharat Publications, New Delhi.

9. E. Gordon & H. Natarajan, Capital Market in India, Himalaya publishing House.

DSC H 6.6 Marketing of Financial Services

Unit-I: Difference between Goods and Services: Managing Service Counters – Integrated Service Management – Service Elements.

Unit-II: Constructing Service Environment – Managing People for service Advantage – Service Quality and Productivity – Customer Loyalty.

Unit-III: Pricing and Promotion Strategies: Pricing strategies – Promotion strategies – B2B Marketing – Marketing Planning and Control for services.

Unit-IV: Distributing Services: Cost and Revenue Management – Approaches for providing services - Channels for Service provision – Designing and managing Service Processes.

Unit-V: Retail Financial Services - Investment services – Insurance services - Credit Services - Institutional Financial Services - Marketing practices in select Financial Service Firms.

References:

1. Aradhani "Marketing of Financial Services" Himalaya Publications
2. Sinha and Saho, Services Marketing, Himalaya Publishing House
3. Reddy Appanaiah, Anil Kumar and Nirmala, Services Marketing, Himalaya Publishing.
4. Shajahan, Services Marketing, Himalaya Publishing House.
5. Christopher lovelock, Services Marketing, Pearson Education Asia.
6. Helen Woodroffe – Services Marketing, McMillan India Ltd.
7. S.M. Jha, Services Marketing, New Delhi Himalaya Publishing House.
8. Valarie A. Zeithmal & Mary JoBitner, Services Marketing, New Delhi, Tata McGraw Hill

6.7: Project work

Cluster Elective -6A: Taxation

DSC H 6.5 Service Tax and VAT

Unit-I: Service Tax: Charge of Service Tax – Service Tax Systems: Central and State – Taxable Services, Valuation of taxable services – Collection and Payment of Service Tax.

Unit-II: Provisions: Registration Procedure, Service Receiver liability – Computation of Service Tax – Revaluation of service tax.

Unit-III: Central Sales Tax: Tax on Inter- State Trade and Exports – Registration – Rates of Tax, Assessment and Refunds – GST Act and Rules.

Unit-IV: Value Added Tax: Concept of VAT, Declared Goods, Registration and Procedural Aspects, Rate and Computation of VAT liability – Collection and Payment of VAT.

Unit-V: Assessment Procedure & Appeals: Assessment of Service Tax – Filing of e-Return – Service Tax Appeals – Service Tax Appellate Tribunal – Refund and penalties.

References:

1) Income Tax VAT & Service Tax- T. N. Manoharan: Snow White Publication

2) Tax Laws – ICSI, New Delhi (www.icsi.edu, www.icai.org)

DSC H 6.6 Tax Planning and Management

Unit-I: Tax Planning: Difference between tax planning, tax avoidance, tax evasion and tax management – Tax planning with reference to setting up a New Business – Form and Size – Tax Holiday, etc.

Unit-II: Tax Planning of Financial Decisions: Absorption, Mergers, De-mergers and Takeovers – Reorganization or Restructuring of Capital – Decisions such as Borrowing or Investment Decisions.

Unit-III: Tax Planning on Managerial decisions: Own or lease – Make or buy decisions – Repair, replace, renewal or renovation of assets – Shut down or Continue decision.

Unit-IV: Tax planning on Foreign income: Selling in domestic or foreign marker – Avoidance of double taxation agreement – Foreign collaborations and joint ventures.

Unit-V: Foreign Collaborations: Incidence of tax on Domestic companies – Provisions for relief in respect of Double taxation – Double Taxation Avoidance Agreements.

References:

1. E.A. Srinivas, Corporate Tax Planning, Tata McGraw Hill.
2. Vinod K. Singhania, Taxman's Direct Taxes Planning and Management.
3. Taxman, The Tax and Corporate Law Weekly.
4. Bhagawati Prasad, Direct Taxes Laws Practice, Wishwa Prakashan.
5. Ahuja, Girish & Ravi Gupta. Corporate Tax Planning and Management, Bharat Law House.
6. Acharya, Shuklendra and M.G. Gurha, Tax Planning under Direct Taxes. Modern Law Publication, Allahabad.
7. IAS – 12 and AS – 22.
8. T.P. Ghosh, IFRSs. Taxman Publications Pvt. Ltd. New Delhi.

6.7: Project work

Cluster Elective -7A: Insurance

DSC H 6.5 Marketing of Insurance Services

Unit-I: Marketing of Services: Distinction between Product and Service Marketing - 7 Ps of Marketing.

Unit-II: Marketing of Insurance Services: Use of relationship marketing in insurance - Commoditization of insurance - Factors determining service quality of insurance products.

Unit-III: Understanding of Insurance Market - Insurance Market structure and competition - Insurance market penetration and density - Changing profile of Indian insurance buyer - Strategies for marketing of insurance.

Unit-IV: Promotion of insurance: Promotional Mix - Personal Selling vs. Advertising - Factors influencing Promotional Mix - Brand building.

Unit-V: Case Studies: Marketing methods and strategies adopted by LIC, GIC, Bajaj Life, SBI Life, HDFC Life.

References:

1. Gray Armstrong & Philip Kotler, Marketing-An Introduction, Pearson Education, Asia.

2. Shukla A.K, Service Marketing, Vaibhav Laxmi Prakashan Varanasi.

3. Adrian Payne, The Essence of Services Marketing, Prentice Hall of India.

4. K. Rama Mohana Rao, Services Marketing, Pearson Education.

6.7: Project work

DSC H 6.6 Insurance Regulatory Framework

Unit-I: Insurance Legislation in India: Insurance Act, 1938 - Functions of IRDA – Motor Vehicle Act, 1988 – Marine Insurance Act – Bill of Lading Act – Indian Railways Act – Carriage of Goods by Sea Act.

Unit-II: IRDA Regulatory Functions: Validity and Renewal of license – Regulations for Third Party Administrators (TPA) – Procedure for Registration of Insurance companies - Categorization of Surveyors - Inspection.

Unit-III: Regulations on Conduct of Business: Obligation of Insurers for rural and Social sector – Micro Insurance – IRDA guidelines – Anti Money laundering – IRDA regulations on Advertisements – Compliance and control – Statutory warnings.

Unit-IV: Policy Holders Rights of Assignment: Assignment and Transfer of policies – Nomination – Prohibition of Rebates – Provisions of sec 64 VB – Exemptions to Sec 64 VB.

Unit-V: Protection of Policy Holders Interest: Pre and Post stage of Insurance Cycle – Free look period – Grievance Redressal – Complaint handling.

References:

1. Nalini Prava Tripathy & Prabir Pal, Insurance: Theory and Practice, Prentice Hall of India.
2. Loomba, Jatinder, Risk Management and Insurance Planning, Prentice Hall of India.
3. Venkatesh Babu S., Manjunatha J.M., Manjunatha K.B. & S.K. Podder, Insurance and Risk Management, Himalaya Publishing House Pvt. Ltd.
4. S. Arunajatesan and T.R. Vishwanathan, Risk Management and Insurance, McMillan.
5. Indian Institute of banking and finance, Principles and Practice of Banking, McMillan.
6. Trieschmann, Hoyt and Sommer, Risk Management and Insurance, Cengage Learning
7. George E Rejda Principles of Risk Management and Insurance, Pearson

6.7: Project work

Cluster Elective -8A: Logistics and Supply Chain Management

DSC H 6.5: Supply Chain Management – Products

Unit-I: Introduction: Challenges in Supply chain management, Uncertainty and supply chain management, Supply chain Drivers and Obstacles, Supply chain Network, Different types of Supply Chain Networks.

Unit-II: Demand: Supply Chain Demand – Estimating Demand – Forecasting Techniques – Managing Supply Chain Demand and Supply.

Unit-III: Sources of Inputs: Suppliers – Relations – Sourcing – Vendor Selection – Performance Rating of Suppliers – Suppliers Networks – Supplier Development.

Unit-IV: Output: Customer Selection – Process – Relationship Management **–** Innovations in Supply Chain Management.

Unit-V: **Logistics:** Logistics and Customer Relationships Management – Functions – Structure – Logistics Costs – Customer Service and Logistics Management – Supply Future Challenges.

References:

1. G. Raghuram , Logics and Supply Chain Management, Macmillan.
2. Emiko Bonafield – Harnessing Value in Supply Chain, Johnwiley, Singapore.
3. Dr. Gopal Krishnan – Material Management Rearview, Pearson New Delhi.
4. B.S. Sahay, Macmillan – Supply Chain Management, Pearson Education.
5. Supply Chain Logistics Management – Bowersox, Closs & Cooper – McGraw-Hill.
6. World Class Supply Management – Burt, Dobbler, Sterling, Tata McGraw-Hill.

DSC H 6.6 Supply Chain Management – Services

Unit-I: Concepts of Supply Chain: Features – Role of Supply Chain Management in Services – Design and development of Supply Chain network for Services.

Unit-II: Customer Service: Service Mix – Cost – Pricing of Service – Channels of Distribution-Customer service linkages – Customer satisfaction Enablers – Sourcing and Availing.

Unit-III: Planning Demand and Supply*:* Planning for supply and demand of Services – Demand Forecasting, Supply and Managing variability – Quick Response and Accurate Response System in SCM – Other Planning Strategies.

Unit-IV: Supply Chain Service Operations: Supply Chain Services Planning – Supply Chain Facilities – Capacity Planning – Services Optimization – Dynamic Routing and Scheduling.

Unit-V: Recent Trends in Supply Chain Management: New Developments – Outsourcing Operations, Co-Makership – Role of e-Commerce in Supply Chain Management – Green Supply Chain Management.

References:

1. Sunil Chopra, Supply Chain Management, Pearson Education Publishing
2. G. Raghuram , Logics and Supply Chain Management, Macmillan.
3. Emiko Bonafield – Harnessing Value in Supply Chain, John Wiley, Singapore.
4. Dr. Gopal Krishnan – Material Management Rearview, Pearson New Delhi.
5. B.S. Sahay, Macmillan – Supply Chain Management, Pearson Education.

6.7: Project work

Cluster Elective -9A: Advertising and Sales Promotion

DSC H 6.5 Sales Promotion

Unit-I: **Sales Promotion:** Sales Executive Functions - Sales Promotion and control - Sales organization - Setting-up of Sales organization - Types of Sales organization .

Unit-II: **Personal Selling**: Theories of personal selling - analyzing market potential - sales potential and sales forecasting methods - Distribution policies and pricing policies.

Unit-III: **Sales Operations**: Sales budget, Sales territories, Sales Quata's, Point of Sale - Sales contests - Coupons and discounts - Free offers - Display - Showrooms and Exhibitions.

Unit-IV: Salesmanship: Sales Manager Qualities and functions - Types of salesman - prospecting - pre-approach and approach - selling sequence - psychology of customers.

Unit-V: **Sales force Management:** Recruitment and Selection - Training - Induction - Motivation of sales personnel - Compensation and Evaluation of Sales Personnel.

References:

1. Richard R. Still, Edward W. Cundiff & Norman A.P. Govani, "Sales Management: Decisions, Strategies and Cases", Person Education, New Delhi.
2. McMurry & Arnold, "How to Build a Dynamic Sales Organization", McGraw Hill, W.C.
3. Pradhan , Jakate & Mali, Elements of Salesmanship and Publicity, Kitab Mahal.
4. Anderson Robert, "Professional Sales Management", Prentice Hall of India, New Delhi.
5. Gerald A.Michaelson, Strategies for Selling, Tata McGraw Hill Publishing Co. New Delhi.
6. Building a Winning Sales Team – Gini Graham & Scott, ASJA Press.
7. Professional Sales Management – Anderson, Hair and Bush, McGraw Hill.

DSC H 6.6 Direct Marketing

Unit-I Direct Marketing: Features - Different Strategies - Mailing SMS - MMS - New Channels of Direct Marketing - Marketing Communication plan.

Unit-II: Direct Marketing Creativity: Creative Process and Testing – Direct Mail, Catalogs -Print Advertising - Marketing Intelligence - Relational, Direct and Interactive Marketing - 3's USP and Creativity.

Unit-III: Direct Marketing Media – Magazines, Newspapers and TV/Radio - Telemarketing - Evolution of Digital Marketing and New Customer.

Unit-IV: Social Media and Digital Marketing: Facebook, Twitter, LinkedIn, Emailing - Mobile Marketing - Interactive Television - Blended Direct Marketing - Integrating media and channels

Unit-V: Key factors of Direct Marketing - Digital Marketing Tips - Best practices in digital marketing - Legal Aspects - Practical examples of Flipkart, Amazon, Paytm, etc.

References:

1. Kotler, Philip, Armstrong, Gary, Saunders, John and Wong, Veronica, "Principles of Marketing", Prentice Hall Europe.

2. Bob Stone and Ron Jacobs, Successful Direct Marketing Methods, McGraw Hill..

3. Mary Lou Roberts, Paul D. Berger, Direct Marketing Management, Prentice Hall Publications.

4. Chet Meisner, The Complete Guide to Direct Marketing- Creating Breakthrough Programs that Really Work, Kaplan Publishing.

6.7: Project work

Cluster Elective -10A: Computer Applications

DSC G 6.5 e-Commerce Applications

Unit-I: e-Commerce Framework: Traditional vs. e-Business Applications - Anatomy of e-Commerce Applications – Present day trends.

Unit-II: Network Infrastructure of e-Commerce: Components of the I-way - Global information distribution networks - Public policy issues - Internet as a network infrastructure - Business of the internet commercialization.

Unit-III: Network Security: Client server network security - Firewalls and Network security - data and message security - Encrypted documents and Electronic mail.

Unit-IV: Electronic Commerce and World Wide Web: Consumer oriented E-commerce, Electronic payment systems, Electronic data interchange (EDI), EDI applications in business, EDI and E-commerce EDI implementation.

Unit-V: Intra-organizational e-Commerce: e-Commerce catalogs, Document Management and Digital libraries – Managing Supply Chain through e-Platform.

Reference:

1. R. Kalakota and A. B. Whinston, Frontiers of Electronic Commerce, Addison Wesley.

2. David Kosiur, Understanding Electronic Commerce, Microsoft Press.

3. Soka, From EDI to Electronic Commerce, McGraw Hill.

4. Saily Chan, Electronic Commerce Management, John Wiley.

DSC G 6.6 Enterprise Resource Planning

Unit-I: Enterprise Resource Planning: Applications - Business function and Business process – Development of ERP system SAP R/3 – New directions in ERP.

Unit-II: Production and Supply chain Management: Production Function – Production planning process – SAP ERP Approach to Production planning – Material requirement planning in SAP ERP – ERP and Supplier.

Unit -III: Marketing Information System and ERP: Sales and Distribution in ERP –Pre-sales activities – Sales order processing – Inventory Sourcing - Billing – Payment – Customer relationship Management.

Unit –IV: Accounting in ERP: ERP for Accounting Information – Industrial Credit Management in SAP ERP – Management Reporting with ERP system.

Unit – V: Human Resource Process in ERP: HR with ERP – Advance HR features – Time Management – ERP Recruitment process Modeling - Payroll – Training and Development – Case Studies.

References:

1. Ellen En Monk and Bret Wagner, Enterprise Resource Planning, McGraw Hill.

2. Alexis Leon, ERP Demystified, Tata McGraw Hill, New Delhi.

3. Joseph A Brady, Ellen F Monk, Bret Wagner, Concepts in Enterprise Resource Planning, Thompson Course Technology, USA.

4. Vinod Kumar Garg & Venkitakrishnan N K, Enterprise Resource Planning: Concepts and Practice, PHI, New Delhi.

6.7: Project work

ACHARYA NAGARJUNA UNIVERSITY :: NAGARJUNA NAGAR

B.Com. (Computer Applications 2016-17)
Course Structure
Revised Common Framework of CBCS for Colleges in Andhra Pradesh
(A.P. State Council of Higher Education)

Semester –I

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam*	Sem. End Exam	Teaching Hours**	Credits
1.	First Language	English	100	25	75	4	3
2.	Second Language	(Telugu/Hindi/Urdu/Sanskrit)	100	25	75	4	3
3.	Foundation Course -1	Human Values & Professional Ethics (HVPE)	50	---	50	2	2
4.	Foundation Course- 2	Environmental Studies	50	---	50	2	2
5.	DSC 1 A	Accounting-I	100	25	75	5	4
6.	DSC 2 A	Business Organization & Management.	100	25	75	5	4
7.	DSC 3 A	Computer Fundamentals & Photoshop	100	25	75	5	4
Total			**600**	**125**	**475**	**27**	**22**

* At the college (The marks split between formal test and co-curricular activities may be decided by the University concerned)
** Syllabus size shall be in accordance with the No. of teaching hours.

Semester – II

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam*	Sem. End Exam	Teaching Hours**	Credits
1.	First Language	English	100	25	75	4	3
2.	Second Language	(Tel/Hindi/Urdu/Sans)	100	25	75	4	3
3.	Foundation Course -3A	Information & Communication Technology-1	50	---	50	2	2
4.	Foundation Course- 4 A	Communication & Soft Skills-1	50	---	50	2	2
5.	DSC 1 B	Accounting-II	100	25	75	5	4
6.	DSC 2 B	Business Economics	100	25	75	5	4
7.	DSC 3 B	Enterprise Resource Planning	100	25	75	5	4
Total			**600**	**125**	**475**	**27**	**22**

Semester – III

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam *	Sem. End Exam	Teaching Hours**	Credits
1.	First Language	English	100	25	75	4	3
2.	Second Language	(Telugu/Hindi/Urdu/ Sanskrit)	100	25	75	4	3
3.	Foundation Course- 3B	Information & Communication Technology - 2	50	---	50	2	2
4.	Foundation Course-4 B	Communication & Soft Skills-2	50	---	50	2	2
5.	DSC 1 C	Corporate Accounting	100	25	75	5	4
6.	DSC 2 C	Business Statistics	100	25	75	5	4
7.	DSC 3 C	Office Automation Tools	100	25	75	5	4
Total			**600**	**125**	**475**	**27**	**22**

Semester – IV

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam*	Sem. End Exam	Teaching Hours**	Credits
1.	Foundation Course-4 C	Communication & Soft Skills-3	50	---	50	2	2
2.	Foundation Course- 5#	Analytical Skills	50	---	50	2	2
3.	Foundation Course- 6	Entrepreneurship Education	50	---	50	2	2
4.	Foundation Course-7	Leadership Education	50	---	50	2	2
5.	DSC 1 D	Banking Theory & Practice	100	25	75	5	4
6.	DSC 2 D	Business Laws	100	25	75	5	4
7.	DSC 3 D	Business Analytics	100	25	75	5	4
Total			**500**	**75**	**425**	**23**	**20**

To be taught by partly by Maths/statistics teachers

Semester – V

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam*	Sem. End Exam	Teaching Hours**	Credits
1.	Skill Based Course SBC E	**University's Choice:** 5.1A. Business Leadership B. Office Management C. Personal Finance D. Project Management	50	---	50	2	2
2.	DSC 1 E	5.2 Cost Accounting	100	25	75	5	4
3.	DSC 2 E	5.3 Taxation	100	25	75	5	4
4.	DSC 3 E	5.4 Commercial Geography	100	25	75	5	4
5.	Elective-DSC 1F/Inter-disp.	5.5 Programming in C	100	25	75	5	4
6.	Elective-DSC 2F /Inter-disp.	5.6 Data Base Management System	100	25	75	5	4
7.	Elective-DSC 3F/Inter-disp.	5.7 Web Technology	100	25	75	5	4
Total			**650**	**125**	**525**	**27**	**27**

Semester – VI

Sl. No.	Course	Name of the subject	Total Marks	Mid. Sem. Exam	Sem. End Exam	Teaching Hours**	Credits
1.	Skill Based Course SBC G	**University's Choice:** 6.1 A. Accounting Software B. Tally C. Event Management D. Media Management	50	---	50	2	2
2.	DSC 1 G	6.2 Marketing	100	25	75	5	4
3.	DSC 2 G	6.3 Auditing	100	25	75	5	4
4.	DSC 3 G	6.4 Management Accounting	100	25	75	5	4
5.	Elective-DSC 1 H/Inter-disp./Gen. Elec.	6.5 Tally	100	25	75	5	4
6.	Elective-DSC 2H/Inter-disp./Gen. Elec.	6.6 e-Commerce	100	25	75	5	4
7.	Elective-DSC 3H/Inter-disp./Gen. Elec.	6.7 PHP and My SQL	100	25	75	5	4
Total			**650**	**125**	**525**	**27**	**27**
Grand Total			**3600**	**700**	**2900**	**158**	**140**

ACHARYA NAGARJUNA UNIVERSITY :: NAGARJUNA NAGAR

SEMESTER-I
DSC 1A - Accounting-I

Unit-I – Introduction to Accounting
Need for Accounting – Definition – Objectives, Advantages – Book keeping and Accounting– Accounting concepts and conventions - Accounting Cycle - Classification of Accounts and its rules - Double Entry Book-keeping - Journalization - Posting to Ledgers, Balancing of ledger Accounts (problems).

Unit –II: Subsidiary Books:
Types of Subsidiary Books - Cash Book, Three-column Cash Book- Petty cash Book (Problems).

Unit-III: Trail Balance and Rectification of Errors:
Preparation of Trail balance - Errors – Meaning – Types of Errors – Rectification of Errors (Problems)

Unit-IV- Bank Reconciliation Statement:
Need for bank reconciliation - Reasons for difference between Cash Book and Pass Book Balances- Preparation of Bank Reconciliation Statement- Problems on both favorable and unfavourable balances.

Unit -V: Final Accounts:
Preparation of Final Accounts: Trading account – Profit and Loss account – Balance Sheet – Final Accounts with adjustments (Problems).

References:

1. T.S.Reddy & A. Murthy, Financial Accounting , Margham Publications
2. R L Gupta & V. K Gupta, Principles and Practice of Accounting, Sultan Chand & Sons
3. S.P. Jain & K.L Narang, Accountancy-I, Kalyani Publishers
4. Tulasian, Accountancy -I, Tata McGraw Hill Co.
5. V.K.Goyal, Financial Accounting, Excel Books
6. K. Arunjyothi, Fundamentals of Accounting; Maruthi Publications

DSC 2 A - Business Organization and Management

Unit-I: Introduction: Concepts of Business, Trade , Industry and Commerce – Features of Business -Trade Classification - Aids to Trade – Industry – Classification – Relationship among Trade, Industry and Commerce.

Unit-II: Forms of Business Organizations: Forms of Business Organization: Sole Proprietorship, Joint Hindu Family Firm, Partnership firm, Joint Stock Company, Cooperative Society; Choice of Form of Organization. Government - Business Interface; Public Sector Enterprises (PSEs) - Multinational Corporations (MNCs).

Unit-III: Joint Stock Company: Company Incorporation: Preparation of important Documents for incorporation of Company – Memorandum of Association – Articles of Association – Differences Between Memorandum of Association and Articles of Association - Prospectus and its contents - Companies Act, 2013.

Unit-IV: Management and Organization: Process of Management: Planning; Decision-making; Organizing: Line and Staff - Staffing - Directing and Controlling; Delegation and Decentralization of Authority.

Unit-V: Functional Areas of Management: Production - Manufacturing - Make in India - Marketing Management: Marketing Concept; Marketing Mix; Product Life Cycle; Pricing Policies and Practices. Financial Management: Objectives; Sources and Forms of Funds – Human Resource Management: Functions.

Suggested Readings:

1. Kaul, V.K., *Business Organization and Management,* Pearson Education, New Delhi.
2. Chhabra, T.N., *Business Organization and Management*, Sun India Publications, New Delhi.
3. Koontz and Weihrich, *Essentials of Management,* McGraw Hill Education.
4. Basu, C. R., *Business Organization and Management,* McGraw Hill Education.
5. Jim, Barry, John Chandler, Heather Clark; *Organization and Management*, Cengage Learning.
6. Allen, L.A., *Management and Organization*; McGraw Hill, New York.
7. R.K.Sharma and Shashi K Gupta, Business Organization - Kalyani Publications.
8. C.B.Guptha, Industrial Organization and Management, Sultan Chand.
9. Y.K.Bushan, Business organization and Management, Sultan Chand.
10. Sherlekar, Business Organization and Management, Himalaya Publications.

DSC 3 A- Computer Fundamentals & Photoshop

Unit-I: Introduction to Computers: Characteristics and limitations of Computer, Block diagram of computer, types of computers, uses of computers, computer generations. Number systems: binary, hexa and octal numbering system- Windows basics: desktop, start menu, icons.

Unit-II: Input and Output Devices: Keyboard and mouse, inputting data in other ways, Types of Software: system software, Application software, commercial, open source, domain and free ware software, Memories: primary, secondary and cache memory.

Unit –III: Introduction to Adobe Photoshop: Getting started with Photoshop, creating and saving a document in Photoshop, page layout and back ground, Photoshop program window-title bar, menu bar, option bar, image window, image title bar, status bar, ruler, pallets, tool box, screen modes, saving files, reverting files, closing files.

Unit –IV: Images: working with images, image size and resolution, image editing, colour modes and adjustments, Zooming & Panning an Image, Rulers, Guides & Grids- **Working with Tool box:** Practice Sessions.

Unit-V: Layers: Working with layers- layer styles- opacity-adjustment layers. **Filters:** The filter menu, Working with filters- Editing your photo shoot, presentation –how to create ads, artistic filter, blur filter, brush store filter, distort filters, noice filters, pixelate filters, light effects, difference clouds, sharpen filters, printing.

Reference Books:

1. Reema Thareja, Fundamentals of Computers, Oxford University Press
2. Adobe Creative Team, Adobe Photoshop Class Room in a Book.
3. David Maxwell, Photoshop: Beginner's Guide for Photoshop - Digital Photography, Photo Editing, Color Grading & Graphic...19 February 2016.

ACHARYA NAGARJUNA UNIVERSITY :: NAGARJUNA NAGAR

SEMESTER-II

DSC 1B – Accounting-II

Unit-I: **Depreciation**
Meaning of Depreciation - Methods of Depreciation: Straight line – Written down Value – Sum of the Years' Digits - Annuity and Depletion (Problems).

Unit-II: **Provisions and Reserves**
Meaning – Provision vs. Reserve – Preparation of Bad debts Account – Provision for Bad and doubtful debts – Provision for Discount on Debtors – Provision for discount on creditors - Repairs and Renewals Reserve A/c (Problems).

Unit-III: Bills of Exchange
Meaning of Bill –Features of bill – Parties in the Bill – Discounting of Bill – Renewal of Bill – Entries in the books of Drawer and Drawee (Problems).

Unit-IV: **Consignment Accounts**
Consignment - Features - Proforma invoice - Account sales – Del-credre Commission - Accounting treatment in the books of consigner and consignee - Valuation of closing stock - Normal and Abnormal losses (Problems).

Unit-V: **Joint Venture Accounts**
Joint venture - Features - Differences between Joint-venture and consignment – Accounting procedure - Methods of keeping records (Problems).

Reference Books:

1. R.L. Gupta & V.K. Gupta, Principles and Practice of Accounting, S.Chand & Co.
2. T. S. Reddy and A. Murthy, Financial Accounting, Margham Publications.
3. S.P. Jain & K.L Narang, Accountancy-I, Kalyani Publishers.
4. Tulsan, Accountancy-I, Tata McGraw Hill Co.
5. V.K. Goyal, Financial Accounting, Excel Books
6. T.S. Grewal, Introduction to Accountancy, Sultan Chand & Co.
7. Haneef and Mukherjee, Accountancy-I, Tata McGraw Hill
8. Arulanandam, Advanced Accountancy, Himalaya Publishers
9. S.N.Maheshwari & V.L.Maheswari, Advanced Accountancy-I, Vikas Publishers.

DSC 2 B - Business Economics

Unit-I- Introduction: Meaning and Definitions of Business Economics - Nature and scope of Business Economics- Micro and Macro Economics and their Interface.

Unit-II- Demand Analysis: Definition - Determinants of Demand -- Demand function – Law of demand- Demand Curve - Exceptions to Law of Demand - Elasticity of Demand – Types of Elasticity of Demand – Measurements of Price elasticity of Demand – Total outlay Method – Point Method – Arc Method.

Unit – III: Cost and Revenue Analysis
Classification of Costs – Total - Average – Marginal; Cost function – Long-run – Short-run – Total Revenue - Average revenue – Marginal Revenue - Production and Costs: Techniques of Maximization of output, Minimization of costs and Maximization of profit - Scale of production - Economies and Dis-economies of Scale - Cobb-Douglas Production Function.

Unit-IV: Market Structure: Concept of Market - Market structure - Perfect competition - characteristics - equilibrium price - Monopoly- characteristics - Defects of Monopoly – Distinction between Perfect competition and Monopoly - Monopolistic Competition - Characteristics - Product differentiation - Oligopoly - characteristics - Price rigidity - Kinked Demand Curve.

Unit-V: National Income And Economic Systems: National Income - Measurement - GDP - Growth Rates - Problems in Assessment - Economic Systems - Socialism - Mixed Economic System - Free Market Economy - Economic liberalization, Privatization, Globalization - Free Trade - Agreements - Trade cycles - Phases - International Trade - Balance of payments.

References:

1. S.Sankaran, Business Economics, Margham Publications, Chennai.
2. Business Economics - Kalyani Publications.
3. Business Economics – Himalaya Publishing House.
4. Aryasri and Murthy Business Economics , Tata McGraw Hill.
5. Aryasri and Murthy, Business Economics, Tata McGraw Hill
6. H.L Ahuja, Business Economics, Sultan Chand & Sons
7. Mankiw, Principles of Economics, Cengage Publications
8. Mithani, Fundamentals of Business Economics, Himalaya Publishing House
9. A.V. R. Chary, Business Economics, Kalyani Publishers, Hyderabad.

DSC 3B: Enterprise Resource Planning

Unit-I: **Introduction**: Overview of enterprise systems – Evolution - Risks and benefits - Fundamental technology - Issues to be consider in planning design and implementation of cross functional integrated ERP systems.

Unit- II: **ERP Solutions and Functional Modules:** Overview of ERP software solutions- Small, medium and large enterprise vendor solutions, BPR and best business practices - Business process Management, Functional modules.

Unit-III: **ERP Implementation**: Planning Evaluation and selection of ERP systems - Implementation life cycle - ERP implementation, Methodology and Frame work- Training – Data Migration - People Organization in implementation-Consultants, Vendors and Employees.

Unit-IV: **Post Implementation:** Maintenance of ERP- Organizational and Industrial impact; Success and Failure factors of ERP Implementation.

Unit-V: **Emerging Trends on ERP**: Extended ERP systems and ERP add-ons -CRM, SCM, Business analytics - Future trends in ERP systems-web enabled, Wireless technologies, cloud computing.

References:

1. Alexis Leon, ERP demystified, second Edition Tata McGraw-Hill, 2008.

2. Sinha P. Magal and Jeffery Word, Essentials of Business Process and Information System, Wiley India, 2012

3. Jagan Nathan Vaman, ERP in Practice, Tata McGraw-Hill, 2008

4. Alexis Leon, Enterprise Resource Planning, second edition, Tata McGraw-Hill, 2008.

5. Mahadeo Jaiswal and Ganesh Vanapalli, ERP Macmillan India, 2009

6. Vinod Kumar Grag and N.K. Venkitakrishnan, ERP- Concepts and Practice, PHI, 2006.

7. Summer, ERP, Pearson Education, 2008

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SEMESTER-III
DSC 1 C - Corporate Accounting

Unit-I:
Accounting for Share Capital - Issue, forfeiture and reissue of forfeited shares- concept & process of book building - Issue of rights and bonus shares - Buyback of shares (preparation of Journal and Ledger).

Unit-II:
Issue and Redemption of Debentures - Employee Stock Options – Accounting Treatment for Convertible and Non-Convertible debentures (preparation of Journal and Ledger).

Unit –III:
Valuation of Goodwill and Shares: Need and methods - Normal Profit Method, Super Profits Method – Capitalization Method - Valuation of shares - Need for Valuation - Methods of Valuation - Net assets method, Yield basis method, Fair value method (including problems).

UNIT – IV:
Company Final Accounts: Preparation of Final Accounts – Adjustments relating to preparation of final accounts – Profit and loss account and balance sheet – Preparation of final accounts using computers (including problems).

Unit –V
Provisions of the Companies Act, 2013 relating to issues of shares and debentures - Book Building- Preparation of Balance Sheet and Profit and Loss Account – Schedule-III.

Reference Books:

1. Corporate Accounting – Haneef & Mukherji,
2. Corporate Accounting – RL Gupta & Radha swami
3. Corporate Accounting – P.C. Tulsian
4. Advanced Accountancy: Jain and Narang
5. Advanced Accountancy: R.L. Gupta and M.Radhaswamy, S Chand.
6. Advanced Accountancy : Chakraborthy
7. Modern Accounting: A. Mukherjee, M. Hanife Volume-II McGraw Hill
8. Accounting standards and Corporate Accounting Practices: T.P. Ghosh Taxman
9. Corporate Accounting: S.N. Maheswari, S.R. Maheswari, Vikas Publishing House.
10. Advanced Accountancy: Arutanandam, Raman, Himalaya Publishing House.
11. Advanced Accounts: M.C. Shukla, T.S. Grewal, S.C. Gupta, S. Chand & Company Ltd.,
12. Management Accounting: Shashi K. Gupta, R.K. Sharma, Kalyani Publishers.

DSC 2C - Business Statistics

Unit 1: Introduction to Statistics:
Definition, importance and limitations of statistics - Collection of data - Schedule and questionnaire – Frequency distribution – Tabulation -Diagrammatic and graphic presentation of data using Computers (Excel).

Unit 2: Measures of Central Tendency:
Characteristics of measures of Central Tendency-Types of Averages – Arithmetic Mean, Geometric Mean, Harmonic Mean, Median, Mode, Deciles, Percentiles, Properties of averages and their applications.

Unit 3: Measures of dispersion and Skewness:
Properties of dispersion-Range-Quartile Deviation –Mean Deviation-Standard Deviation-Coefficient of Variation-Skewness definition-Karl Pearson's and Bowley's Measures of skewness-Normal Distribution.

Unit 4: Measures of Relation:
Meaning and use of correlation – Types of correlation-Karlpearson's correlation coefficient – Spearman's Rank correlation-probable error-Calculation of Correlation by Using Computers - Regression analysis comparison between correlation and Regression – Regression Equations-Interpretation of Regression Co-efficient.

Unit 5: Analysis of Time Series & Index Numbers:
Components of Time series- Measurement of trend and Seasonal Variations – Index Numbers-Methods of Construction of Index Numbers – Price Index Numbers – Quantity Index Numbers – Tests of Adequacy of Index Numbers – Cost of Index Numbers-Limitations of Index Numbers – Use of Computer Software.

References:

1. Business Statistics — Reddy, C.R, Deep Publications.
2. Statistics-Problems and Solutions — Kapoor V.K.
3. Fundamentals of Statistics — Elhance.D.N
4. Statistical Methods — Gupta S.P
5. Statistics — Gupta B.N.
6. Fundamentals of Statistics — Gupta S.C
7. Statistics-Theory, Methods and Applications — Sancheti,D.C. &Kapoor V.K
8. Business Statistics — J.K.Sharma
9. Business Statistics — Bharat Jhunjhunwala
10. Business Statistics — R.S.Bharadwaj

DSC 3C: Office Automation Tools

Unit-I: MS-Excel: features of Ms-Excel, Parts of MS-Excel window, entering and editing data in worksheet, number formatting in excel, different cell references, how to enter and edit formula in excel, auto fill and custom fill, printing options.

Unit-II: Formatting options: Different formatting options, change row height, formulae and functions, **Functions:** Meaning and advantages of functions, different types of functions available in Excel.

Unit-III: Charts: Different types of charts, Parts of chart, chart creation using wizard, chart operations, data maps, graphs, data sorting, filtering. Excel sub totals, scenarios, what-if analysis
Macro: Meaning and advantages of Macros, creation, editing and deletion of macros - Creating a macro, how to run, how to delete a macro.

Unit-IV: MS Access: Creating a Simple Database and Tables: Features of Ms-Access, Creating a Database, Parts of Access. **Tables:** table creation using design view, table wizard, data sheet view, import table, link table. **Forms:** The Form Wizard, design view, columnar, tabular, data sheet, chart wizard.

Unit- V: Finding, Sorting and Displaying Data: Queries and Dynasts, Creating and using select queries, Returning to the Query Design, Multi-level sorts, Finding incomplete matches, showing All records after a Query, saving queries - Crosstab Queries. **Printing Reports:** Form and Database Printing. **Relational Databases:** Flat Versus Relational, Types of Relationships, Viewing Relationships, Defining and Redefining Relationships, Creating and Deleting Relationships.

Reference Books:

1.Ron Mansfield, Working in Microsoft Office, Tata McGraw Hill(2008)

2.Ed Bott, Woody Leonhard, Using Microsoft Office 2007, Pearson Education(2007)

3. Sanjay Saxsena, Microsoft Office, 4.Microsoft Office, BPB Publications

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SEMESTER-IV

DSC 1D - Banking Theory & Practice

Unit-I: Introduction

Meaning & Definition of Bank – Functions of Commercial Banks – Kinds of Banks - Central Banking Vs. Commercial Banking.

Unit-II: Banking Systems

Unit Banking , Branch Banking, Investment Banking- Innovations in banking – E banking - Online and Offshore Banking , Internet Banking - Anywhere Banking - ATMs - RTGS.

Unit-III: Banking Development

Indigenous Banking - Cooperative Banks, Regional Rural banks, SIDBI, NABARD - EXIM Bank.

Unit-IV: Banker and Customer

Meaning and Definition of Banker and customer – Types of Customers - General Relationship and Special Relationship between Banker and Customer - KYC Norms.

Unit-V: Collecting Banker and Paying Banker

Concepts - Duties & Responsibilities of Collecting Banker – Holder for Value – Holder in Due Course – Statutory Protection to Collecting Banker - Responsibilities of Paying Banker - Payment Gateways.

Books for Reference

1. Banking Theory: Law & Practice : K P M Sundram and V L Varsheney
2. Banking Theory, Law and Practice : B. Santhanam; Margam Publications
3. Banking and Financial Systems : Aryasri
4. Introduction to Banking : Vijaya Raghavan
5. Indian Financial System : M.Y.Khan
6. Indian Financial System : Murthy & Venugopal

DSC 2D - Business Laws

Unit-I: Contract:

Meaning and Definition of Contract-Essential elements of valid Contract -Valid, Void and Voidable Contracts - Indian Contract Act, 1872.

Unit-II: Offer and Acceptance:

Definition of Valid Offer, Acceptance and Consideration -Essential elements of a Valid Offer, Acceptance and Consideration.

Unit-III: Capacity of the Parties and Contingent Contract:

Rules regarding to Minors contracts - Rules relating to contingent contracts - Different modes of discharge of contracts-Rules relating to remedies to breach of contract.

Unit-IV: Sale of Goods Act 1930:

Contract of sale – Sale and agreement to sell – Implied conditions and warranties – Rights of unpaid vendor.

Unit-V: Cyber Law and Contract Procedures - Digital Signature - Safety Mechanisms.

References:

1. J. Jayasankar, Business Laws, Margham Publication. Chennai -17
2. Kapoor ND, Mercentile Law , Sultan Chand
3. Balachandram V, Business law Tata
4. Tulsian , Business Law Tata
5. Pillai Bhagavathi, Business Law , S.Chand.
6. Business Laws, Maruthi Publishers

DSC 3D Business Analytics

Unit-I: **Introduction** - Business Analytics Life Cycle - Business Analytics Process - Data concepts - Data exploration & visualization - Business Analytics as Solution for Business Challenges -

Unit-II**: Automated Data Analysis:** Tabulation and Cross Tabulation of Data: Univariate, Bivariate and Multivariate Data Analysis – ANOVA.

Unit-III: **Hypothesis Testing:** Type 1 & 2 errors - T-test, ANOVA, Chi-Square and correlation - Linear Regression Analysis - Logistic Regression - Cluster Analysis - Market Basket Analysis.

Unit-IV**: Business Data Management:** Master Data Management: Data Warehousing and kinds of Architecture – Data Extraction – Transformation and Up-loading of Data – Data Mining – Meta Data – Data Marts – Creating Data Marts – Data Integration – OLTP and OLAP.

Unit-V: **SPSS Packages** – Applications and Case Studies.

Suggested Books:

1. Gupta S.P. “Statistical Methods”, Sultan Chand, New Delhi, 2010.
2. K.V. Rao, “Research Methodology in Commerce and Management”, Sterling Publishers, New Delhi, 2012.
3. T.S. Wilkinson & P.L. Bhandarkar, “Methodology and Techniques of Social Research”, 2010.
4. Richard A.Johnson & Dean W.Wichern, “Applied Multivariate Statistical Analysis”, Prentice Hall International Inc., 2007.
5. R.N Prasad and Seema Acharya, “Fundaments of Business Analytics”, Wiley India Publication.
6. Pang-Ning Tan, Michael Steinbach & Vipin Kumar, “Introduction to Data Mining”, Pearson, 2009.
7. Alex Berson, Stephen Smith & Kurt Thearling, “Building Data Mining Application for CRM”, Tata McGraw Hill, New Delhi, 2000.

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SEMESTER-V
SBC E 5.1 A - Business Leadership

Unit-I: Introductory: Leadership - Traits, Skills and Styles- Leadership Development - Qualities of a Good Leader.

Unit-II: Decision-Making and Leadership: Leadership for Sustainability - Power, Influence, Impact - Leadership Practices - Organizations and Groups**:** Organizational Culture and Leadership - Leadership in Business Organizations

Unit-III: Special Topics: Profiles of a few Inspirational Leaders in Business – Jemshedji Tata - Aditya Birla - Swaraj Paul - L N Mittal - N R Narayana Murthy - Azim Premji, etc.

References:

1. Northouse, Peter G., Leadership: Theory and Practice, Sage Publications.

2. Daloz Parks, S., Leadership can be taught: A Bold Approach for a Complex World, Boston: Harvard Business School Press.

3. Drucker Foundation (Ed.), Leading Beyond the Walls, San Francisco: Jossey Bass.

4. Al Gini and Ronald M. Green, Virtues of Outstanding Leaders: Leadership and Character, John Wiley & Sons Inc.

5. S Balasubramanian, The Art of Business Leadership – Indian Experiences, Sage Publications.

SBC E 5.1 B Office Management

Unit-I: Office and Functions: Features of Modern Office - Layout Planning - Interior, Security of the Office, Knowledge of Stationery Items and Maintenance - Office Manager - Duties and Responsibilities - Scientific Office Management - Work Simplification.

Unit-II: Office Systems: Office procedures - Guides and Common charts of Office work simplification - Planning for improving office procedures - Forms Design, Design of Forms - Reproduction of Forms - Office Reproduction Services.

Unit-III: Records Storage and Retrieval: Nature of Files and Records - Storage - Purposes of Records Storage and Control - Filing systems, equipment and supplies - Records retention – ICT applications in Office Management.

References:

1. James, A.F. Stoner et. al: Management, Englewood Cliffs, N.J Prentice Hall
2. Mahajan, J.P.: Fundamentals of Office Management, Ane Books Pvt. Ltd.
3. Bhatia, R.C. Principles of Office Management, Lotus Press, New Delhi.
4. Terry, George R: Office Management and Control, R.D. Irwin.
5. Duggal, B: Office Management and Commercial Correspondence, Kitab Mahal.

SBC E 5.1C Personal Finance

Unit-1: Investment: Assessment of Income - Objectives of Investment – Factors affecting selection of investment – Time value of money – Future value of investment and annuity – Present value of cash flows and outflows.

Unit-II: Investment Alternatives: Real Estate, Gold, Shares, Bonds, Govt. Securities, Insurance Policies, Mutual Funds, Post Office Saving Schemes, Public Provident Fund, etc.

Unit-III: Security Valuation: Concepts of Return and Risk – Systematic and Nonsystematic risk - Risk-return tradeoff - Equity valuation - Bond Valuation**:** Bond return and valuation.

References:

1.Punithavathy Pandian, Security Analysis & Portfolio Management, Vikas Publishers, New Delhi.

2. Yassaswy, Personal and Tax Planning, Vision Books, New Delhi.

3. A.N. Shanbag, In the Wonderland of Investment, Popular Prakashan, Bombay.

4. V.N.S.Raman, Investment Principles and Techniques, Vikas Publishing House, New Delhi.

5. Ankit Gala & Khushboo Gala, Investment Planning, Buzzing Stock Publishing.

SBS E 5.1 D Project Management

Unit-I: Basics of Project Management: Project Identification, Project Initiation - Project Life Cycle - Project Planning, Resource Allocation, Scheduling, Project Cost Estimate and Budgets - CPM - PERT.

Unit-II: Project Performance Measurement and Evaluation: Performance Measurement, Productivity, Performance Evaluation, Challenges of Performance Measurement and Evaluation.

Unit-III: Project Execution, Control and Close-out: Project Execution, Project Control, Purpose of Execution and Control - Project Close-out, Project Termination, Project Follow-up.

References:

1. Horald Kerzner, Project Management: A Systemic Approach to Planning, Scheduling and Controlling, CBS Publishers.
2. S. Choudhury, Project Scheduling and Monitoring in Practice, South Asian Publishers Pvt. Ltd.
3. P. K. Joy, Total Project Management: The Indian Context, Macmillan India Ltd.
4. John M Nicholas, Project Management for Business and Technology: Principles and Practice, Prentice Hall of India.
5. N. J. Smith (Ed), Project Management, Blackwell Publishing.
6. Jack R Meredith and Samuel J Mantel, Project Management: A Managerial Approach, John Wiley.

DSC - 1E 5.2 Cost Accounting

Unit-I:Introduction: Distinguish between Financial Accounting, Cost Accounting and management accounting - Cost Concepts and Classification – Cost Centre and Cost Unit – Preparation of Cost Sheet.

Unit-II: Elements of Cost: Materials: Material control – Selective control, ABC technique – Methods of pricing issues – FIFO, LIFO, Weighted average, Base stock methods, choice of method (including problems).

Unit-III: Labour and Overheads: Labour: Control of labor costs – time keeping and time booking – Idle time –Methods of remuneration – labour incentives schemes - Overheads: Allocation and apportionment of overheads – Machine hour rate.

Unit-IV: Methods of Costing: Job costing – Process costing - treatment of normal and abnormal process losses – preparation of process cost accounts – treatment of waste and scrap, joint products and by products (including problems).

Unit -V: Costing Techniques: Marginal Costing – Standard costing – Variance Analysis (including problems).

References:

1. S.P. Jain and K.L. Narang – Advanced Cost Accounting, Kalyani Publishers, Ludhiana.
2. M.N. Aurora – A test book of Cost Accounting, Vikas Publishing House Pvt. Ltd.
3. S.P. Iyengar – Cost Accounting, Sultan Chand & Sons.
4. Nigam & Sharma – Cost Accounting Principles and Applications, S.Chand & Sons.
5. S.N .Maheswari – Principles of Management Accounting.
6. I.M .Pandey – Management Accounting, Vikas Publishing House Pvt. Ltd.
7. Sharma & Shashi Gupta – Management Accounting, Kalyani Publishers. Ludhiana.

DSC 2E 5.3 Taxation

Unit-I: **Introduction:** Objectives - Principles of Taxation - Brief History - Basic Concepts; Capital and Revenue; Basis of Charge - Exempted Incomes - Residential Status – Incidence of Taxation.

Unit-II: **Direct and Indirect Taxes** – Service Tax – VAT – Central Sales Tax – Latest Developments.

Unit-III: **Computation of income under different heads**: Income from Salary; Income from House Property; Income from Business/Profession, Charges Deemed Profits to Tax; Deductions u/s 80C to 80U - Income from Capital Gains; Income from Other Sources (simples problems).

Unit-IV**: Taxation System in India**: Objectives; Tax Holiday; Modes of Tax Recovery (Section 190 and 202); Payments and Refunds; Filing of Returns.

Unit-V: **Tax Planning**: Tax Avoidance and Tax Evasion; Penalties and Prosecutions; Income Tax Authorities.

References:

1. Vinod K. Singhania Direct Taxes - Law and Practice, Taxman Publication.
2. B.B. Lal: Direct Taxes, Konark Publisher (P) Ltd.
3. Bhagwati Prasad: Direct Taxes – Law and Practice, Wishwa Prakashan.
4. Dr. Mehrotra and Goyal: Direct Taxes – Law and Practice, Sahitya Bhavan Publication.

DSC 3E 5.4 Commercial Geography

Unit –I: The Earth: Internal structure of the Earth – Latitude – Longitude – Realms of the Earth – Evolution of the Earth – Environmental pollution - Global Warming - Measures to be taken to protect the Earth.

Unit -II: India – Agriculture: Land Use - Soils - Major crops – Food and Non-food Crops – Importance of Agriculture – Problems in Agriculture – Agriculture Development.

Unit -III: India – Forestry: Forests – Status of Forests in Andhra Pradesh – Forest (Conservation) Act, 1980 – Compensatory Afforestation Fund (CAF) Bill, 2015 - Forest Rights Act, 2006 and its Relevance – Need for protection of Forestry.

Unit -IV: India – Minerals and Mining: Minerals – Renewable and non Renewable – Use of Minerals – Mines – Coal, Barites, etc. – Singareni Coal mines and Mangampeta Barites - District-wise Profile.

Unit-V: India – Water Resources – Rivers: Water resources - Rationality and equitable use of water – Protection measures - Rivers - Perennial and peninsular Rivers - Interlinking of Rivers - Experience of India and Andhra Pradesh.

References:

1. Shabiar Ahmad; Quazi ,Natural Resource Consumption and Environment Management, APH Publishing Corporation.
2. Tarachand, Economic and Commercial Geography of India, Vikas Publishing House.
3. Dr. S. Sankaran, Commercial Geography, Margam Publications, Chennai.
4. C. B. Memoria, Commercial Geography, Lal Agarwal & Co.
5. C. B. Memoria, Economic and Commercial Geography, Lal Agarwal & Co.
6. Vinod N. Patel, Commercial Geography, Oxford Book Company

DSC 1F 5.5 - Programming IN C

Unit- I: Introduction to Algorithms and Programming Languages: Algorithm – Key features of Algorithms – Some more Algorithms – Flow Charts. **Introduction to C:** Structure of C Program – Writing the first C Program – File used in C Program – Compiling and Executing C Programs – Using Comments – Keywords – Identifiers – Basic Data Types in C – Variables – Constants – I/O Statements in C- Operators in C- Programming Examples – Type Conversion and Type Casting

Unit-II: Decision Control and Looping Statements: Introduction to Decision Control Statements – Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – Go to Statement

Unit- III: Functions: Introduction – using functions – Function declaration/ prototype – Function definition – function call – return statement – Passing parameters – Scope of variables – Storage Classes – Recursive function

Unit- IV: Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array – Calculating the length of the Array – Operations on Array – one dimensional array for inter-function communication – Two dimensional Arrays –Operations on Two Dimensional Arrays.

Unit-V: Strings:- Introduction string and character functions.

Reference Books:

1. Reema Thareja, Introduction to C programming, Oxford University Press.
2. E Balagurusamy, Computing Fundamentals & C Programming – Tata McGraw-Hill, 2008.
3. Ashok N Kamthane, Programming with ANSI and Turbo C, Pearson Publisher, 2002.
4. Henry Mulish & Hubert L.Coo Reema Thareja: The Spirit of C: An Introduction to Modern Programming, Jaico Publishing House,1996.

DSC 2F 5.6 - Database Management System

Unit-I: Overview of Database Management System: Introduction, Data and Information, Database, Database Management System, Objectives of DBMS, Evolution of Database Management Systems, Classification of Database Management System.

Unit-II: File-Based System, Drawbacks of File-Based System , DBMS Approach, Advantages of DBMS, Data Models , Components of Database System, Database Architecture, DBMS Vendors and their Products.

Unit-III: Entity–Relationship Model: Introduction, The Building Blocks of an Entity–Relationship, Classification of Entity Sets , Attribute Classification, Relationship Degree, Relationship Classification, Generalization and Specialization, aggregation and composition, CODD'S Rules, Relational Data Model , Concept of ,Relational Integrity.

Unit-IV: Structured Query Language: Introduction, History of SQL Standard, Commands in SQL, Data types in SQL, Data Definition Language (DDL), Selection Operation Projection Operation, Aggregate Functions, Data Manipulation Language, Table Modification, Table Truncation, Imposition of Constraints, Set Operations.

Unit -V: PL/SQL: Introduction, Structure of PL/SQL, PL/SQL Language Elements ,Data Types, Control Structure,, Steps to Create a PL/SQL Program, Iterative Control ,Cursors , Steps to Create a Cursor , Procedure, Function ,Packages ,Exceptions Handling, Database Triggers, Types of Triggers.

Reference Books:

1. Paneerselvam: Database Management Systems, PHI.
3. David Kruglinski, Osborne, Data Management System McGraw Hill Publication.
4. Shgirley Neal and Kenneth LC Trunik Database Management Systems in Business – PHI.
5. Godeon C. EVEREST, Database Management – McGraw Hill Book Company.
6. MARTIN, Database Management – Prentice Hall of India, New Delhi.
7. Bipin C. Desai, "An Introduction to Database Systems", Galgotia Publications.
8. Korth, Database Management systems.
9. Navathe, Database Management systems.
10. S. Sumathi, S. Esakkirajan, Fundamentals of Relational Database Management Systems

DSC 3F 5.7 - Web Technology

Unit-I: Introduction: HTML, XML, and WWW, Topologies, Bus, Star, Ring, Hybrid, Tree, Lan,Wan,Man. **HTML**: Basic HTML, Document body, Text, Hyper links, Adding more formatting, Lists, Tables using colors and images. **More HTML**: Multimedia objects, Frames, Forms towards interactive, HTML document heading.

Unit-II: Cascading Style Sheets: Introduction, using Styles, simple examples, your own styles, properties and values in styles, style sheet, formatting blocks of information, layers.

Unit-III: Introduction to JavaScript: What is DHTML, JavaScript, basics, variables, string manipulations, mathematical functions, statements, operators, arrays, functions.

Unit-IV: Objects in JavaScript: Data and objects in JavaScript, regular expressions, exception handling, built-in objects, events.

Unit-V: DHTML with JavaScript: Data validation, opening a new window, messages and confirmations, the status bar, different frames, rollover buttons, moving images, multiple pages in single download, text only menu system.

References:

1. Uttam Kumar Roy, Web Technologies, Oxford University Press.
2. Black Book HTML 5.0
3. Complete reference HTML 5.0
4. Web Technology, PHI Publications.

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SEMESTER-VI

SBS G 6.1A Accounting Software

Unit-I: **Accounting Software Packages**: Tally, Wings, Busy, Spreadsheet, Ms Excel as Accounting tool, Function wizard, Auditing Tool in MS Excel - Selective Applications for Accounts.

Unit-II: Financial Accounting Software: Accounting package for Voucher Entry - Preparation of Journal Proper - Ledgers, Trail Balance, Final Accounts.

Unit-III: **Applications of Spreadsheet Software**: Preparation of Cash, Production and Flexible Budgets, Projected Profit & Loss Statement and Balance Sheet.

References:

1. Horngreen, C.T., Introduction to Management Accounting, Prentice Hall,
2. Smith, J.L. Keith, RM and Stephens, W.L., Managerial Accounting, McGraw Hill.
3. Guy Hart Davis, The ABCs of Microsoft Office, BPB Publications.

SBS G 6.1B Tally

Unit-I: Fundamentals of Tally.ERP 9: Features - Start Tally, Create and Alter a Company - Creating Single Group/Multiple Groups, Display, Deleting Groups - Ledger: Creating Single Ledger / Multiple Ledgers.

Unit-II: Create Accounting Masters in Tally.ERP 9 - Chart of Accounts - Creating Single and Multiple charts, Displaying and Altering charts – Walkthrough for creating Chart of Accounts – Back-up of data and Restoring - Tally Audit Features.

Unit-III: Creating Inventory Master: Creating Stock Groups, Displaying, Deleting, Altering - Creating Stock Unit of Measure, Displaying and Deleting Unit Measures - Creating, Altering, Displaying, Deleting Stock items - Generating Reports.

References:

1. Tally 9 in Simple Steps, Kogent Solutions Inc., John Wiley & Sons.
2. Tally 9.0 (English Edition), (Google eBook) Computer World
3. Tally.ERP 9 Made Simple Basic Financial Accounting by BPB Publisher.
4. Tally ERP 9 For Real Time Accounting by Avichi Krishnan
5. Fundamentals of Computers, by V. Rajaraman, PHI.

SBS G 6.1C Event Management

Unit-I: Event Concept: Corporate Events and Customer's needs - Types of Events - Corporate hospitality – Exhibitions – Trade Fairs – Conferences –Business and Government Meets - Corporate event packages - Menu Selection - Customization.

Unit-II: Outdoor Events: Logistics, Types of Outdoor events, Risk management - Health and safety, Marketing and sponsorship, HR Management, Programming and Entertainment.

Unit-III: Celebrity Events: Launches, Fashion shows, National festivals and high-profile charity events - Liaison with agents, Contract Negotiations, Client briefings, Celebrity wish lists and expectations - Liaisoning with Govt. Departments.

References:

1. Event Management: A Blooming Industry and an Eventful Career by Devesh Kishore, Ganga Sagar Singh - Har-and Publications Pvt. Ltd.
2. Event Management by Swarup K. Goyal - Adhyayan Publisher.
3. Event Management & Public Relations by Savita Mohan - Enkay Publishing House
4. Event Entertainment and Production - Mark Sonder, CSEP, Wiley & Sons, Inc.
5. Special Event Production - Doug Matthews.
6. Fenich, G. Meetings, Expositions, Events, and Conventions: An introduction to the industry. New Jersey: Pearson Prentice Hall.

SBC G 6.1D Media Management

Unit-I: Media Management: Role of Media - Planning - Organization - Media types - Unique features of print media - Radio and Television - Teleconferencing - **Media Technology:** Internet, mobile phones, interactive television, video games, Ipod, Blogs, Community network sites.

Unit-II: Media Marketing: Penetration, Reach, Access and Exposure to media - Revenue-expenditure in media - Selling and buying space and time on media - TRP Rating - Audience Profiles - .

Unit-III: Media and Ethics: Ethical issues related to Media - Intellectual Property Rights (IPR) and New Media - Security issues and New media - Comparative analysis of Ten websites.

References:

1. Principles of Advertising and IMC – Tom Duncan-Tata McGraw-Hill-Second Edition.
2. Advertising and Promotion, An IMC Perspective, Kruti shah and Alan D' Souza, TMH.
3. Mehra - Newspaper Management, Corgi Books.
4. Rucker and Williams- Newspaper Organization and Management, John Wiley & Sons.
5. Raidu C.S., Media and Communication Management, Himalaya Publishers
6. Michael Goodwin, Making Multimedia Work, John Wiley & Sons.
7. Raidu Nageshwar, Mass Media: Law and Regulations, Himalaya Publishers.

DSC 1 G 6.2 Marketing

Unit-I: **Introduction:** Concepts of Marketing: Product Concept – Selling Concept - Societal Marketing Concept – Marketing Mix - 4 P's of Marketing – Marketing Environment.

Unit-II: **Consumer Markets and Buyer Behaviour:** Buying Decision Process – Stages – Buying Behaviour – Market Segmentation – Selecting Segments – Advantages of Segmentation.

Unit-III: Product Management: Product Life Cycle - New products, Product mix and Product line decisions - Design, Branding, Packaging and Labeling.

Unit-IV: Pricing Decision: Factors influencing price determination, Pricing strategies: Skimming and Penetration pricing.

Unit-V: Promotion and Distribution: Promotion Mix - Advertising - Publicity – Public relations - Personal selling and Direct marketing - Distribution Channels – Online marketing- Global marketing.

References:

1. Philip Kotler, Marketing Management, Prentice Hall of India.
2. Philip Kotler & Gary Armstrong, Principles of Marketing, Pearson Prentice Hall
3. Stanton J. William & Charles Futrel, Fundamentals of Marketing, McGraw Hill Company
4. V.S. Ramaswamy S. Nama Kumari, Marketing Management – Planning, McMillan

DSC 2G 6.3 Auditing

Unit-I: Auditing: Meaning – Objectives – Importance of Auditing – Auditing as a Vigil Mechanism – Role of Auditor in checking corporate frauds.

Unit-II: Types of Audit: Based on Ownership and time - Independent, Financial, Internal, Cost, Tax, Government, Secretarial audits.

Unit-III: Planning of Audit: Steps to be taken at the commencement of a new audit - Audit programme - Audit note book - Internal check, internal audit and internal control.

Unit-IV: Vouching and Investigation: Vouching of cash and trading transactions - Investigation, Auditing vs. Investigation

Unit-V: Company Audit and Auditors Report: Auditor's Qualifications – Appointment and Reappointment – Rights, duties, liabilities and disqualifications - Audit report: Contents – Preparation - Relevant Provisions of Companies Act, 2013.

References:

1. S.Vengadamani, “Practical Auditing”, Margham Publications, Chennai.
2. Ghatalia, “Principles of Auditing”, Allied Publishers Pvt. Ltd., New Delhi.
3. Pradeesh Kumar, Baldev Sachdeva & Jagwant Singh, “Auditing Theory and Practice, Kalyani Publications, Ludhiana.
4. N.D. Kapoor, “Auditing”, S. Chand, New Delhi.
5. R.G. Saxena, “Principles and Practice of Auditing”, Himalaya Publishing House, New Delhi.
6. Jagadesh Prakesh, “Principles and Practices of Auditing” Kalyani Publications, Ludhiana.
7. Kamal Gupta and Ashok Gupta, “Fundamentals of Auditing”, Tata McGraw Hill
8. B.N. Tondan, “Practical Auditing”, S.Chand, New Delhi.

DSC 3G 6.4 Management Accounting

Unit–I: Management Accounting: Interface with Financial Accounting and Cost Accounting - Financial Statement analysis and interpretation: Comparative analysis – Common size analysis and trend analysis (including problems).

Unit–II: Ratio Analysis: Classification, Importance and limitations - Analysis and interpretation of Accounting ratios - Liquidity, profitability, activity and solvency ratios (including problems).

Unit–III: Fund Flow Statement: Concept of fund: Preparation of funds flow statement. Uses and limitations of funds flow analysis (including problems).

Unit–IV: Cash Flow Statement: Concept of cash flow – Preparation of cash flow statement - Uses and limitations of cash flow analysis (including problems).

Unit–V: Break-Even Analysis and Decision Making: Calculation of Break-even point - Uses and limitations - Margin of safety – Make/Buy Decision - Lease/own Decision (including Problems).

References:

1. S.N. Maheswari, A Textbook of Accounting for Management, S. Chand Publishing, New Delhi.
2. I.M Pandey, "Management Accounting", Vikas Publishing House, New Delhi,
3. Shashi K. Gupta & R.K. Sharma, "Management Accounting: Principles and Practice", Kalyani Publishers, Ludhiana.
4. Jawahar Lal, Accounting for Management, Himalaya Publishing House, New Delhi.
5. Charles T. Horngren, et.al, "Introduction to Management Accounting" Person EducationIndia, New Delhi, 2002.
6. Murthy & Guruswamy – Management Accounting, Tata McGraw Hill, New Delhi.
7. Dr. Kulsreshtha & Gupta – Practical problems in Management Accounting.
8. Bhattacharya, D., "Management Accounting", Pearson Education India, New Delhi.
9. S.P. Gupta – Management Accounting, S. Chand Publishing, New Delhi.

DSC 1H 6.5 - Tally

Unit-I: Introduction to Tally: Introduction, Software versions of Tally, Terminology related to Accounts credit & Debit, Journal, Ledger, Voucher, Group etc. Difference between Manual Accounting and Accounting Packages. Features and advantages of Tally.

Unit-II: Introduction of Tally Software, Creation of a company, Gateway of Tally, Accounts Information, Groups, pre defined Groups, Creation of New Groups, Creation of sub Group.

Unit-III: Ledgers, Ledger Creation – Single and multiple Ledgers, Displaying & altering Ledgers, configure Ledger, Stock Ledger, Ledgers and their Group Allocation.

Unit-IV: Vouchers –types of vouchers – recording of vouchers – entry of payment voucher, Receipt voucher, sales voucher, purchase voucher, Journal Voucher, Contra Voucher, Debit & Credit Note. Creating New Voucher types, customizing the Existing voucher types, Alternation of Voucher, Deletion of Voucher.

Unit-V: Final Accounts: Customizing the final accounts – Profit and Loss Account, Balance Sheet. Key board shortcuts in Tally. Generating the Reports from Tally, Trial Balance, Account Books, Sales, Purchase, Journal Registers, Statement of Accounts, Day Book, List of Accounts.

Reference Books:

1. K. Kiran Kumar, Tally ERP9.
2. Tally 9 In Simple Steps, Kogent solutions Inc., John Wiley & Sons, 2008.
3. Narmata Agarwal, Financial Accounting on Computers Using Tally, Dreamtech Press, 2000.
4. Tally 9.0, Google eBook, Computer World.
5. Vikas Gupta, Comdex Computer and Financial Accounting with Tally 9.0, 2007.
6. Tally ERP 9 Made Simple Basic Financial Accounting, BPB Publisher.
7. Avichi Krishnan, Tally ERP 9 for Real Time Accounting, Book Ganga.

DSC 2H 6.6 - e-Commerce

Unit-I: Introduction to E-Commerce: Scope, Definition, e-Commerce and the Trade Cycle, Electronic Markets, Electronic Data Interchange, Internet Commerce. Business Strategy in an Electronic Age: Supply Chains, Porter's Value Chain Model, Inter Organizational Value Chains, Competitive Strategy, First Mover Advantage - Sustainable Competitive Advantage, Competitive Advantage using E-Commerce - Business Strategy.

Unit-II: Business-to-Business Electronic Commerce: Characteristics of B2B EC, Models of B2B EC, Procurement Management by using the Buyer's Internal Market place, Just in Time Delivery, Other B2B Models, Auctions and Services from traditional to Internet Based EDI, Integration with Back-end Information System, Role of Software Agents for B2B EC, Electronic marketing in B2B, Solutions of B2B EC, Managerial Issues, Electronic Data Interchange (EDI), EDI: Nuts and Bolts, EDI and Business.

Unit-III: Internet and Extranet : Automotive Network Exchange, Largest Extranet, Architecture of the Internet, Intranet and Extranet, Intranet software, Applications of Intranets, Intranet Application Case Studies, Considerations in Intranet Deployment, Extranets, Structures of Extranets, Extranet products and services, Applications of Extranets, Business Models of Extranet Applications, Managerial Issues. Electronic Payment Systems: Issues and Challenges.

Unit-IV: Public Policy: From Legal Issues to Privacy : Legal Incidents, Ethical and Other Public Policy Issues, Protecting Privacy, Protecting Intellectual Property, Free speech, Internet Indecency and Censorship, Taxation and Encryption Policies, Other Legal Issues: Contracts, Gambling and More, Consumer and Seller Protection in EC.

Unit-V: Infrastructure For EC : Network of Networks, Internet Protocols, Web- Based client/Server, Internet Security, Selling on the Web, Chatting on the Web, Multimedia delivery, Analyzing Web Visits, Managerial Issues, Equipment required for establishing EC Sites – Problems in Operation – Future of EC.

Reference Books

1. David Whiteley, "E-Commerce", Tata McGraw Hill, 2000.
2. E Business by Parag Kulakarni and Sunitha Jahirabadkar from Oxford University Press.
3. E Business by Jonathan Reynolds from Oxford University Press.
4. Eframi Turban, Jae Lee, David King, K. Michael Chung, "Electronic Commerce", Pearson Education, 2000.
5. R. Kalakota and A. B. Whinston, Frontiers of Electronic Commerce, Addison Wesley.
6. David Kosiur, Understanding Electronic Commerce, Microsoft Press.
7. Soka, From EDI to Electronic Commerce, McGraw Hill.

DSC 3H 6.7 - PHP and My SQL

Unit-I: Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. **Flow Control Functions in PHP:** Switching Flow, Loops, Code Blocks and Browser Output. **Working with Functions:** Defining Functions, Calling functions, returning the values from User-Defined Functions, Variable Scope, Saving State between Function calls with the Static statement, more about arguments.

Unit-II: Working with Arrays: Arrays, Creating Arrays, Some Array-Related Functions. **Working with Objects:** Creating Objects, Object Instance. **Working with Strings, Dates and Time:** Formatting Strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP.

Unit-III: Working with Forms: Creating Forms, Accessing Form - Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, Working with File Uploads**. Working with Cookies and User Sessions:** Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsetting Variables, Using Sessions in an Environment with Registered Users.

Unit-IV: Working with Files and Directories: Including Files with include(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories, Open Pipes to and from Process Using popen (), Running Commands with exec(), Running Commands with system ( ) or passthru ( ). **Working with Images:** Understanding the Image-Creation Process, Necessary Modifications to PHP, Drawing a New Image, Getting Fancy with Pie Charts, Modifying Existing Images, Image Creation from User Input.

Unit-V: Interacting with MySQL using PHP: MySQL Versus MySQLi Functions, Connecting to MySQL with PHP, Working with MySQL Data. **Creating an Online Address Book:** Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record.

References:

1. Julie C. Meloni, PHP MySQL and Apache, SAMS Teach Yourself, Pearson Education (2007).
2. Xue Bai Michael Ekedahl, The Web Warrior Guide to Web Programming, Thomson (2006).

ACHARYA NAGARJUNA UNIVERSITY

REGISTRAR

Telephone No: 0863-2346115
Fax:0863-2293378/2293320
Website: http:/www.anu.ac.in

No. ANU/Acad./UG/CBCS syllabus/Course Sturcture-2016-17/2016, Date: 27-7-2016.

To
All the Principals of affiliated colleges offering U.G. Courses,
Acharya Nagarjuna University.

Sir/Madam,

Sub:- ANU – Academic – U.G. Courses – CBCS Syllabus/Course structure-2016-17 - Clarification on continuation of B.Com. (Computer Application) Course – Communicated – Reg.

Ref:- 1. This office letter No. ANU/Acad./UG/Revised CBCS syllabus/Course Structure/2016-17/2016, dated 16-6-2016.
2. Letter Rc.No.APSCHE/Degree Colleges-VCR Collg-Action/2016 received from the Secretary, APSCHE, Hyderabad, dated 08-7-2016.
3. Minutes of the meeting of Boards of Studies (UG) of certain subjects held on 18-70-2016.
4. Vice-Chancellor's orders dated 26-7-2016.

<<>>

In partial modification to the earlier letter cited under reference (1) and in accordance with the letter cited under reference (2), I am by direction to inform you that all the affiliated colleges offering U.G. courses of Acharya Nagarjuna University area are permitted to continue to offer B.Com. (Computer Applications) course under CBCS pattern. The **Revised Course structure and syllabi** to be followed from the academic year 2016-17 is placed in the University website at acharyanagarjunauniversity.ac.in.

Also, it is to inform that for the students, who have admitted during the academic year **2015-16** in I year B.Com. (Computers/Restructure) course, the course structure for **III semester** (II year 2016-17) **is** ~~same~~ modified and it is also **placed in the University website**. As far as IV, V and VI semesters concerned for this batch of students, the same course structure is applicable which is designed for the batch of students admitted during the academic year 2016-2017.

Further, having considered the minutes of the Boards of Studies (UG) concerned cited under reference (3), it is to inform that the following subject's syllabi is approved for the academic year 2016-17 and placed in the University website.

S.No.	Subjects	Syllabi for
01.	Hindi	I, II & III Semesters
02.	Sanskrit	I, II & III Semesters

(P T O)

S.No.	Subjects	Syllabi for
03.	Psychology	I, II, III & IV Semesters (Theory & Lab)
04.	Biochemistry	I, II, III & IV Semesters (Theory & Lab)
05.	Statistics (with Maths)	I, II, III & IV Semesters (Theory & Lab)
06.	Statistics (Non Maths)	II, III & IV Semesters (Theory & Lab)
07.	Geology	I, II, III & IV Semesters (Theory & Lab)
08.	Microbiology	I, II, III & IV Semesters (Theory & Lab)

Yours faithfully,

REGISTRAR

Copy to: The Secretary, APSCHE, Khairatabad, Hyderabad.
The Dean, College Development Council, A.N.U.
The Co-ordinator, U.G. Examinations, A.N.U.
The Additional Controller of Examinations, A.N.U.
The Deputy Registrar, Affiliation Section, A.N.U.
P.A. to Vice-Chancellor/Rector/Registrar, ANU.
The file.

Part I

AcharyaNagarjuna University Guidelines Relating to Project Work for B.Com (General) Degree Course V Semester / VI Semester in Banking / Insurance / Retailing / Taxation

- Project work / Report may be prepared in the following modes

  a**)** Internship- Students may be sent to organizations, they will be assigned some role in the organisation. They have to complete their task with the help of organization employees and prepare the project report based on their work experience.

  b) Assistance in organization – Students may assist LIC agents / Super market etc. based on the organization selected for study. They may submit the project report based on the industrial / Any Part time Job experience

  c) based on primary data .

  d) Based on secondary sources

  e) Experimental commercial activity (Startups) eg: Kirana, Pan shop, hotel etc,
- Project evaluation may be done in accordance with scheme of evaluation. However valuators may adjudge some innovative projects judiciously.
- One student / up to five students has/have to undertake a project work individually or as group under the supervision of a teacher.
- Language of the Project Report and Viva-Voce examination may be in English / Telugu
- The Project Report may be typed /hand written
- Each student /group of students have to submit three copies of project report 1) External examiner 2) Internal examiner 3) Student copy
- Failure to submit the Project Report or failure to appear the Viva- Voce examination will be treated as '**Absent'**in the examination. He / she has to submit the project Report and appear at the Viva-Voce examination in the subsequent years (within the time period as per acharyaNagarjuna University Rules)
- No marks will be allotted to the Project Report unless a candidate appears at the Viva-Voce examination. Similarly no marks will be allotted on Viva-Voce examination unless a candidate submits his/her Project Report
- It is mandatory to submit Project Report and attend Viva-Voce examination

- Each student has to give oral presentation on the project at time of Viva-Voce examination. The external examiners may pose questions on the project.
- Project guide / any other commerce staff member in the concerned college may be appointed as internal examiner.
- Project work topic may be selected from selected cluster or any commerce related topics.
- Last date for submission of fifth Semester Project Report for this academic year only:

  a)Without any fine: On before September 15th 2017.

  b) With fine : 20th September, 2017.
- Last date for submission of fifth / Sixth Semester Project Report ,from academic year 2018-19 onwards :

  a) Without any fine: One month before semester exams

  b) With fine : 20 days before semester exams.
- Evaluation of the Project Report and Viva-Voce should be conducted after completingVth semester and VIth semester by both internal and external examiners.
- A few classes (about 10 hours) may be allotted to enlighten the students on the Project work by Project guide at the beginning of the Vth Semesters and VIth Semester
- Both internal and external project evaluators may note that the project work at the B.Com level is to create interest and curiosity among students to study the practical functioning of the organization / business /application of the theoretical knowledge in real life situations.
- This is a first step to undertake research in any organistaion. Hence guides may refrain from pressurizing students to produce finest quality of research at graduation level itself. Consider their level of understanding and analytical capabilities.the external and internal examiners are suggested not to compare the B.com students project report standards with that of PG/M.Phil /P.hD students project/research topics.
- So evaluators may consider even a micro /small /Case Studies like the fixed deposits, Savings of a group of people may be taken for study and analysis. The impact and profitability of the schemes may be considered on par with other descriptive projects

I.Scheme of evaluation for Project Report and Viva-Voce Examination by external Examiner:

Project Report (50 Marks)

S.No	Chapter	Contents	Marks
1	1	Introduction	10
2	2	Profile and Methodology	10
3	3	Presentation, data Analysis	20
4	4	Findings, Conclusion & Recommendations	10
5		Total	50

Viva-Voce (25 marks)

In course of Viva-Voce Examination, the question may be asked in the following areas:

S.No	Contents	Marks
1	Importance / relevance of the Study, Objectives of the Study, Methodology of the Study / Mode of Enquiry	10
2	Ability to explain the analysis, findings, concluding observations, recommendation, limitations of the Study	10
3	Overall Impression- including Communication Skills	5
4	**Total**	25

II.**Scheme of evaluation for Project Report and Viva-Voce Examination by internal Examiner:**

S.No	Contents	Marks
1	Students Interest and Active Participation	5
2	Comprehension level and knowledge in the Topic	10
3	Ability to explain the analysis&findings	5
4	Communication skills	5
5	Total	25

Part II

Cover page/title

PROJECT REPORT (title)

AN ANALYSIS OF AGRICULTURAL CREDIT FLOW TO FARMERS

(Submittedfor B.Com (General) Degree in Banking /Insurance /Retailing/ Taxation under AcharyaNagarjuna University 2015-2018)

Submitted by

Name of the candidate:

Registration No:

Semester No:

Name of the College:

College Roll No:

Supervised by

Name of the Supervisor:

Designation:

Name of the College:

Month & Year of Submission

STUDENT'S DECLARATION

I/we declare that the project work/report entitled, **AN ANALYSIS OF AGRICULTURAL CREDIT FLOW TO FARMERS**is a record of independent/team work carried out by me/us under the guidance of Mr. /Mrs. /Ms. / Dr. /Prof……, M.com, NET/JRF/APSET/ M.Phil., Ph.D., Lecturer/Assistant Professor/Associate Profess /Professor, Department of commerce …… College …….District.

I/we also declare that this project report/work is a result of my/our own effort and was not submitted to this or to any other University earlier, for the award of any degree or diploma.

Place: Name of the Candidate:

Date: Registration No :

Semester No :

Name of the College :

College Roll No :

SUPERVISOR'S CERTIFICATE

This is to certify that Mr. /Ms. …….

is a student of B.Com (General) Degree in Banking / Insurance / Retailing /

Taxation in …….. (Name of the College) affiliated to

AcharyaNagarjuna University, has worked under my Supervision and Guidance

for his/her /their Project work and prepared a project Report

(title)…….

Which he /she/they is/are submitting his/ her/their genuine and original work to

the best of my knowledge.

Place: Name of the Supervisor:

Date: Designation :

Name of the College :

ACKNOWLEDGEMENT

I deem it a great privilege to express my sincere and profound thanks to my project supervisor/guide Mr. /Mrs./Ms./ Dr. /Prof. ……., M.com, NET/JRF/APSET/ M.Phil., Ph.D., Lecturer/Assistant Professor/Associate Profess /Professor, Department of Commerce ……. College, Who has whole heartedly encouraged and extended consistent guidance in successful completion of project work.

I wish to express my deep sense of gratitude to our College principal, teaching, Non-teaching staff, library staff and all that have extended their encouragement co-operation throughout my B.com course and project period.

I would like to express my gratitude to the organisation staff that supported me during my industrial / institute /organization / bank visit by providing project data and other relevant data.

Last, but certainly not the least, I am indebted to my friends, Parents and all my family members for their immeasurable love and affection, without their blessings or grace, I couldn't have finished this project under stipulated time and with focused vision.

Place: Name of the Candidate:

Date: Registration No :

Semester No :

Name of the College :

College Roll No :

Table of contents

Chapter 1 **- Introduction**

1.1 Introduction of the topic

1.2General scenario of industry

1.3 Identified Problem

1.4 Need for Study –if needed

1.5 Objectives & Scope

Chapter 2**– Profile and Methodology**

2.1 Profile of: Topic

2.2 Institute/organization

2.3Relevant data

2.4Methodology-Type of project

2.5 Sampling methods

2.6 Tools for analysis

Chapter 3 – **Data Analysis and Interpretation**

3.1Analysis of objective-1

3.2 Analysis of objective-2

3.3 Diagrammatic Representations

(Additional Contents may be added if required)

Chapter 4 – **Conclusions**

4.1Summary of Findings

4.2 Suggestions & Recommendations

4.3 Conclusions

4.4 Directions for Future Research

References

1. Anand, M., Ajay Arora., "Economic Value Added: Business Performance Measure of Share Holder Value", *The Management Accountant,*, Vol. 25, No: 4, May 1999, p.25

2. http://india.gov.in/sectors/agriculture/spices.php (accessed august 9, 2017)
3. James R Gregory. (2004),*"THE BEST OF BRANDING: BEST PRACTICES IN CORPORATE BRANDING"*, Tata McGraw Hill Publishing Co Ltd, New Delhi, pp. 24-37
4. Tom Jackle (2004) "Customer Satisfaction, Service Quality and perceived value: An integrative model" *Journal of Marketing Management* vol.20, issue 7, PP.897-917

Appendix

Copy of Questionnaire/Interview Schedule

Any Other related documents

Part III

AcharyaNagarjuna university III.B.com(General) VTh Semester /VIThSemester Tips for preparation preparation of project report

1. Cover Page & Title Page – A specimen copy of the Cover page & Title page for B.com project report is given in first page

Title: Title has to be selected keeping in view the topic or contents in the project work. Fancy titles, Short cuts, Abbreviations may be avoided. However well-known Abbreviations like AP, MP, TN etc. may be used.

2. **Student Declaration**: Declaration by the student (s) stating that the said report has not formed part of any other degree / diploma and is a bonafide work carried out by the candidate.

3. Supervisor's Certificate -Certificate from the Project Guide has to be obtained stating that the said work is original and the candidate has done under his / her supervision.

4. Acknowledgement: The student may acknowledge the help received from various persons this should not exceed one page when typed in 1.5 spacing. The candidate's signature, Registration No, Semester No., College Name and Roll No. shall be typed in capitals / hand written.

5. Abstract: Abstract should be an essay type of narration not exceeding 200-250 words. It may contain problem to be studied, methodology used to study and Summary of findings in brief. It should be followed by **Key words**: 5-6 important words frequently used or key words

in the project work. This is not mandatory, one may include if possible after acknowledgement.

6. Contents of the project: Contents of the project report should be arranged in cohesive manner. The model list of contents is not exhaustive it may be modified according to the requirement of the project. Students may frame the contents according to the type of project. This table of contents gives a bird's eye view of the project report.It should be presented chapter wise as follows

Chapter 1 - **Introduction:** This chapter may contain a brief back ground of the topic it may include the brief note about the areas you are going to present in the later part of the project. Origin of the selected Institution, Schemes etc. and evolution may be presented. Significance, importance of the topic and blue print or Outline of the content can be presented here.

- **Need for Study:** what is the need to study this topic has to be mentioned in a paragraph. It may be to find solution to existing problem in any organization. It may be to know the status of the situation in any industry etc.
- **Scope of the study:** The study should highlight its application in day to day functioning or in a specific area of your specialization field. The data collected could be primary i.e., gathered by your own observation, or it may be secondary i.e. taken from the records of the organization where the research is being undertaken like balance sheets, control figures, performance reports, sales reports etc.
- **Objectives of the study:** The candidate must identify 2-4 core major areas of study. They have to represent the intention, goals of the study. Objectives describe what we expect to achieve by a project. These objectives give direction for project work, what we have to study? What we have to analyse? What would be the outcome of the project?

  Eg: 1. To study the credit flow to farmers in the study area by public sector banks

  2. To identify the difficulties in credit flow to farmers in study area

  3. To analyse the reasons for not availing loans from institutional lenders on par with the non- institutional lenders

7. Chapter 2**–Profile and Methodology**

- Profile of: Brief historical background of the topic

Institute/organizational evolution, major achievements, growth, expansion and highlights of the organisation may be presented under the profile heading.

Methodology

- **Type of project**: The student has to mention which type of project he /she has undertaken. One may select field study/empirical,case study,secondary data or experimental commercial activity (Real entrepreneurship) based study.
- **Surveys:**Surveys involve collecting information, usually from fairly large groups of people, by means of questionnaires but other techniques such as interviews or telephoning may also be used. There are different types of survey. The most straightforward type (the "one shot survey") is administered to a sample of people at a set point in time. Another type is the "before and after survey" which people complete before a major event or experience and then again afterwards.
- **Case studies**: Case studies usually involve the detailed study of a particular case (a person or small group). Various methods of data collection and analysis are used but this typically includes observation and interviews and may involve consulting other people and personal or public records. The students may select one or more individuals in the respective situation on whom to base their case study/studies. Case studies have a very narrow focus which results in detailed descriptive data which is unique to the case(s) studied.
- **Experimental project / Start-up Project**: under this students may take up manufacturing of any product (s) or offer services and sell it through traders or may sell by his /her/ their own firm (sole proprietorship, partnership firm, private company, limited company etc.), any commercial activity done by him/her/them may be prepared in project report. This may be treated as most valuable work far superior to other types of projects, because it presents practical application of the commerce knowledge.
- **Sampling Methods**: Various sampling methods may be adopted to pick up the samples to study the population. Simple random, stratified random sampling and convenience sampling etc.
- **Tools for Analysis**: t-test, f-test, Z-test, chi-square test, ANOVA etc. one may refer statistics. Appropriate tests may be used according to the requirement. Unnecessary tests may be avoided applying tests is not mandatory. Application of tools depends on type of project. Students may follow project guide suggestions.

8. Chapter 3**– Data Analysis and Interpretation**

- **Analysis of objective1:** Collected data either empirical or secondary data may be tabulated and required statistical tools may be applied to interpret in a better way to find out accurate truth.
- **Diagrammatic Representations:** flow charts or bar, line piecharts,graphs etc etc., or pictures in support of the analysis may be inserted

(Additional Contents may be added if required) This is the main part of the project work. So students may take the guidance from the project supervisor/guide

9. Chapter 4 – **Conclusions**

- **Summary of Findings:** After analysing the data above, students may find new and important things, points to be noted here. all the findings may be summarized here
- **Conclusions & Recommendations**: Based on the study done, what conclusions/inferences can be drawn? Recommendations are based on the conclusions of the study. It is important to indicate that a set of recommendations should follow from the conclusions inferred. The recommendations should have value to the organization. If possible quantify the benefits that can be gained from following the recommendations. Indications as to what other techniques can be applied to improve the systems viz. Cost saving techniques, precautions etc.
- **Directions for Future Research**: After studying a topic in detail one arrives at a conclusion. He/she/they may find other aspects of the topic which were not taken for study due to limitations like available time, money resources etc. but they are worthy to be studied may be given here.

10. References: This section will include the list of books and articles, websites and various other sources of data obtained/exerted/excerpted and used in a project report. Universally accepted and followed APA (American philosophical association) recommended style may be followed for references. This is not mandatory it is optional

11. Appendix: All the additional material in support of project may be presented in appendix, 1. Copy of Questionnaire/Interview Schedule and 2) Tables or any other related documents.

The list of contents is not exhaustive it is inclusive candidate may include as many as possible in consultation with project guide/supervisor. This is not mandatory it is optional

Part IV

Model Questionnaire

Socio-Economic Profile of the Borrower

1. Name of the borrower

2. Village

3. Age

4. Sex: Male / Female

5. Caste: SC/ST/BC/OBC

6. Religion: Hindu/Muslim/Christian/Others

7. Educational Qualifications: (i) Primary

(ii) Secondary

(iii) Higher

(iv) Professional

8. Occupation: (i) agricultural labour iii) Govt employee

(ii) Private employee iv) self-employed

9. Income from different sources: (a) Agriculture: Rs._____

(b) Business: Rs. _____

(c)Industry: Rs._____

(d) Others:

10. Annual Expenditure: Rs._____

11. No. of earning members and dependents : Earning members in the family…….

: Dependents…….

12. Marital status: Married/Unmarried

if yes how many children

a)0 b)1 c)2 d)3 e) above 3

13. From which bank did you borrow the loan? : (a) Other commercial bank

(b) Co-operative Bank

(c) NBFC's (LIC, GIC, etc.)

(d) Money Lenders

(e) Others

14. When did you borrow the loan? : (i) Less than and upto 1 year

(ii) 1-2 years

(iii) 2-3 years

(iv) 3-4 years

(v) 4-5 years

(vi) 5 years and above.

15. Time Gap between applying the loan and sanctioning of the Loan:

(i) Less than 90 days

(ii) Less than or equal to 12 months

(iii) More than 12 months

(iv) 2 years & above

16. How much amount did you borrow? : (i) Below Rs.25, 000/

(ii) Rs.25, 000 to Rs.50, 000/

(iii) Rs.50, 000 to Rs.1,00,000/

(iv) Above Rs.1, 00,000/

17. When did you pay the last interest / installment of the principal amount?

(i) Less than 30 days

(ii) Less than or equal to 90months

(iii)) Less than or equal to 12 months

(iv) 12 months & above

(i) Now, your loan asset status: (i) Standard Asset

(ii) Sub-Standard Asset

(iii) Doubtful Asset

(iv) Loss Asset

18. Did you borrow loan from any other financial Institution?

a) If yes, specify

b) Are you repaying the loan regularly

(i) If yes, what is the amount paid

(ii) What is the amount due?

(iii) Since how long the amount is due

19. Do you face any problems from the bankers for repaying the loan: Yes/No

(i) If yes, what type of problems?

20. What is the purpose of borrowing the advance?: (a) For Self-employment

(b) Diversification

(c) For personal use

(d) Others

Points to be added later

Case1.project evaluation for 75 marks by external examiner

Case 2.Evaluation of project work to be done jointly by one internal expert and one external expert with equal weightage, i.e., average marks of the internal and external expert for 75 marks will be awarded.

Case3.Evaluation of project work to be done by internal expert for 100 marks

Andhra Pradesh State Council of Higher Education
GENERAL ENGLISH SYLLABUSFOR B.A/B.Com/B.Sc COURSESunder CBCS
w.e.f. 2015-16 (Revised in April, 2016)

SEMESTER – I

1. Every unit shall state the objectives and expected deliverables.
2. Every lesson shall have
   i) Questions on subject comprehension, paragraph, short note, single sentence answer types
   ii) Exercises on vocabulary, syntax, and pronunciation
   iii) Language exercises shall include exercises in paraphrasing, note-making and report writing wherever possible
   iv) Pre -reading and post- reading activities.

Unit – I
PROSE
1. A.P. J. Abdul Kalam: The Knowledge Society (from *Ignited Minds*)
2. NgugiWaThiong'o: The Language of African Literature (from *Decolonizing the Mind*)

Unit – II
POETRY
1. Robert Frost: The Road Not Taken
2. Nissim Ezekiel: Night of the Scorpion

Unit – III
SHORT STORY
1. Mulk Raj Anand : The Lost Child
2. Henry Lawson: The Loaded Dog

Unit – IV
ONE - ACT PLAY
William Shakespeare: The Merchant of Venice (Court Scene – Act IV Scene -1)

Unit – V
LANGUAGE ACTIVITY
1. Classroom and Laboratory Activities
   i. Single Sentence Answer Questions on Vocabulary (spelling), sound(pronunciation), sense (meaning), and syntax (usage)
2. Classroom Activity
   i. Exercises in Articles and Prepositions
   ii. Exercises in Tenses, Interrogatives and Question tags

Note: In classroom instruction it may be ensured that the theoretical and practical components of CSS-I complement the language activity in this semester.

SEMESTER – II

Unit – I
PROSE

1. J. B.S Haldane: The Scientific Point of View
2. A.G. Gardiner : On Shaking Hands

Unit - II
POETRY

1. John Keats: Ode to Autumn
2. KishwarNaheed : I am not that Woman (from *An Anthology of Commonwealth Poetry* edited by C.D. Narasimhaiah)

Unit –III
SHORT STORY

1. Ruskin Bond : The Boy Who Broke the Bank
2. R. K. Narayan : Half a Rupee Worth

Unit – IV
ONE ACT PLAY

Anton Chekhov: The Proposal

Unit – V
LANGUAGE ACTIVITY

1. Classroom and Laboratory Activities
   i. Transformation of Sentences (Voice, Speech and Degrees)
   ii. Dialogue Practice (Oral)
   iii. Listening Comprehension

2. Classroom Activity
   i. Guided Composition
   ii. Dialogue Writing
   iii. Reading Comprehension

SEMESTER –III

Unit – I
PROSE

1. M.K. Gandhi: Shyness My Shield (from *The Story of My Experiments with Truth)*
2. Alexis C. Madrigal: Why People Really Love Technology: An Interview with Genevieve Bell

Unit – II
POETRY

1. Gabriel Okara: Once upon a Time
2. Seamus Heaney: Digging

Unit – III
SHORT STORY

1. JhumpaLahiri: The Interpreter of Maladies
2. Shashi Deshpande: The Beloved Charioteer

Unit – IV
ONE ACT PLAY

GurajadaAppa Rao: *Kanyasulkam,* translated by C. Vijayasree& T. VijayaKumar (Acts I & II)

Unit – V
LANGUAGE ACTIVITY

1. Classroom and Laboratory Activities
   i. JAM Sessions
   ii. Note Taking
   iii. Reporting for the Media
   iv. Expansion of an idea
2. Classroom Activity
   i. Transformation of sentences (Simple-Complex-Compound Sentences)
   ii. Note Making
   iii. Report Writing
   iv. Writing for the Media

Note: In classroom instruction it may be ensured that the theoretical and practical components of CSS-II complement the language activity in this semester.

Andhra Pradesh State Council of Higher Education

General Telugu Syllabus for B.A/ B.Com/B.Sc., Courses Under CBCS

W.e.f. 2015-16 (Revised in April - 2016)

SEMESTER - I

I. ప్రాచీన కవిత్వం:

(అ) నన్నయ – గంగాశంతనుల కథ
ఆంధ్రమహాభారతం–ఆదిపర్వం–నాల్గవ ఆశ్వాసం (120–165)
"నరవరుడగు శంతనునకు" నుండి "దివ్య భూషణాలంకృత" వరకు

(ఆ) తిక్కన – ద్రౌపది పరిదేవనం – ఆంధ్రమహాభారతం – ఉద్యోగపర్వం – తృతీయ ఆశ్వాసం – (100–125)
"ధర్మనందను పలుకులు" నుండి "అని యూఱడిలగ బలికిన" వరకు

II ఆధునిక కవిత్వం

(అ) గురజాడ – కన్యక

(ఆ) శ్రీశ్రీ – దేశచరిత్రలు

III కథానికలు

(అ) పాపినేని శివశంకర్ – చింతల తోపు

(ఆ) బండి నారాయణస్వామి – సావుకూడు

IV వ్యాకరణం

(అ) సంధులు – సవర్ణదీర్ఘ, గుణ, వృద్ధి, యణాదేశ, త్రిక, గ.స.డ.ద.వాదేశ, రుగాగమ, టుగాగమ, ఆమ్రేడిత, అత్వ, ఇత్వ, ఉత్వ, సంధులు.

(ఆ) సమాసాలు – తత్పురుష, కర్మధారయ, ద్వంద్వ, ద్విగు, బహువ్రీహి.

(ఇ) అక్షర దోషాలు – దోషాలు సరిదిద్ది సాధు రూపాలు రాయాలి.

విద్యార్థి కృత్యాలు:

1. శ్రీశ్రీ కవిత దేశ చరిత్రలకు సంబంధించిన పేరడీలు సేకరించండి.
2. ముత్యాల సరాలు ఛందస్సులో రచనలు చేసే ప్రయత్నం చేయండి.
3. ఆనాటి ద్రౌపది పరిస్థితిని ప్రస్తుత సమాజ పరిస్థితికి అన్వయించండి.

(పైన సూచించిన విద్యార్థి కృత్యాలు కొన్ని ఉదాహరణలు మాత్రమే. ఇటువంటివి మరిన్ని ప్రయత్నించగలరు.)

Andhra Pradesh State Council of Higher Education

General Telugu Syllabus for B.A/ B.Com/B.Sc., Courses Under CBCS

W.e.f. 2015-16 (Revised in April - 2016)

SEMESTER - II

I. ప్రాచీన కవిత్వం:

(అ) ధూర్జటి – సాయుజ్యము

శ్రీకాళహస్తి మహాత్మ్యము – ద్వితీయాశ్వాసం (109–139)

త్రేతాంబుననొక్క .... నుండి పన్నగంబు .... వరకు

(ఆ) చేమకూర వేంకటకవి– సుభద్రా పరిణయం

విజయ విలాసం – 3వ ఆశ్వాసం – (93–139)

"తనయుని పెండ్లికేగ వలె ధాత్రికి"నుండి

"తేరెక్కి దంపతులరుగ" వరకు.

II ఆధునిక కవిత్వం

(అ) జాషువా – పిరదౌసి లేఖ

("ఆ సుల్తాను" ... నుండి "అనుచు లిఖించె" వరకు)

(ఆ) గెడ్డాపు సత్యం – 'చెట్టు' ఖండిక 1 నుండి 25 పద్యాలు

("శ్రీనిధానం" నుండి "మహిమ నీది" పద్యం వరకు)

(కవితా వైజయంతి పద్య సంకలనం నుండి)

III కథానికలు

(అ) కేతు విశ్వనాథ రెడ్డి – నమ్ముకున్న నేల

(ఆ) ముప్పాళ్ళ రంగనాయకమ్మ– అమ్మకు ఆదివారం లేదా?

IV నవల

డా॥ వి.ఆర్. రాసాని – బతుకాట

విద్యార్థి కృత్యాలు:

1. సుభద్ర వివాహ ఆచారాలు – ఈనాటి వివాహ ఆచారాలు తులనాత్మకంగా పరిశీలించండి.
2. మీకు నచ్చిన ఒక చెట్టుకు సంబంధించిన పూర్తి సమాచారాన్ని సేకరించండి.
3. మీ ఇంటి నేపథ్యంలో అమ్మలకు ఆదివారం ఉందో లేదో ఒక సంఘటన ఆధారంగా కథ రాయండి.
4. నమ్ముకున్న నేల కథలోని రైతుల గాథలను చిత్రాలతో దినపత్రికల ఆధారంగా సేకరించండి.

Andhra Pradesh State Council of Higher Education

General Telugu Syllabus for B.A/ B.Com/B.Sc., Courses Under CBCS

W.e.f. 2015-16 (Revised in April - 2016)

SEMESTER - III

I. ప్రాచీన కవిత్వం:

(అ) పోతన – వామనావతారం

ఆంధ్రమహాభాగవతం – ఎనిమిదవ స్కంధం (582–621)

("కులమున్ రాజ్యము" నుండి "రవిబింబంబుపమింప" వరకు)

(ఆ) కొఱవిగోపరాజు – శాలివాహన విజయం

సింహాసన ద్వాత్రింశిక – ఒకటవ ఆశ్వాసం (115–165)

("సజ్జిత దానధర్మ" నుండి "ఇట్లు విక్రమార్కుడీల్గిన" వరకు)

II ఆధునిక కవిత్వం

(అ) కుసుమ ధర్మన్న – హరిజన శతకము (1–20)

"శ్రీహరినుత నీదు" నుండి "నీకులంబువారు" వరకు

(ఆ) రాయప్రోలు సుబ్బారావు– సంక్రాంతి సంబరము – మిశ్రమంజరిలోంచి – "అయిదు లక్షల అరవదేడులు" నుండి "మంగళము సంక్రాంతి సామికి" వరకు

III గద్యభాగం (వ్యాస సంపుటి)

(అ) ఆచార్య గుజ్జర్లమూడి కృపాచారి – తెలుగు భాష

(ఆ) ఆచార్య రాచపాళెం చంద్రశేఖర రెడ్డి– వ్యక్తిత్వ వికాసం

IV ఛందస్సు – అలంకారాలు

(అ) ఛందస్సు – ఉత్పలమాల, చంపకమాల, శార్దూలం, మత్తేభం, కందం, తేటగీతి, ఆటవెలది

(ఆ) అలంకారాలు – ఉపమ, రూపక, ఉత్ప్రేక్ష, స్వభావోక్తి, అతిశయోక్తి, అర్థాంతరన్యాస, దృష్టాంతం, శబ్దాలంకారాలు.

విద్యార్థి కృత్యాలు:

1. తెలుగు వారాలు, తిథులు, నక్షత్రాలు, సంవత్సరాల పేర్లు నేర్చుకోండి.
2. మీ వ్యక్తిత్వాన్ని మీరు ఏ విధంగా మెరుగుపరుచుకుంటున్నారో వ్యాసం రాయండి.
3. అంత్యానుప్రాసాలంకారంలో ఒక కవిత సొంతంగా రాయండి.

Hindi-I

PROSE-GADYA SANDESH - V.L. NARASIMHA SINHA

पूरा की बात

Unit-1: गद्य संदेश (Prose)	साहित्य की महत्ता - सच्ची वीरता - मित्रता
Unit-II: कथा लोक (Short Stories)	मुक्तिधन - गूदड़ साई - उसने कहा था
Unit-III: व्याकरण (Grammar)	लिंग – वचन – काल – वाच्य - वाक्यों की शुद्धि
Unit-IV: व्याकरण (Grammar)	शब्द प्रयोग कार्यालयी हिन्दी (पारिभाषिक - शब्दावली-अंग्रेजी से हिन्दी) - विलोम शब्द
Unit-V: पत्र लेखन (Letter Writing)	व्यक्तिगत और सरकारी पत्र

18/7/2016
(Dr. B. Venkateswara Rao)
Chairman, BOS (Hindi), ANU.

Hindi-II

Prose-Gadya Sandesh - V. L. Narasimha Sinha

Unit-I: गद्य संदेश **(Prose)**	संस्कृति और साहित्य का परस्पर सम्बंध - भारत एक है - हेच. आई. वी (Aids)
Unit-II: कथा लोक **(Short stories)**	में डर गई जरिया- भूख हड़ताल - परमात्मा का कुत्ता
Unit-III: व्याकरण **(Grammar)**	कार्यालय हिन्दी (Changing Administrative Terminology Hindi to English and English to Hindi)
Unit-IV: व्याकरण **(Grammar)**	अपने वाक्यों में शब्द प्रयोग (कार्यालयी हिन्दी - (हिन्दी से अंग्रेजी)) - संधि विच्छेद
Unit-V: पत्र लेखन **(Letter Writing)**	आवेदन पत्र

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(Dr. B. Venkateswara Rao)
Chairman, BOS (Hindi) ANO

Hindi-III

Prose-Gadya Sandesh - V.L. Narasimha Sinha

Unit-I: काव्यदीप
(Ancient and Modern Poetry)

कबीरदास – साखी तुलसी के दोहे (1 to 10)
सूरदास का बाल वर्णन – मातृभूमि- तोड़ती पत्थर-
गीत फरोश्ते भारत माता

Unit-II: हिन्दी साहित्य का इतिहास
(History of Hindi Literature)

भक्तिकाल - ज्ञानश्रयी शाखा-कबीर - प्रेमाश्रयी शाखा-जायसी

Unit-III: साधारण निबन्ध
(General Essays)

समाचार पत्र - बेकारी की समस्या – कम्प्यूटर - पर्यावरण और प्रदूषण - साहित्य और समाज

Unit-IV: अनुवाद
(Translation)

अनुवाद अभ्यास से हिन्दी ~~(Four or Five lines)~~ five sentences of one line each)

Unit-V: प्रयोजनमूलक हिन्दी
(Functional Hindi)

परिपत्र ज्ञापन

8

18/7/2016
(Dr. B. Venkateswara Rao)
Chairman, BOS (Hindi) ANU

Andhra Pradesh State Council of Higher Education : Hyderabad

Foundation Courses under CBCS; Revised Syllabi

For All Degree Programmes

w.e.f. 2015-16 (Revised in May 2016)

As a part of curriculum upgradation, Semester and CBCS systems were introduced in all affiliated colleges in Andhra Pradesh from 2015-16. As an effective part of the overall curriculum, Foundation Courses were introduced with an aim to prepare students in the required basic skills and values in diverse areas. Hence, courses covering a broad spectrum were introduced. The following are the revised syllabi of the ten Foundation Courses, each with 30 teaching hours per semester and worth 2 credits. They were spread in the first four semesters.

Sno	Foundation Course	Sem	Hrs/ Week	Total Hrs	Credits	Marks
1	Human Values and Professional Ethics	I	2	30	2	50
2	Environmental Studies	I	2	30	2	50
3	Information and Communication Technology (ICT) – 1	II	2	30	2	50
4	Communication and Soft Skills (CSS)-1	II	2	30	2	50
5	Information and Communication Technology (ICT) – 2	III	2	30	2	50
6	Communication and Soft Skills (CSS)-2	III	2	30	2	50
7	Communication and Soft Skills (CSS)-3	IV	2	30	2	50
8	Analytical Skills	IV	2	30	2	50
9	Entrepreneurship	IV	2	30	2	50
10	Leadership Education	IV	2	30	2	50

The objective of the foundation courses is to create awareness among students and train them in the skills of the course concerned. Hence, teaching learning may be focused, and limited to the hours prescribed.

Foundation Course – 1

I. HUMAN VALUES AND PROFESSIONAL ETHICS
Common for BA/BCom/BSc/BBA/BCA Programmes

I Semester (Total 30 Hrs)

Unit-I : Introduction to Value Education

1. Value Education, Definition, Concept and Need for Value Education
2. The Content and Process of Value Education
3. Self-Exploration as a means of Value Education
4. Happiness and Prosperity as parts of Value Education

Unit-II : Harmony in the Human Being

1. Human Being is more than just the Body
2. Harmony of the Self ('I') with the Body
3. Understanding Myself as Co-existence of the Self and the Body
4. Understanding Needs of the Self and the Needs of the Body

Unit-III : Harmony in the Family and Society and Harmony in the Nature

1. Family as a basic unit of Human Interaction and Values in Relationships
2. The Basics for respect and today's Crisis : Affection, Care, Guidance, Reverence, Glory, Gratitude and Love
3. Comprehensive Human Goal : The Five dimensions of Human Endeavour

Unit-IV : Social Ethics

1. The Basics for Ethical Human conduct
2. Defects in Ethical Human Conduct
3. Holistic Alternative and Universal order
4. Universal Human Order and Ethical Conduct

Unit-V : Professional Ethics

1. Value Based Life and Profession
2. Professional Ethics and Right Understanding
3. Competence in Professional Ethics

4. Issues in Professional Ethics – The Current scenario
5. Vision for Holistic Technologies, Production System and Management Models

Reference Books :

1. A.N.Tripaty, Human Values, New Age International Publishers, 2003
2. Bajpai.B.L., Indian Ethos and Modern Management, New Royal Book Co., Lucknow, Reprinted, 2004
3. Bertrand Russell, Human Society in Ethics and Politics
4. Corliss Lamont, Philosophy of Humanism
5. Gaur.R.R., Sangal.R, Bagaria.G.P., A Foundation Course in Value Education, Excel Books, 2009
6. Gaur.R.R., Sangal.R, Bagaria.G.P., Teacher's Manual, Excel Books, 2009
7. I.C.Sharma, Ethical Philosophy of India, Nagin & Co., Julundhar
8. Mortimer.J.Adler, What Man has Made of Man
9. R.Subramanian, Professional Ethics, Oxford University Press
10. Text Book for Intermediate Ethics and Human Values, Board of Intermediate Education & Telugu Academy, Hyderabad
11. William Lilly, Introduction to Ethics, Allied Publishers

Foundation Course – 2

ENVIRONMENTAL STUDIES

Common for BA/BCom/BSc/BBA/BCA Programmes

Semester – I (Total 30 Hours)

Unit-I : Natural Resources: 6 Hrs

Definition, scope and importance. Need for public awareness.

Brief description of;

- Forest recourses: Use and over-exploitation. Deforestation; timber extraction, mining, dams. Effect of deforestation environment and tribal people
- Water resources: Use and over–utilization. Effects of over utilisation of surface and ground water. Floods, drought.
- Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.

- Food resources: World food problems, Effects of modern agriculture; fertilizer-pesticide, salinity problems.
- Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources.
- Land resources: Land as resources, land degradation, man induced landslides, soil erosion and desertification

Unit-II : Ecosystems, Biodiversity and its conservation **6 Hrs**

- Concept of an ecosystem
- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Food chains, food webs and ecological pyramids
- Characteristic features of the following ecosystems:-

Forest ecosystem, Desert ecosystem, Aquatic ecosystem.

- Value of biodiversity: Consumptive use, productive use. Biodiversity in India.
- Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts.
- Endangered and endemic species of India
- Conservation of biodiversity

Unit-III : Environmental Pollution **6 Hrs**

- Definition
- Causes, effects and control measures of :-
  a. Air pollution
  b. Water pollution
  c. Soil pollution
  d. Noise pollution
- Solid waste management; Measures for safe urban and industrial waste disposal
- Role of individual in prevention of pollution
- Disaster management: Drought, floods and cyclones

Unit-IV : Social Issues and the Environment **6 Hrs**

- From Unsustainable to Sustainable development
- Water conservation, rain water harvesting, watershed management.
- Climate change, global warming, ozone layer depletion,
- Environment protection Act
- Wildlife Protection Act, Forest Conservation Act

Unit-V : Human Population and the Environment **6 Hrs**

- Population explosion, impact on environment.
- Family welfare Programme
- Environment and human health

- Women and Child Welfare
- Value Education
- Role of Information Technology in Environment and humanhealth.

Reference Books :

1. Environmental Studies by Dr.M.Satyanarayana, Dr.M.V.R.K.Narasimhacharyulu, Dr.G. Rambabu and Dr.V.VivekaVardhani, Published by Telugu Academy, Hyderabad.
2. Environmental Studies by R.C.Sharma, Gurbir Sangha, published by Kalyani Publishers.
3. Environmental Studies by Purnima Smarath, published by Kalyani Publishers.

Foundation Course – 3

INFORMATION & COMMUNICATION TECHNOLOGY –1 (ICT-1)
Computer Fundamentals and Office Tools

Common for all DegreeProgrammes

II Semester

(30 Hours of Teaching Learning including Lab)

Unit-I:

Basics of Computers : Definition of a Computer - Characteristics and Applications of Computers – Block Diagram of a Digital Computer – Classification of Computers based on size and working – Central Processing Unit – I/O Devices.

Unit-II:

Primary, Auxiliary and Cache Memory – Memory Devices. Software, Hardware, Firmware and People ware – Definition and Types of Operating System – Functions of an Operating System – MS-DOS – MS Windows – Desktop, Computer, Documents, Pictures, Music, Videos, Recycle Bin, Task Bar – Control Pane.

Unit-III:

MS-Word

Features of MS-Word – MS-Word Window Components – Creating, Editing, Formatting and

Printing of Documents – Headers and Footers – Insert/Draw Tables, Table Auto format –

Page Borders and Shading – Inserting Symbols, Shapes, Word Art, Page Numbers, Equations – Spelling and Grammar – Thesaurus – Mail Merge

Unit-IV:

MS-PowerPoint

Features of PowerPoint – Creating a Blank Presentation - Creating a Presentation using a

Template - Inserting and Deleting Slides in a Presentation – Adding Clip Art/Pictures - Inserting Other Objects, Audio, Video - Resizing and Scaling of an Object – Slide Transition – Custom Animation

Unit-V:

MS-Excel

Overview of Excel features – Creating a new worksheet, Selecting cells, Entering and editing Text, Numbers, Formulae, Referencing cells – Inserting Rows/Columns – Changing column widths and row heights, auto format, changing font sizes, colors, shading.

Reference Books:

1. Fundamentals of Computers by ReemaThareja, Publishers : Oxford University Press,
India
2.Fundamentals of Computers by V.Raja Raman, Publishers : PHI
3. Microsoft Office 2010 Bible by John Walkenbach, Herb Tyson, Michael R.Groh and FaitheWempen, Publishers : Wiley

Foundation Course - 5

INFORMATION & COMMUNICATION TECHNOLOGY –2 (ICT-2)
Internet Fundamentals and Web Tools

Common for BA / BCom / B Sc / BBA Programmes

III Semester

(30 Hours of Teaching Learning including Lab)

Unit-I :

Fundamentals of Internet : Networking Concepts, Data Communication – Types of Networking, Internet and its Services, Internet Addressing – Internet Applications – Computer Viruses and its types – Browser –Types of Browsers.

Unit-II:

Internet applications: Using Internet Explorer, Standard Internet Explorer Buttons, Entering a Web Site Address, Searching the Internet – Introduction to Social Networking: twitter, tumblr, Linkedin, facebook, flickr, skype, yelp, vimeo, yahoo!, google+, youtube,

WhatsApp, etc.

Unit-III :

E-mail : Definition of E-mail - Advantages and Disadvantages – UserIds, Passwords, Email Addresses, Domain Names, Mailers, Message Components, Message Composition, Mail Management,Email Inner Workings.

Unit IV:

WWW- Web Applications, Web Terminologies, Web Browsers,URL – Components of URL, Searching WWW – Search Engines and Examples

Unit-III :

Basic HTML: Basic HTML – Web Terminology – Structure of a HTML Document – HTML, Head and Body tags – Semantic and Syntactic Tags – HR, Heading, Font, Image and Anchor Tags –Different types of Lists using tags – Table Tags, Image formats – Creation of simple HTML Documents.

Reference Books :

1. In-line/On-line : Fundamentals of the Internet and the World Wide Web, 2/e - by Raymond Greenlaw and Ellen Hepp, Publishers : TMH

Foundation courses 4, 6 & 7

COMMUNICATION SKILLS AND SOFT SKILLS

(Three papers spread over three Semesters)

(Each Paper: Total 30 hours of Teaching Learning)

The course helps the student hone their four skills – listening, speaking, reading, and writing – and also initiates them into the fifth skill, "thinking," in English. The learner-friendly material and the task-based activities enhance their communicative competence. The course focuses on all the four areas of knowledge and skill that constitute Communicative Competence: Linguistic/Grammatical Competence, Sociolinguistic Competence, Discourse Competence, and Strategic Competence. It also aims at equipping the student with a wide range of sub-skills: understanding gist in listening; skimming and scanning in reading; pronunciation andintonation, fluency, accuracy, and appropriacy in speaking; and organizational and editing skills in writing. In addition, the course helps the student acquire knowledge of soft skills. Thus the three-semester course helps the learner in their personal life as well as their professional life. The efficacy of the course largely depends on continuous and consistent practice by the students in and outside the classroom. Therefore, the designed content and the modules

thereof provide ample scope for activity based learning. The teacher shall ensure the conduct of activity in the classroom meticulously as per the syllabus.

Foundation Course - 4

COMMUNICATION SKILLS AND SOFT SKILLS-1 (CSS -1)

COURSE CONTENT(30 hours)

Vocabulary is considered the key to communication and it plays a great role for learners in acquiring a language. The first unit, therefore, is on the different aspects of vocabulary.Since English is a predicate-oriented language, there are two units on grammar focusing on the verb phrase.Listening and speaking are the two receptive skills. Listening is the basic skill of communication, and reading helps a person refine their writing skills. Unit IV and Unit V are on listening and reading respectively.

Unit I: Vocabulary Building
1a. Prefixes and Suffixes
1b. Conversion
1c. Compounding
1d. Analogy
2. One-Word Substitutes
3. Words Often Confused
4. Synonyms and Antonyms
5. Phrasal Verbs

Unit II: Grammar - 1
1. Types of Verbs
2. Subject-Verb Agreement

Unit III: Grammar - 2
1. Meanings of Modals
2. Tense (Present and Past) and Aspect
3. The Several Possibilities for Denoting Future Time
4. Articles and Prepositions

Unit IV: Listening Skills
1. The Importance of Listening

2. Types of Listening
3. Barriers/Obstacles to Effective Listening
4. Strategies for Effective Listening

Unit V: Reading Skills
1. Skimming
2. Scanning
3. Intensive Reading and Extensive Reading
4. Comprehension

Foundation Course - 6

COMMUNICATION SKILLS AND SOFT SKILLS-2 (CSS -2)

COURSE CONTENT(30 hours)

CSS 02 aims at improving the speaking skills of the learner. For many learners of English, the sound-spelling relationship of the language appearsanarchic. Another problem many Indian learners face is English word accent. Unit I and Unit II help learners overcome these problems to a great extent. The remaining units are on the two productive skills, speaking and writing. The techniques of day-to-day conversations and the important characteristics of interviews and GDs presented in this course strengthen the learner's speaking skills. The last unit presents various aspects of presentation in writing.

Unit I: Pronunciation - 1
The Sounds of English

Unit II: Pronunciation – 2
1. Word Accent
2. Intonation

Unit III: Speaking Skills -1
1. Conversation Skills
2. Interview Skills
3. Presentation Skills
4. Public Speaking

Unit IV: Speaking Skills -2
1. Role Play
2. Debate

3. Group Discussion

Unit V: Writing Skills

1. Spelling
2. Punctuation
3. Information Transfer
    - Tables
    - Bar Diagrams
    - Line Graphs
    - Pie Diagrams
    - Flow Charts
    - Tree Diagrams
    - Pictures

Foundation Course -7

COMMUNICATION SKILLS AND SOFT SKILLS-3 (CSS -3)

COURSE CONTENT(30 hours)

A current axiom is that hard skills will get a person an interview, but soft skills will get that person the job. Unit I of the course is on soft skills, which are absolutely necessary in the global job market. Writing is considered the most difficult of all the skills. Units II to V help the learner improve their writing skills, especially academic/formal writing.

Unit I: Soft Skills

1. Positive Attitude
2. Body Language
3. SWOT/SWOC Analysis
4. Emotional Intelligence
5. Netiquette

Unit II: Paragraph Writing

1. Paragraph Structure
2. Development of Ideas

Unit III: Paraphrasing and Summarizing

1. Elements of Effective Paraphrasing
2. Techniques for Paraphrasing
3. What Makes a Good Summary?

4. Stages of Summarizing

Unit IV: Letter Writing

1. Letter Writing (Formal and Informal)
2. E-correspondence

Unit V:

1. Resume and CV
2. Cover Letter

SEMESTER-END EXAMINATION

Pattern of the Question Paper for CSS 01

Time: 2 Hours **Maximum Marks: 50**

Part - A

1. Comprehension - 5 Marks(Five Multiple Choice Questions)

Part - B

2. Objective Type Questions - 20 Marks (Twenty Multiple Choice Questions)

Part - C

3. One Word Answers - 10 Marks (Ten Questions)

Part - D

4. One Sentence Answers - 10 Marks (Five Questions)

Part - E

5. Matching - 5 Marks (5=6)

Reference Books:

Commissionerate of Collegiate Education, Government of Andhra Pradesh (2015) *JKC -Communication Skills and Soft Skills*: *Student's Book*

Sethi, J., and P.V. Dhamija (1999) *A Course in Phonetics and Spoken English* New Delhi: Prentice-Hall of India

Daniel Jones (2011)*English Pronouncing Dictionary* (18th Edition) Ed. Peter Roach, Jane Setter, and John Esling

Quirk, Randolph and Sydney Greenbaum (1973) *A University Grammar of English*. Harlow: Longman. Chapters 2, 3, and 7

White, Goodith (2010) *Listening (Resource Book for Teachers)*. Oxford University Press

Nageshwar Rao and Rajendra P. Das (2009) *Communication Skills*. Mumbai: Himalaya Publishing House

Burton, S.H. (1983) *Mastering English Language*. The Macmillan Press Limited Chapter 3: Comprehension

Grellet, Francoise (2007) *Developing Reading Skills*. Cambridge University Press

Roberts, Rachael, Joanne Gakonga, and Andrew Preshous (2004) *IELTS Foundation: Student's Book*. Oxford: Macmillan Education

Roberts, Rachael, Joanne Gakonga, and Andrew Preshous (2004) *IELTS Foundation: Study Skills*. Oxford: Macmillan Education

Foundation Course - 8

ANALYTICAL SKILLS

Syllabus, Forall Degree Programmes.

w.e.f. 2015-16 (Revised in April, 2016)

Semester – IV (Total 30 Hrs)

UNIT – 1

Data Analysis:-The data given in a Table, Graph, Bar Diagram, Pie Chart, Venn diagram or a passage is to be analyzed and the questions pertaining to the data are to be answered.

UNIT – 2

Sequence and Series:- Analogies of numbers and alphabets completion of blank spaces following the pattern in A:b::C: d relationship odd thing out; Missing number in a sequence or a series.

UNIT - 3

Arithmetic ability:-Algebraic operations BODMAS, Fractions, Divisibility rules, LCM&GCD (HCF).

Date, Time and Arrangement Problems: Calendar Problems, Clock Problems, Blood Relationship.

UNIT - 4

Quantitative aptitude:- Averages, Ration and proportion, Problems on ages, Time-distance – speed.

UNIT – 5

Business computations:- Percentages, Profit &loss, Partnership, simple compound interest.

Reference Books:

1. Quantitative Aptitude for Competitive Examination by R S Agrawal, S.Chand publications.
2. Quantitative Aptitude and Reasoning by R V Praveen, PHI publishers.
3. Quantitative Aptitude : Numerical Ability (Fully Solved) Objective Questions, Kiran Prakashan, Pratogitaprakasan, Kic X, Kiran Prakasan publishers
4. Quantitative Aptitude for Competitive Examination by Abhijit Guha, Tata Mc Graw hill publications.
5. Old question Paper of the exams conducted by (Wipro, TCS, Infosys, Etc) at their recruitment process, source-Internet.

Note: The teachers/students are expected to teach /learn the contents by not converting them to the problems of algebra at the maximum possible extent, but to use analytical thinking to solve the exercises related to those topics. This is the main aim of the course.

Foundation Course - 9

ENTREPRENEURSHIP

Syllabus, Forall Degree Programmes.

w.e.f. 2015-16 (Revised in April, 2016)

Semester – IV (Total 30 Hrs)

Unit-I: Entrepreneurship: Entrepreneur characteristics – Classification of Entrepreneurships – Incorporation of Business – Forms of Business organizations –Role of Entrepreneurship in economic development – Start-ups.

Unit-II: Idea Generation and Opportunity Assessment: Ideas in Entrepreneurships – Sources of New Ideas – Techniques for generating ideas – Opportunity Recognition – Steps in tapping opportunities.

Unit-III: Project Formulation and Appraisal : Preparation of Project Report –Content; Guidelines for Report preparation – Project Appraisal techniques –economic – Steps Analysis; Financial Analysis; Market Analysis; Technical Feasibility.

Unit-iv: Institutions Supporting Small Business Enterprises: Central level Institutions: NABARD; SIDBI, NIC, KVIC; SIDIO; NSIC Ltd; etc. – state level Institutions –DICs- SFC- SSIDC- Other financial assistance.

Unit-V: Government Policy and Taxation Benefits: Government Policy for SSIs- tax Incentives and Concessions –Non-tax Concessions – Rehabilitation and Investment Allowances.

Reference Books:

1. Arya Kumar, Entrepreneurship, Pearson, Delhi, 2012.

2. Poornima M.CH., Entrepreneurship Development –Small Business Enterprises, Pearson, Delhi,2009

3. Michael H. Morris, ET. al., Entrepreneurship and Innovation, Cen gage Learning, New Delhi, 2011

4. KanishkaBedi, Management and Entrepreneurship, Oxford University Press, Delhi, 2009

5. Anil Kumar, S., ET.al., Entrepreneurship Development, New Age International Publishers, New Delhi, 2011

6. Khanka, SS, Entrepreneurship Development, S. Chand, New Delhi.

7. Peter F. Drucker,Innovation and Entrepreneurship.

8. A.Sahay, M. S. Chhikara, New Vistas of Entrepreneurship: Challenges &Opportunities.

Foundation Course - 10

LEADERSHIP EDUCATION

Syllabus, Forall Degree Programmes.

w.e.f. 2015-16 (Revised in April, 2016)

Semester – IV (Total 30 Hrs)

1. Organisation – Management – Leadership –Meaning and Significance – Different theories – Trait Theory, Blake &Mountan Theory – Other functions of Management.
2. Behavioral Concepts – Individual Behaviour – Perception – Learning – Attitude Formation and Change – Motivation – Theories of Motivation – Personality Development.
3. Interpersonal Behaviour – Communication – Leadership – Influencing Relations – Transactional Analysis.
4. Group Dynamics – Roles – Morale – Conflict – Groups – Inter-Group Behaviour – Inter-Group Collaboration and Conflict Management.
5. Team Building and Management – Developing team resources – Designing team – Participation and Repercussion – Team building activities.

Reference Books:

1. Fred Luthans, “Organizational Behaviour”, Tata McGraw Hill Publishing Co., New Delhi.
2. Robins, Stephen P, “OrganisationalBehaviour”, 9th Edition, Prentice Hall of India, New Delhi.
3. Koontz and O “Donnell”, Essentials of Management,Tata McGraw Hill Publishing Co., New Delhi, 2000.
4. Keith Davis, “Human Behaviour at Work”, Tata McGraw Hill Publishing Co., New Delhi.
5. Aswathappa,”OrgnizationalBehaviour”, Himalaya Publishing House, Mumbai
6. Stoner Freeman, “Management”, Prentice Hall of India, New Delhi.