HINDU COLLEGE : : GUNTUR



SYLLABUS

HAND BOOK

2020-21 onwards

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
CBCS Syllabus Review Committee

CBCS Syllabus Revision, 2019 - 20
Framework and Guidelines for Preparing Syllabus for V Semester Skill Enhancement Courses (SECs)

A. FRAMEWORK

I. Framework for BA & BSc:

1. A total of 6 Skill Enhancement Courses (SECs) will be offered in Semester V, two from each of the Major Domain Subjects in a programme. For example, BA-HEP will have two SECs each for History, Economics and Political Science. BSc MPC will have two SECs each for Mathematics, Physics and Chemistry.
2. The two SECs will be Course-6 and Course-7 (Courses 1 to 5 of each domain subject will be offered as core courses from semesters 1 to 4) of the respective domain subjects.
3. The two SECs can be linearly linked or related to each other, as far as possible (*for example, (SEC-1) Tourism and (SEC-2) Archeology* OR *(SEC-1) Analytical Methods in Chemistry and (SEC-2) Environmental Chemistry*). This is (a) to give students a wider experience in the same/related area and (b) to avoid too many skills areas (already the student is pursuing 3 different domain subjects HEP or MPC)
4. The two SECs can be termed as one 'pair' of courses for each domain subject.
5. Since the SECs are Electives under CBCS, at least three 'pairs' are to be offered by the institution to the students from which 'one pair' will be chosen by students.
6. The minimum total SEC 'pairs' offered for three domain subjects will be 9 (3x3 pairs i.e., 18 courses) for a BA/BSc Programme, of which a student chooses one pair for each domain subject.
7. More than three pairs can also be offered enhancing the selection range to students.

II. Framework for B.Com:

1. There will be Six SECs for B.Com. Programme in Semester V as in case of BA/BSc.
2. Since B.Com. students pursue only one major domain subject, i.e., Commerce, all six SECs will belong to Commerce.
3. However, the Six SECs are offered as 3 pairs preferably in 3 areas to avoid studying six altogether different skills. In each pair, the two SECs will be linked or related, as far as possible (*for example, (SEC-1) Advertising and (SEC-2) Sales Promotion).*
4. To give choice under CBCS to students, a total of 9 SEC sets (18 Courses) will be offered in each college. Therefore, a total of 18 SECs are to be prepared for B.Com. That means skills in a total of 9 areas of Commerce will be offered. Student can choose three pairs.

III. Hours, Credits and Marks for BA, BCom & BSc:

The details of hours, credits and marks for BA and BSc are as shown below.

Table-1: for BA Programme

Sem	*Domain Sub*	*Course*	*Hours/wk*	*Credits*	*Max Marks*	*Remarks*
V	1 (ex. History)	Course – 6	5	4	100	
		Course – 7	5	4	100	
	2 (ex. Economics)	Course – 6	5	4	100	
		Course – 7	5	4	100	
	3 (ex. Pol Sci)	Course – 6	5	4	100	
		Course – 7	5	4	100	

Table-2: for B.Sc. Programme:

Sem	*Domain Sub*	*Course*	*Hours/wk Theo+Pra*	*Credits*	*Max Marks*	*Remarks*
V	1 (ex. Botany)	Course – 6	3+3	3+2	100 +50	
		Course – 7	3+3	3+2	100 +50	
	2 (ex. Zoology)	Course – 6	3+3	3+2	100 +50	
		Course – 7	3+3	3+2	100 +50	
	3 (ex. Chemistry)	Course – 6	3+3	3+2	100 +50	
		Course – 7	3+3	3+2	100 +50	

* Credits for science subjects will be higher as they have more hours, additional practical component and higher max marks.

** For science subjects like Mathematics, hours and credits are 6 and 5. Max marks will be 100.

Table-3: for B.Com. Programme:

Sem	*Domain Sub*	*Course*	*Hours/wk*	*Credits*	*Max Marks*	*Remarks*
V	Commerce Area-1	Course – 16	5	4	100	
		Course – 17	5	4	100	
	Commerce Area-2	Course – 18	5	4	100	
		Course – 19	5	4	100	
	Commerce Area-3	Course – 20	5	4	100	
		Course – 21	5	4	100	

IV. The Format:

The overall format for the curriculum of SECs will be more or less the same as Core Courses 1 to 5, and as shown below.

1. **Title** of the Course along with other details, total hours, maximum marks etc.
2. **Outcomes**: Not more than five. Shall focus on skills outcomes along with knowledge outcomes. There is no need for writing 'Objectives' of the SEC.
   (Outcomes are different from objectives and are usually written as possible future attainments. For example, outcomes in Economics can be written like this.
   At the end of the course the student will be able to;

i. *Analyse the annual budget of the country/state.*

ii. *Prepare a real time budget document …..*)

3. **Syllabus Content**: Will consist of Five units. Unlike the Core Courses, SEC syllabus content will be more oriented towards learning of field related skills rather than mere

knowledge content by students. The skills to be learnt by students shall match with 'Outcomes' mentioned.

4. **Hours**: Total classroom/lab/field hours for each course: 90 in Science (incl. Maths) and 75 in Arts/Commerce.

a. Science subjects: The total 90 hours include 80 hours of theory and practical classes in classroom and lab, 10 hours for imparting field related skills in the lab/field and 05 hours for training in the field by the teacher. The remaining 05 hrs are for other activities including unit tests.

b. Arts and Commerce subjects: 65 hours for teaching and other activities including tests etc. and10 hours for training in the actual field related skills in the classroom/field by the teacher.

5. **Maximum Marks**: Maximum marks for a SEC in arts/commerce are 100 (incl IE). For a SEC in science:150 (theory, incl IE:100 and Practical: 50) as in core courses.
6. **References**: list of textbooks/practical/field manuals/reference books and web sources.
7. **Co-curricular activities:** Mandatory and Suggested**.**

a) Mandatory:

1. As suggested above teacher shall impart actual field related skills to students for 15 hours in Science and 10 hours in Arts/Commerce subjects in the classroom/lab/field. A list of suggested skills (based on the syllabus of the course) to be taught to students in the classroom/lab/field may be recommended under this title. The skills suggested may be related to the outside field/agency/lab/industry concerned.

2. Field work will be mandatory for students of both science and arts/commerce domains for learning/practicing skills (this is in addition to the laboratory work and record in case of science subjects). The curriculum document may suggest some areas of field work related to the SEC.

3. Each student has to submit a simple, hand-written Fieldwork Report on white paper not exceeding 10 pages as an evidence of his/her work in the field. A maximum of 5 marks may be allotted for this report from the Internal Assessment quota.
4. A format for the Fieldwork Report may be suggested for the SEC.

b) **Suggested Co-curricular activities**: a few co-curricular activities like assignments, seminars, invited lectures, group discussion, quiz, compilation of information including model documents, photographs of tools/equipment, visits, preparation of videos etc. may be suggested under this title.

B. **GUIDELINES**

1. SECs are different from Core Courses as well as SDCs. SDCs are introductory courses for general skills whereas SECs belong to the Domain Subject Concerned. The scope of SDC is small (2 hrs and 2 credits) while the scope of SEC is larger (5hrs and 4 credits for arts/commerce and 6hrs and 5 credits for science).
2. Curricula for SECs are to be prepared keeping in mind the students of urban, rural and remote areas including slow learners. The intention is to inculcate skills related to the

domain subjects that are practiced in markets, industry, agencies around the college. The college shall be able to inculcate the skill with its available resources.

3. Since the main objective of SECs is to inculcate the skills related to the areas of domain subject concerned, the curriculum has to cover aspects such as knowledge, protocols of skills and practicing of skills in classroom/lab/field.
4. It is desirable that the skills part in the syllabus may be not less than 30%.
5. The skills to be included in SECs, whether simple or advanced, shall be currently in practice in the field and available in all areas of the State. No use of including outdated skills.
6. As there will not be any separate practical examination for SECs in Arts and Commerce, the student shall answer the skills part also theoretically. Hence, terms with high technicality and complicated procedures shall be avoided.
7. The existing domain subject lecturers shall be able to teach all the skills of the SECs concerned.
8. It is desirable that the format for field work report is very simple and short so that students of remote areas will also be able to prepare and submit.
9. The fact that our arts and commerce classrooms will have large student strengths shall be kept in mind while choosing the skills for syllabus.
10. It is essential that the syllabus document is prepared in Word file with 12 Times New Roman font and in 'No Space' style. Tables copied and pasted from other files like pdf, MS power point & Excel etc. will seriously hamper correcting and editing. It is important that use of disabled tables in the syllabus document is avoided. Bolding, italicizing and colouring of sentences may be rare and for the purpose only.
11. Templates will be circulated, and the format is adhered to.

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HINDU COLLEGE : : GUNTUR



LANGUAGES

SYLLABUS

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,
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SYLLABUS VETTED BY

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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, నుగాగమ,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, ఛేకానుప్రాస లాటానుప్రాస, అంత్యానుప్రాస)

ఛందస్సు

వృత్తాలు: ఉత్పలమాల, చంపకమాల, శార్దూలము, మత్తేభము;

జాతులు : కందం, ద్విపద; ఉపజాతులు : ఆటవెలది, తేటగీతి, సీసం మరియు ముత్యాలసరాలు

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

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.

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

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

అ-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.

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 నేర్వడంతో పాటు వారిలో రచనా నైపుణ్యాలను పెంపొందించుకోగలరు.
5. సృజన రంగం, ప్రసారమాధ్యమ రంగాల్లో ఉపాధి అవకాశాలను అందిపుచ్చుకోగలరు.
6. అనువాద రంగంలో నైపుణ్యం సంపాదించగలరు.

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.

SUBJECT EXPERTS

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HINDU COLLEGE : : GUNTUR



SCIENCE SYLLABUS

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 of TMV and Gemini virus; multiplicationof TMV; 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 saprophytes in Bryophyte.

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: On successful completion of this practical course, student shall be ableto;

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, Gemini 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. Virus
   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 /Botany Core Course – 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 Angiospermplants of their localitiesand 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.

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
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- 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 of this course students shall be able to:

1. Demonstrate the techniques of section cutting, preparing slides, identifying of the material and 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 : *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 / taxonomic study of locally available plants belonging to the familiesprescribed in theory syllabus. (Submission of 30 number of Herbarium sheets ofwild 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 Gymnosperms from 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 andand preparation of a report on their taxonomy.
8. Collection of data on plants of ethnic and ethnobotanical importance from their native 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, the students will be able to;

- Understand on the organization of tissues and tissue systems in plants.
- Illustrate and interpret various aspects of embryology.
- Discuss the basic concepts of plant ecology, and evaluate the effects ofenvironmental and biotic factors on plant communities.
- Appraise various qualitative and quantitative parameters to study the population and community ecology.
- Correlate the importance of biodiversity and consequences due to its loss.
- Enlist the endemic/endangered flora and fauna from two biodiversity hot spots inIndia 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. Outlines 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.
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 and 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 andWestern Ghats.
4. Principles 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 Botany Core 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 of this practical 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 biodiversity and 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 stems of *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).
11. Quantitative analysis of herbaceous vegetation in the college campus for frequency, 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', 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/animal
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.

IV Semester/ Botany Core 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;

- Comprehend the importance of water in plant life and mechanisms for transport ofwater 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 food in plants.
- Analyze the biochemical reactions in relation to Nitrogen and lipid metabolisms.
- Evaluate the physiological factors that regulate growth 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.

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.

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 Botany Core Course – 4 / Semester –

IVPlant 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.

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

   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 / Botany Core Course –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 chromosome and the structure of geneticmaterial.
- Demonstrate techniques to observe the cell and its components under amicroscope.
- 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; animal vs plant 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); ultra structure 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 – schemes, and technique; Heterosis(hybrid vigour).
4. 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 structureof plant cell and its organelles using Electron microscopic Photographs/models.

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

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 three 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 five 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 programme with 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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Programme Outcomes:

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 ultra structure of plant cells, inheritance and cropimprovement 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,
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Anantapur

Dr.A.Srinivasa Rao
Lecturer in Botany,
Govt Degree College,
Mandapeta

SYLLABUS VETTED BY

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Dept of Botany and Microbiology,
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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

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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

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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 x 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

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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 x 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

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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 <u>all</u> the following questions. 5 x 2 = 10 M

- ✓ One question should be given from each Unit in the syllabus.

Section – B

Answer any <u>Four</u> 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 <u>five</u> 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.

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 – II Volumetric 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. Explainthe differencebetweensolid,liquidandgasesintermsof intermolecularinteractions.
3. Applytheconceptsofgasequations,pHandelectrolyteswhilestudyingotherchemistrycourses.

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 and Free electron theory, explanation of thermal and electrical conductivity of metals based on these theories, Band theory- formation of bands, explanation of conductors, semiconductors and insulators.

PHYSICAL CHEMISTRY 36h

UNIT-III

Solid state 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. Experimental methods for the determination of molar mass of a non-volatile

solute using 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 analyzed) 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- B5 X 10 = 50 Marks

Answer **ALL** the questions. Each carries **TEN** marks

9 (a). Explain Classification, Preparations & uses of Silicones

(or)

(b). (i) What are Pseudohalogens.
(ii) Explain the Structures of any one AX3& AX_5 interhalogen compounds.

10 (a). What is Lanthanide Contraction? Explain the Consequences of Lanthanide Contraction.

(or)

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

11.(a). Write an essay on Crystal defects.

(or)

(b). What is Bragg's Law. Explain the determination of structure of a crystal by powder method.

12.(a). Derive the relationship between Critical constants &Vanderwaal constants

(or)

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

13.(a). Explain Nernst distribution Law. Explain its applications

(or)

(b). What are colligative properties. Write experimental methods for determination of 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

Recapitulation of Basics of Organic Chemistry

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.
4. Estimation of water of crystallization in Mohr's salt by titrating with $KMnO_4$

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 5 X 10 = 50 Marks

Answer **ALL** the questions. Each carries **TEN** marks

9 (a). (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.

(or)

(b). (i) Explain Baeyer Strain Theory
(ii) Draw the conformations of Cyclohexane and explain their stability by drawing energy profile diagram.

10 (a). (i) Write any two methods of preparation of alkenes.
(ii) Explain the mechanism of Markownikiff and Anti-Markownikoff addition of HBr to alkene.

(or)

(b). (i) Explain the acidity of 1-alkynes
(ii) How will you prepare acetaldehyde and acetone from alkynes?
(iii) Write alkylation reaction of terminal alkne.

11.(a). Define Huckel rule of aromatic compounds. What are benzenoid and non-benzenoid aromatic compounds? Give examples.

(or)

(b). Explain the mechanisms of Nitration and Friedel-Craft's alkylation of Benzene.

12.(a). (i) Define Hardy-Schulze rule & Gold number.
(ii) Differentiate Physisorption& Chemisorption. Explain Langmuir adsorption isotherm.

(or)

(b). Construct the Molecular Orbital diagram for O_2 and NO and explain their bond order and magnetic property.

13.(a). Define racemic mixture. Explain any two techniques for resolution of racemic mixture.

(or)

(b).(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. Chemistry of Halogenated Hydrocarbons: **6h**

Alkylhalides:Methodsofpreparationandproperties,nucleophilicsubstitutionreactions–SN1,SN2andSNimechanismswithstereochemicalaspectsandeffectofsolventetc.;nucleophilicsubstitutionvs. elimination, Williamson's synthesis.

Arylhalides:Preparation(includingpreparationfromdiazoniumsalts)andproperties,nucleophilicaromatic substitution;SNAr,Benzynemechanism.

Relativereactivityofalkyl,allyl,benzyl,vinylandarylhalidestowardsnucleophilicsubstitutionreactions.

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.

Preparationandreactionsofacidchlorides,anhydrides,estersandamides; Comparative study of nucleophilic substitutionatacyl group-Mechanism of acidicandalkaline hydrolysis of esters, Claisencondensation, Reform at sky reactions and Curtius rearrangement

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

Molecular Spectroscopy: **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 of force constant, Harmonic and anharmonic oscillator, Morsepotential curve, vibrational degrees offered for polyatomic molecules, modesofvibration. Selection rules for vibrational transitions, Fundamental frequencies, overtones and hot bands.

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 Continuous Evaluation: Monitoring the progress of student'slearning Class Tests, Work sheets 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 byteachers throughout the semester.

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 5 X 10 = 50 Marks

Answer **ALL** the questions. Each carries **TEN** marks

9 (a). Give the mechanism & stereochemistry of SN^1& SN^2 reactions of alkyl halides with suitable example.

(or)

(b). Explain the following reactions with mechanism.
(i) Reimer-Tiemann reaction (ii) Fries rearrangement.

10 (a). Discuss the mechanism for following reactions.
(i) Perkin reaction. (ii) Cannizaro reaction

(or)

(b). Write the preparation and any three synthetic applications of diethyl malonate.

11.(a). Explain acid and base hydrolysis reaction of esters with mechanism.

(or)

(b). Explain the mechanisms of Curtius rearrangement & Arndt –Eistert reaction.

12.(a). (i) Write a note on vibrational degrees of freedom for polyatomic molecules.
(ii) Explain different modes of vibrations & selection rules in IR spectroscopy.

(or)

(b).(i) Define Bathochromic shift. Explain the effect of conjugation in U.V. spectroscopy.
(ii) Discuss the principle of NMR spectroscopy.

13.(a). Write Woodward-Fieser rules for calculating λmax for conjugated dienes and α,β – unsaturated carbonyl compounds , and apply them for one example each.

(or)

(b).(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**

Definition and classification of organometallic Compounds on the basis of bond type, Concept of hapticity of organicligands. Metalcarbonyls:18electronrule,electroncountofmononuclear, polynuclear and substituted metalcarbonyls of 3dseries.Generalmethods of preparation of mono and binuclear carbonyls of 3dseries.P-acceptor behaviour of carbon monoxide. Synergic effects (VB approach) - (MOdiagram of CO can be referred to for synergic effect to IR frequencies).

UNIT – II

Carbohydrates 8h

Occurrence,classificationandtheirbiologicalimportance,Monosaccharides: Constitution and absolute configuration of glucose and fructose, epimers and anomers, mutarotation, determination of ringsize of glucose and fructose, Haworth projections and conformationalstructures; Interconversions of aldosesandketoses; Killiani-Fischer synthesis and Ruffdegradation; Disaccharides– Elementary treatment of maltose, lactose and sucrose. Polysaccharides–Elementary treatment of 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

Nitrogen Containing Functional Groups

Preparation, properties and important treactions of nitrocompounds, amines and diazonium salts.

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), importance and general methods of preparation.

Properties : Physical properties, Basicity of amines: Effect of substituent, solvent and steric effects. Distinction between Primary, secondary and tertiary aminesusing Hinsberg's method and nitrousacid. Discussion of thefollowing reactions with emphasis on the mechanistic pathway: Gabriel Phthalimide synthesis, Hoffmann- Bromamidereaction, Carbylaminereaction, Mannichreaction, Hoffmann'sexhaustive methylation, Hofmann-elimination reaction and Copeelimination.

Diazonium Salts: Preparation and synthetic applications of diazonium salts including preparation of arenes, haloarenes, phenols, cyano and nitro compounds. Coupling reactions of diazonium salts (preparation of azo dyes).

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- Kirch off 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. Third law of thermodynamics, Nernst heat theorem, Spontaneous and non- spontaneous processes, Helmholtz and Gibbs energies-Criteria for spontaneity.

Co-curricular activities and Assessment Methods Continuous Evaluation : Monitoring the progress of student's learning Class Tests, Work sheets 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 byteachers 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

LABORATORY COURSE -IV 30hrs(2 h / w)

Practical Course-IV Organic 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 5 X 10 = 50 Marks

Answer **ALL** the questions. Each carries **TEN** marks

9 (a). What are organometallic compounds? Discuss their Classification on the basis of type of bonds with examples.

(or)

(b). Discuss the general methods of preparations of mono & bi-nuclear carbonyls of 3d series.

10 (a). Discuss the constitution, configuration and ring size of glucose. Draw the Haworth and Conformational structure of glucose.

(or)

(b). (i) Explain Ruff's degradation.
(ii) Explain Kiliani- Fischer synthesis.

11.(a). What are amino acids? Write any three general methods of preparation of amino acids.

(or)

(b). Discuss the aromatic character of Furan, Thiophene and Pyrrole.

12.(a). Write the mechanism for the following.
(i) Nef reaction (ii) Mannich reaction

(or)

(b).(i) Explain Hinsberg separation of amines.
(ii) Discuss any three synthetic applications of diazonium salts.

13.(a). What is quantum yield? Explain the photochemical combination of Hydrogen-Chlorine and Hydrogen - Bromine.

(or)

(b). 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 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 the irusein structure determination.

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**

Introduction to inorganic reaction mechanisms. Concept of reaction pathways, transitionstate, intermediate and activated complex. Labile and inert complexes, lig and substitution reactions - SN^1 and SN^2,Substitutionreactions in square planar complexes, Trans-effect, the ories 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.

Bioinorganic Chemistry: 8h

Metalions present inbiological systems, classification of elements according to their action in biolog ical system. Geochemical effect on the distribution of metals, Sodium/K- pump, carbonicanhydrase and carboxypeptidase.

Excess and deficiency of sometracemetals. Toxicityofmetalions(Hg,Pb,CdandAs), reasons fortoxicity, Use of chelatingagentsinmedicine, Cisplatinasananti-cancerdrug. Iron and its application in bio-systems, Haemoglobin, Myoglobin. Storage and transfer of iron.

PHYSICAL CHEMISTRY **34 h**

UNIT-III

1 .Phase rule

6Th 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.

Fuel cells- Basic concepts, examples and applications

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. Theories of Reaction Rates: Collision theory and Activated Complex theory of bimolecular reactions. Comparison of the two theories (qualitative treatment only).Enzyme catalysis- Specificity,

factors affecting enzyme catalysis, Inhibitors and Lock & key model. Michaels- Menten equation- derivation, significance of Michaelis-Menten constant.

Co-curricular activities and Assessment Methods Continuous Evaluation: Monitoring the progress of student's learning Class Tests, Work sheets 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 byteachers 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'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

Course V **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 concepts of electrochemistry in experiments
3. Be familiar with electro analytical 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- A 5 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 5 X 10 = 50 Marks

Answer **ALL** the questions. Each carries **TEN** marks

9 (a). Explain Valence Bond theory with Inner and Outer orbital complexes. Write limitations of VBT.

(or)

(b). Define CFSE. Explain the factors effecting the magnitude of crystal field splitting energy.

10 (a). Explain Trans effect. Explain the theories of trans effect and write any two applications of trans effect.

(or)

(b). (i) Write the biological functions of Haemoglobin and Myoglobin.
(ii) Write note on use of chelating agents in medicines.

11.(a). Define Phase rule and terms involved in it. Explain phase diagram of Pb-Ag system.

(or)

(b). (i) Explain phase diagram for NaCl-water system.

(ii) Explain briefly about Freezing mixtures.

12.(a). Define Transport number. Write experimental method for the determination of transport number by Hittorf method.

(or)

(b).(i) Define single electrode potential.
(ii) Explain four types of electrodes with examples.

13.(a). Explain general methods for determination of order of a reaction.

(or)

(b).Explain Collision theory and Activated complex theory of bimolecular reactions.

***

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.

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 Mar-ks	EE Mar-ks	Credits	Prac. Hrs./ Wk	Mar-ks	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.*

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. PhotochemistryofCarbonylcompounds-$n-\pi$and$\pi-\pi^*$transitions,Norrishtype-1and type-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.

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.

***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).

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.

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.

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.

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.

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.

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.

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}.

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.

***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).

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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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.

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.

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

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, microbiology involved in solid waste disposal, methods of solid waste disposal-composting, sanitary landfilling- economic, aesthetic and environmental problems.

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*

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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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.

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.

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.

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)

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.

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?

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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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.

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, 6^{th} edition
7. Chemistry experiments for instrumental methods, Donald T Sawyer William
8. Instrumental methods of analysis, Willard, Merit, Dean, 6^{th} 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).

b) Suggested Co-Curricular Activities:

1. Training of students by related industrial experts.
2. Visitor 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 chromatography.

VII. Suggested Question Paper Pattern and model :

Max.Marks:75 Time:3 hrs

SECTION- A (Total: 10 Marks)
Very Short Answer Questions (5x2=10 Marks)
(Answer any five of the following questions.
Each answer carries 2 marks)

1. Define Precipitation and Coagulation.
2. Explain Iodometric titration with a suitable example.
3. What is Correlation coefficient?
4. What are the methods of expressing Accuracy?
5. Outline the principle involved in Solvent extraction.
6. Write a brief note on Synergism.
7. How can you classify the Chromatographic methods?
8. Explain two dimensional chromatography.
9. Discuss the basic principle involved in HPLC
10. What are stationary and mobile phases?

SECTION - B(Total: 25Marks)
(Answer any five of the following questions.
Each answer carries 5 marks)5x5=25Marks
(At least1 question should be given from each Unit)

1. Define the complex ometrictit rations with examples.
2. Discuss the choice of indictors for the titrations with suitable examples.
3. Write a short note on standard deviation.
4. What are the methods of expressing precision?
5. Describe the development of chromatogram in paper chromatography.
6. Explain the factors affecting Rf values.
7. What type of adsorbents and solvents used in thin layer chromatography?
8. Outline the applications of high performance liquid chromatography

SECTION - C (Total: 40 Marks)
(Answer any four of the following questions.
Each answer carries10 marks) 4x10 = 40 Marks
(At least 1 question should be given from each Unit)

1. Describe the acid-base titrations in detailed.
2. Discuss various types of errors with suitable examples.
3. Explain any two methods for solvent extraction.
4. Write the principle involved and applications of thin layer chromatography. Discuss the preparation of thin layer chromatography plates.
5. Discuss about column chromatography and the important applications.
6. Give the experimental procedure of paper chromatography. Write any two of its applications.

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)

MaxMarks: 100+50

Course7- E: Cosmetics and Pharmaceutical Chemistry
(Skill Enhancement Course (Elective), Credits- 05)

I. Learning Outcomes:

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

1. Explain the principles of formulation and application of Cosmetics & perfumes.
2. Acquire a critical knowledge on synthetic techniques of drugs.
3. Demonstrate the skills in various aspects of the fermentation technology and apply for production.
4. Comprehend the applications offer mentation.

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

Unit- I Chemistry of Cosmetics (8hrs)

A general study including preparation and uses of the following: Hair dye, hair spray, shampoo, suntan lotions, face powder, lipsticks, talcum powder, nail enamel, creams (cold, vanishing and shaving creams), antiperspirants and artificial flavours.

Unit- II Chemistry of Perfumes (8hrs)

Essential oils and their importance in cosmetic industries with reference to Eugenol, Geranial, sandalwood oil, eucalyptus, rose oil, 2-phenyl ethyl alcohol, Jasmine, Civet one, Mascon.

Unit–III Drugs & Pharmaceuticals – I (10hrs)

Drug discovery, design and development; Basic Retrosynthetic approach. Synthesis of the representative drugs of the following classes: analgesics agents, antipyretic agents, anti-inflammatory agents (Aspirin, paracetamol, ibuprofen)

Unit–IV Drugs & Pharmaceuticals - II (12hrs)

Synthesis of the representative drugs of the following classes: Antibiotics (Chloramphenicol); antibacterial and antifungal agents (Sulphonamides; Sulphacetamide, Trimethoprim); antiviral agents (Acyclovir), Central Nervous System agents (Phenobarbital, Diazepam), Cardiovascular (Glycerol triturate), antilaprosy (Daps one), HIV-AIDS related drugs (AZT-Zidovudine).

Unit – V Fermentation (12hrs)

Aerobic and anaerobic fermentation. Production of (i) Ethyl alcohol and citric acid, (ii) Antibiotics; Penicillin, Cephalosporin, Chloromycetin and Streptomycin, (iii) Lysine, Glutamic acid, Vitamin B_2, Vitamin B_{12} and Vitamin C.

III. Lab work-Skills Outcomes:

On successful completion of this practical course, student shall be able to:

1. The ability to develop comprehensive product development programs to meet new product criteria and timing.
2. Acquire skills in the preparation of Cosmeceuticals.
3. Demonstrate proficiency in the experimental techniques for fermentation and microbial production of enzymes.
4. Carry out perfume testing with the knowledge of perfumes.
5. Learn the procedure of synthesis of drugs.

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 lndustrial 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).

<u>b) 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.

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.

5. Outline the synthesis of Chloramphenicol and Sulphonamide.

Draft syllabus prepared by:

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Structure of Computer Science /Information Technology (IT)

Programme: B.Sc. with Computer Science as one of the Core Subjects.
Discipline: Computer Science

Year	Semester	Paper Code	Subject	Hrs. per Week	Credits	IA	ES	Total
First Year	I	C1	Problem Solving in C	4	3	25	75	100
	I	C1-P	Problem Solving in C Lab	2	2		50	50
	II	C2	Data Structures using C	4	3	25	75	100
	II	C2-P	Data Structures using C Lab	2	2		50	50
Second Year	III	C3	Database Management System	4	3	25	75	100
	III	C3-P	Database Management System Lab	2	2		50	50
	IV	C4	Object Oriented Programming using Java	4	3	25	75	100
	IV	C4-P	Object Oriented Programming using Java Lab	2	2		50	50
	IV	C5	Operating Systems	4	3	25	75	100
	IV	C5-P	Operating Systems Lab using C/Java	2	2		50	50

PROBLEM SOLVING IN C

Semester	Course Code	Course Title	Hours	Credits
I	C1	PROBLEM SOLVING IN C	60	3

Objectives:

This course aims to provide exposure to problem-solving through programming. It introduces the concepts of the C Programming language.

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand the evolution and functionality of a Digital Computer.
2. Apply logical skills to analyse a given problem
3. Develop an algorithm for solving a given problem.
4. Understand 'C' language constructs like Iterative statements, Array processing, Pointers, etc.
5. Apply 'C' language constructs to the algorithms towrite a 'C' language program.

UNIT I

General Fundamentals: Introduction to computers: Block diagram of a computer, characteristics and limitations of computers, applications of computers, types of computers, computer generations.

Introduction to Algorithms and Programming Languages: Algorithm – Key features of Algorithms, Flow Charts, Programming Languages – Generations of Programming Languages – Structured Programming Language- Design and Implementation of Correct, Efficient and Maintainable Programs.

UNIT II

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.

Decision Control and Looping Statements: Introduction to Decision Control Statements– Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – Goto Statement

UNIT III

Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array– Operations on Arrays – one dimensional, two dimensional and multi dimensional arrays, character handling and strings.

UNIT IV

Functions: Introduction – using functions – Function declaration/ prototype – Function definition – function call – return statement – Passing parameters – Scope of variables – Storage Classes – Recursive functions.

Structure, Union, and Enumerated Data Types: Introduction – Nested Structures – Arrays of Structures – Structures and Functions– Union – Arrays of Unions Variables – Unions inside Structures – Enumerated Data Types.

UNIT V

Pointers: Understanding Computer Memory – Introduction to Pointers – declaring Pointer Variables – Pointer Expressions and Pointer Arithmetic – Null Pointers - Passing Arguments to Functions using Pointer – Pointer and Arrays – Memory Allocation in C Programs – Memory Usage – Dynamic Memory Allocation – Drawbacks of Pointers

Files: Introduction to Files – Using Files in C – Reading Data from Files – Writing Data to Files – Detecting the End-of-file – Error Handling during File Operations – Accepting Command Line Arguments.

BOOKS

1. E Balagurusamy – Programming in ANSIC – Tata McGraw-Hill publications.
2. Brain W Kernighan and Dennis M Ritchie - The 'C' Programming language" - Pearson publications.
3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publications.
4. YashavantKanetkar - Let Us 'C' – BPB Publications.

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)

A. 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. 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

B. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

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. Problem-solving exercises,
4. Practical assignments and laboratory reports,

5. Observation of practical skills,
6. Individual and group project reports like “Creating Text Editor in C”.
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

Semester	Course Code	Course Title	Hours	Credits
I	**C1-P**	**PROBLEM SOLVING IN C LAB**	**30**	**2**

Problem solving in C LAB

1. Write a program to check whether the given number is Armstrong or not.
2. Write a program to find the sum of individual digits of a positive integer.
3. Write a program to generate the first n terms of the Fibonacci sequence.
4. Write a program to find both the largest and smallest number in a list of integer values
5. Write a program to demonstrate refection of parameters in swapping of two integer values using **Call by Value**&**Call by Address**
6. Write a program that uses functions to add two matrices.
7. Write a program to calculate factorial of given integer value using recursive functions
8. Write a program for multiplication of twoN X N matrices.
9. Write a program to perform various string operations.
10. Write a program to search an element in a given list of values.
11. Write a program to sort a given list of integers in ascending order.
12. Write a program to calculate the salaries of all employees using ***Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary)*** structure.
    a. DA is 30 % of Basic Pay
    b. HRA is 15% of Basic Pay
    c. Deduction is 10% of (Basic Pay + DA)
    d. Gross Salary = Basic Pay + DA+ HRA
    e. Net Salary = Gross Salary - Deduction
13. Write a program to illustrate pointer arithmetic.

14. Write a program to read the data character by character from a file.
15. Write a program to create***Book (ISBN,Title, Author, Price, Pages, Publisher)***structureand store book details in a file and perform the following operations
    a. Add book details
    b. Search a book details for a given ISBN and display book details, if available
    c. Update a book details using ISBN
    d. Delete book details for a given ISBN and display list of remaining Books

DATA STRUCTURES USING C

Semester	Course Code	Course Title	Hours	Credits
II	C2	DATA STRUCTURES USING C	60	3

Course Objectives

To introduce the fundamental concept of data structures and to emphasize the importance of various data structures in developing and implementing efficient algorithms.

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand available Data Structures for data storage and processing.
2. ComprehendData Structure and their real-time applications - Stack, Queue, Linked List, Trees and Graph
3. Choose a suitable Data Structures for an application
4. Develop ability to implement different Sorting and Search methods
5. Have knowledge onData Structures basic operations like insert, delete, search,update and traversal
6. Design and develop programs using various data structures
7. Implement the applications of algorithms for sorting, pattern matching etc

UNIT – I:

Introduction to Data Structures: Introduction to the Theory of Data Structures, Data Representation, Abstract Data Types, Data Types, Primitive Data Types, Data Structure and Structured Type, Atomic Type, Difference between Abstract Data Types, Data Types, and Data Structures, Refinement Stages

Principles of Programming and Analysis of Algorithms: Software Engineering, Program Design, Algorithms, Different Approaches to Designing an Algorithm, Complexity, Big ‘O’ Notation, Algorithm Analysis, Structured Approach to Programming, Recursion, Tips and Techniques for Writing Programs in ‘C’

UNIT – II:

Arrays: Introduction to Linear and Non- Linear Data Structures, One- Dimensional Arrays, Array Operations, Two- Dimensional arrays, Multidimensional Arrays, Pointers and Arrays, an Overview of Pointers

Linked Lists: Introduction to Lists and Linked Lists, Dynamic Memory Allocation, Basic Linked List Operations, Doubly Linked List, Circular Linked List, Atomic Linked List, Linked List in Arrays, Linked List versus Arrays

UNIT – III:

Stacks: Introduction to Stacks, Stack as an Abstract Data Type, Representation of Stacks through Arrays, Representation of Stacks through Linked Lists, Applications of Stacks, Stacks and Recursion

Queues: Introduction, Queue as an Abstract data Type, Representation of Queues, Circular Queues, Double Ended Queues- Deques, Priority Queues, Application of Queues

UNIT – IV:

Binary Trees: Introduction to Non- Linear Data Structures, Introduction Binary Trees, Types of Trees, Basic Definition of Binary Trees, Properties of Binary Trees, Representation of Binary Trees, Operations on a Binary Search Tree, Binary Tree Traversal, Counting Number of Binary Trees, Applications of Binary Tree

UNIT – V:

Searching and sorting: Sorting – An Introduction, Bubble Sort, Insertion Sort, Merge Sort, Searching – An Introduction, Linear or Sequential Search, Binary Search, Indexed Sequential Search

Graphs: Introduction to Graphs, Terms Associated with Graphs, Sequential Representation of Graphs, Linked Representation of Graphs, Traversal of Graphs, Spanning Trees, Shortest Path, Application of Graphs.

BOOKS:

1. “Data Structures using C”, ISRD group Second Edition, TMH

2. “Data Structures through C”, Yashavant Kanetkar, BPB Publications
3. “Data Structures Using C” Balagurusamy E. TMH

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)

A. 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. 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))

B. General

1. Group Discussion
2. Others

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. Programming 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

Semester	Course Code	Course Title	Hours	Credits
II	**C2-P**	**DATA STRUCTURES USING C LAB**	**30**	**2**

1. Write a program to read 'N' numbers of elements into an array and also perform the following operation on an array
    a. Add an element at the begging of an array
    b. Insert an element at given index of array
    c. Update a element using a values and index
    d. Delete an existing element
2. Write a program using stacks to convert a given
    a. postfix expression to prefix
    b. prefix expression to postfix
    c. infix expression to postfix
3. Write Programs to implement the Stack operations using an array
4. Write Programs to implement the Stack operations using Liked List.
5. Write Programs to implement the Queue operations using an array.
6. Write Programs to implement the Queue operations using Liked List.
7. Write a program for arithmetic expression evaluation.
8. Write a program for Binary Search Tree Traversals
9. Write a program to implement dequeue using a doubly linked list.
10. Write a program to search an item in a given list using the following Searching Algorithms
    a. Linear Search
    b. Binary Search.
11. Write a program for implementation of the following Sorting Algorithms
    a. Bubble Sort
    b. Insertion Sort
    c. Quick Sort
12. Write a program for polynomial addition using single linked list
13. Write a program to find out shortest path between given Source Node and Destination Node in a given graph using Dijkstrar's algorithm.

14. Write a program to implement Depth First Search graph traversals algorithm
15. Write a program to implement Breadth First Search graph traversals algorithm

DATABASE MANAGEMENT SYSTEMS

Semester	Course Code	Course Title	Hours	Credits
III	**C3**	**DATABASE MANAGEMENT SYSTEMS**	**60**	**3**

Course Objective:

The objective of the course is to introduce the design and development of databases with special emphasis on relational databases.

Course Learning Outcomes:

On completing the subject, students will be able to:

1. Gain knowledge of Database and DBMS.
2. Understand the fundamental concepts of DBMS with special emphasis on relational data model.
3. Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database
4. Model database using ER Diagrams and design database schemas based on the model.
5. Create a small database using SQL.
6. Store, Retrieve data in database.

UNIT I

Overview of Database Management System: Introduction to data, information, database, database management systems, file-based system, Drawbacks of file-Based System, database approach, Classification of Database Management Systems, advantages of database approach, Various Data Models, Components of Database Management System, three schema architecture of data base, costs and risks of database approach.

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, 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), Functional dependencies and normal forms upto 3rd normal form.

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, Join Operation, Set Operations, View, Sub Query.

UNIT V

PL/SQL: Introduction, Shortcomings of SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control, Procedure, Function, Database Triggers, Types of Triggers.

BOOKS:

1. Database System Concepts by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill
2. Database Management Systems by Raghu Ramakrishnan, McGrawhill
3. Principles of Database Systems by J. D. Ullman
4. Fundamentals of Database Systems by R. Elmasri and S. Navathe
5. SQL: The Ultimate Beginners Guide by Steve Tale.

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)

A. 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. 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

B. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

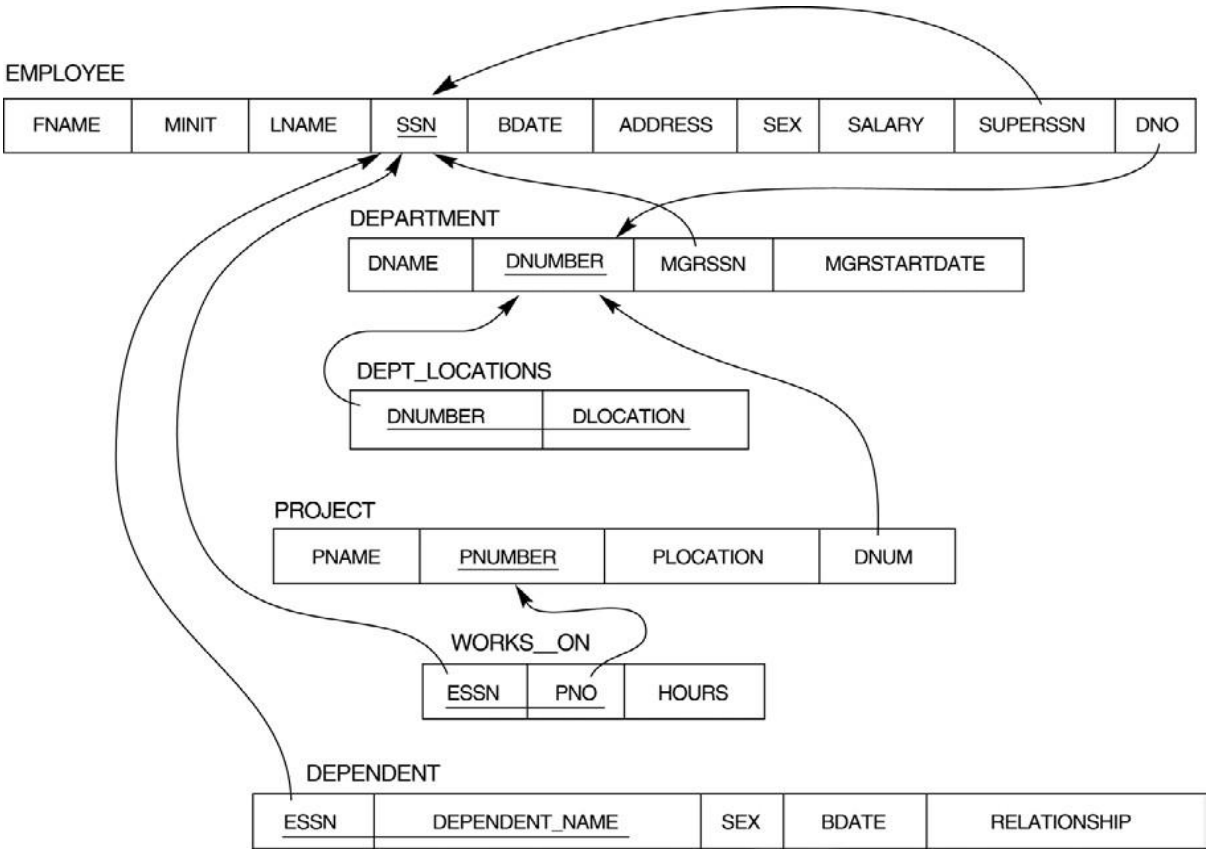
1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Practical assignments and laboratory reports,
4. Observation of practical skills,

5. Individual and group project reports like Create your college database for placement purpose.
6. Efficient delivery using seminar presentations,
7. Viva voce interviews.
8. Computerized adaptive testing, literature surveys and evaluations,
9. Peers and self-assessment, outputs form individual and collaborative work

Semester	Course Code	Course Title	Hours	Credits
III	**C3-P**	**DATABASE MANAGEMENT SYSTEMS LAB**	**30**	**2**

1. Draw ER diagram for hospital administration
2. Creation of college database and establish relationships between tables
3. Relational database schema of a company is given in the following figure.

Relational Database Schema - COMPANY



Questions to be performed on above schema

1. Create above tables with relevant ***Primary Key, Foreign Key and other constraints***
2. Populate the tables with data
3. Display all the details of all employees working in the company.
4. Display ***ssn, lname, fname, address*** of employees who work in department no 7.

5. Retrieve the ***Birthdate and Address*** of the employee whose name is 'Franklin T. Wong'
6. Retrieve the name and salary of every employee
7. Retrieve all distinct salary values
8. Retrieve all employee names whose address is in ‘Bellaire’
9. Retrieve all employees who were born during the 1950s
10. Retrieve all employees in department 5 whose salary is between 50,000 and 60,000(inclusive)
11. Retrieve the names of all employees who do not have supervisors
12. Retrieve SSN and department name for all employees
13. Retrieve the name and address of all employees who work for the 'Research' department
14. For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birth date.
15. For each employee, retrieve the employee's name, and the name of his or her immediate supervisor.
16. Retrieve all combinations of Employee Name and Department Name
17. Make a list of all project numbers for projects that involve an employee whose last name is 'Narayan’ either as a worker or as a manager of the department that controls the project.
18. Increase the salary of all employees working on the 'ProductX' project by 15%. Retrieve employee name and increased salary of these employees.
19. Retrieve a list of employees and the project name each works in, ordered by the employee's department, and within each department ordered alphabetically by employee first name.
20. Select the names of employees whose salary does not match with salary of any employee in department 10.
21. Retrieve the employee numbers of all employees who work on project located in Bellaire, Houston, or Stafford.
22. Find the sum of the salaries of all employees, the maximum salary, the minimum salary, and the average salary. Display with proper headings.
23. Find the sum of the salaries and number of employees of all employees of the ‘Marketing’ department, as well as the maximum salary, the minimum salary, and the average salary in this department.

24. Select the names of employees whose salary is greater than the average salary of all employees in department 10.
25. Delete all dependents of employee whose ***ssn is '123456789'***.
26. Perform a query using alter command to drop/add field and a constraint in Employee table.

OBJECT ORIENTATED PROGRAMMING THROUGH JAVA

Semester	Course Code	Course Title	Hours	Credits
IV	**C4**	**OBJECT ORIENTATED PROGRAMMING THROUGH JAVA**	**60**	**3**

Objectives:

To introduce the fundamental concepts of Object-Oriented programming and to design & implement object oriented programming concepts in Java.

Course Learning Outcomes: At the end of this course student will:

1. Understand the benefits of a well-structured program
2. Understand different computer programming paradigms
3. Understand underlying principles of Object-Oriented Programming in Java
4. Develop problem-solving and programming skills using OOP concepts
5. Develop the ability to solve real-world problems through software development in high-level programming language like Java

UNIT – I

Introduction to Java: Features of Java, The Java virtual Machine, Parts of Java

Naming Conventions and Data Types: Naming Conventions in Java, Data Types in Java, Literals

Operators in Java: Operators, Priority of Operators

Control Statements in Java: if... else Statement, do... while Statement, while Loop, for Loop, switch Statement, break Statement, continue Statement, return Statement

Input and Output: Accepting Input from the Keyboard, Reading Input with Java.util.Scanner Class, Displaying Output with System.out.printf(), Displaying Formatted Output with String.format()

Arrays: Types of Arrays, Three Dimensional Arrays (3D array), arrayname.length, Command Line Arguments

UNIT – II

Strings: Creating Strings, String Class Methods, String Comparison, Immutability of Strings

Introduction to OOPs: Problems in Procedure Oriented Approach, Features of Object-Oriented Programming System (OOPS)

Classes and Objects: Object Creation, Initializing the Instance Variables, Access Specifiers, Constructors

Methods in Java: Method Header or Method Prototype, Method Body, Understanding Methods, Static Methods, Static Block, The keyword 'this', Instance Methods, Passing Primitive Data Types to Methods, Passing Objects to Methods, Passing Arrays to Methods, Recursion, Factory Methods

Inheritance: Inheritance, The keyword 'super', The Protected Specifier, Types of Inheritance

UNIT – III

Polymorphism: Polymorphism with Variables, Polymorphism using Methods, Polymorphism with Static Methods, Polymorphism with Private Methods, Polymorphism with Final Methods, final Class

Type Casting: Types of Data Types, Casting Primitive Data Types, Casting Referenced Data Types, The Object Class

Abstract Classes: Abstract Method and Abstract Class

Interfaces: Interface, Multiple Inheritance using Interfaces

Packages: Package, Different Types of Packages, The JAR Files, Interfaces in a Package, Creating Sub Package in a Package, Access Specifiers in Java, Creating API Document

Exception Handling: Errors in Java Program, Exceptions, throws Clause, throw Clause, Types of Exceptions, Re – throwing an Exception

UNIT – IV

Streams: Stream, Creating a File using FileOutputStream, Reading Data from a File uingFileInputStream, Creating a File using FileWriter, Reading a File using FileReader, Zipping and Unzipping Files, Serialization of Objects, Counting Number of Characters in a File, File Copy, File Class

Threads: Single Tasking, Multi Tasking, Uses of Threads, Creating a Thread and Running it, Terminating the Thread, Single Tasking Using a Thread, Multi Tasking Using Threads, Multiple Threads Acting on Single Object, Thread Class Methods, Deadlock of Threads,

Thread Communication, Thread Priorities, thread Group, Daemon Threads, Applications of Threads, Thread Life Cycle

UNIT – V

Applets: Creating an Applet, Uses of Applets, <APPLET> tag, A Simple Applet, An Applet with Swing Components, Animation in Applets, A Simple Game with an Applet, Applet Parameters

Java Database Connectivity: Database Servers, Database Clients, JDBC (Java Database Connectivity), Working with Oracle Database, Working with MySQL Database, Stages in a JDBC Program, Registering the Driver, Connecting to a Database, Preparing SQL Statements, Using jdbc–odbc Bridge Driver to Connect to Oracle Database, Retrieving Data from MySQL Database, Retrieving Data from MS Access Database, Stored Procedures and CallableStatements, Types of Result Sets

BOOKS:

1. Core Java: An Integrated Approach, Authored by Dr. R. Nageswara Rao &Kogent Learning Solutions Inc.
2. E.Balaguruswamy, Programming with JAVA, A primer, 3e, TATA McGraw-Hill Company.
3. John R. Hubbard, Programming with Java, Second Edition, Schaum's outline Series, TMH.
4. Deitel&Deitel. Java TM: How to Program, PHI (2007)

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)

A. 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. 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

B. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

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. Programming 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

Semester	Course Code	Course Title	Hours	Credits
IV	**C4-P**	**OBJECT ORIENTATED PROGRAMMING THROUGH JAVA LAB**	**30**	**2**

1. Write a program to read ***Student Name, Reg.No, Marks[5]*** and calculate ***Total***, ***Percentage, Result***. Display all the details of students
2. Write a program to perform the following String Operations
    a. Read a string
    b. Find out whether there is a given substring or not
    c. Compare existing string by another string and display status
    d. Replace existing string character with another character
    e. Count number of works in a string
3. Java program to implements Addition and Multiplication of two N X N matrices.
4. Java program to demonstrate the use of Constructor.
5. Calculate area of the following shapes using method overloading.
    a. Triangle
    b. Rectangle
    c. Circle
    d. Square
6. Implement inheritance between ***Person (Aadhar, Surname, Name, DOB, and Age)*** and ***Student (Admission Number, College, Course, Year)***classes where ReadData(), DisplayData() are overriding methods.
7. Java program for implementing Interfaces
8. Java program on Multiple Inheritance.
9. Java program for to display ***Serial Number from 1 to N*** by creating two Threads
10. Java program to demonstrate the following exception handlings
    a. Divided by Zero
    b. Array Index Out of Bound
    c. File Not Found
    d. Arithmetic Exception
    e. User Defined Exception

11. Create an Applet to display different shapes such as Circle, Oval, Rectangle, Square and Triangle.

12. Write a program to create ***Book (ISBN,Title, Author, Price, Pages, Publisher)***structure and store book details in a file and perform the following operations

a. Add book details

b. Search a book details for a given ISBN and display book details, if available

c. Update a book details using ISBN

d. Delete book details for a given ISBN and display list of remaining Books

OPERATING SYSTEMS

Semester	Course Code	Course Title	Hours	Credits
IV	C5	OPERATING SYSTEMS	60	2

Objectives:

This course aims to introduce the structure and organization of a file system. It emphasizes various functions of an operating system like memory management, process management, device management, etc.

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Know Computer system resources and the role of operating system in resource management with algorithms
2. Understand Operating System Architectural design and its services.
3. Gain knowledge of various types of operating systems including Unix and Android.
4. Understand various process management concepts including scheduling, synchronization, and deadlocks.
5. Have a basic knowledge about multithreading.
6. Comprehenddifferent approaches for memory management.
7. Understand and identify potential threats to operating systems and the security features design to guard against them.
8. Specify objectives of modern operating systems and describe how operating systems have evolved over time.
9. Describe the functions of a contemporary operating system

UNIT- I

What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems– Multiprogramming Systems, Batch Systems, Time Sharing Systems; Operating Systems for Personal Computers, Workstations and Hand-held Devices, Process Control & Real time Systems.

UNIT- II

Processor and User Modes, Kernels, System Calls and System Programs, System View of the Process and Resources, Process Abstraction, Process Hierarchy, Threads, Threading Issues, Thread Libraries; Process Scheduling, Non-Preemptive and Preemptive Scheduling Algorithms.

UNIT III

Process Management: Deadlock, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock, Deadlock Handling Approaches: Deadlock Prevention, Deadlock Avoidance and Deadlock Detection and Recovery.

Concurrent and Dependent Processes, Critical Section, Semaphores, Methods for Inter-process Communication; Process Synchronization, Classical Process Synchronization Problems: Producer-Consumer, Reader-Writer.

UNIT IV

Memory Management: Physical and Virtual Address Space; Memory Allocation Strategies– Fixed and -Variable Partitions, Paging, Segmentation, Virtual Memory.

UNIT V

File and I/O Management, OS security : Directory Structure, File Operations, File Allocation Methods, Device Management, Pipes, Buffer, Shared Memory, Security Policy Mechanism, Protection, Authentication and Internal Access Authorization

Introduction to Android Operating System, Android Development Framework, Android Application Architecture, Android Process Management and File System, Small Application Development using Android Development Framework.

REFERENCE BOOKS:

1. Operating System Principles by Abraham Silberschatz, Peter Baer Galvin and Greg Gagne (7thEdition) Wiley India Edition.
2. Operating Systems: Internals and Design Principles by Stallings (Pearson)
3. Operating Systems by J. Archer Harris (Author), Jyoti Singh (Author) (TMH)
4. Online Resources for UNIT V

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)

A. Measurable

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B. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

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1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Programming 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

Semester	Course Code	Course Title	Hours	Credits
IV	**C-5**	**OPERATING SYSTEMS LAB USING C/Java**	**30**	**2**

1. Write a program to implement Round Robin CPU Scheduling algorithm
2. Simulate SJF CPU Scheduling algorithm
3. Write a program the FCFS CPU Scheduling algorithm
4. Write a program to Priority CPU Scheduling algorithm
5. Simulate Sequential file allocation strategies
6. Simulate Indexed file allocation strategies
7. Simulate Linked file allocation strategies
8. Simulate MVT and MFT memory management techniques
9. Simulate Single level directory File organization techniques
10. Simulate Two level File organization techniques
11. Simulate Hierarchical File organization techniques
12. Write a program for Bankers Algorithm for Dead Lock Avoidance
13. Implement Bankers Algorithm Dead Lock Prevention.
14. Simulate all Page replacement algorithms.
    a) FIFO
    b) LRU
    c) LFU
15. Simulate Paging Techniques of memory management

SUBJECT EXPERTS

Dr.M.Ussenaiah
Dept of Computer Science,
Vikrama Simhapuri University

Dr.A.Kavitha,
Govt. Degree College,
Repalle

SYLLABUS VETTED BY

Dr.Gangadhar,
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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**: COMPUTER SCIENCE**

Skill Enhancement Courses (SECs) for Semester V, from 2022-23 *(Syllabus with Learning Outcomes, References, Co-curricular Activities)*

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 Theo+Prac	Credits Theo+Prac	Marks	
					IA – 20 Filed Work 05	Sem End
	6A	Web Interface Designing Technologies	3 + 3	3+ 2	25	75
	7A	Web Applications Development using PHP& MYSQL	3 + 3	3 + 2	25	75
OR						
	6B	Internet of Things	3 + 3	3+ 2	25	75
	7B	Application Development using Python	3 + 3	3 + 2	25	75
OR						
	6C	Data science	3 + 3	3+ 2	25	75
	7C	Python for Data science	3 + 3	3 + 2	25	75

Note-1: For Semester–V, for the domain subject Computer Science **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 (ABCD allotment is random, not on any priority basis).

Note-2: One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate field related skills of 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: **Computer Science**
IV Year B. Sc.(Hons) – Semester – V

Max Marks: 100 + 50

Course 6A: Web Interface Designing Technologies
(Skill Enhancement Course (Elective), Credits: 05)

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

1. Understand and appreciate the web architecture and services.
2. Gain knowledge about various components of a website.
3. Demonstrate skills regarding creation of a static website and an interface to dynamic website.
4. Learn how to install word press and gain the knowledge of installing various plugins to use in their websites.

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

Unit - I (10 hours)

HTML: Introduction to web designing, difference between web applications and desktop applications, introduction to HTML, HTML structure, elements, attributes, headings, paragraphs, styles, colours, HTML formatting, Quotations, Comments, images, tables, lists, blocks and classes, HTML CSS, HTML frames, file paths, layout, symbols, HTML responsive.

Unit – II (10 hours)

HTML forms: HTML form elements, input types, input attributes, HTML5, HTML graphics, HTML media – video, audio, plug INS, you tube.

HTML API'S: Geo location, Drag/drop, local storage, HTML SSE.

CSS: CSS home, introduction, syntax, colours, back ground, borders, margins, padding, height/width, text, fonts, icons, tables, lists, position, over flow, float, CSS combinators, pseudo class, pseudo elements, opacity, tool tips, image gallery, CSS forms, CSS counters, CSS responsive.

Unit – III (10 hours)

Client side Validation: Introduction to JavaScript - What is DHTML, JavaScript, basics, variables, string manipulations, mathematical functions, statements, operators, arrays, functions. Objects in JavaScript - Data and objects in JavaScript, regular expressions, exception handling. DHTML with JavaScript - Data validation, opening a new window, messages and confirmations, the status bar, different frames, rollover buttons, moving images.

Unit – IV (10 hours)

Word press: Introduction to word press, servers like wamp, bitnami e.tc, installing and configuring word press, understanding admin panel, working with posts and pages, using editor, text formatting with shortcuts, working with media-Adding, editing, deleting media elements, working with widgets, menus.

Unit – V (10 hours)

Working with themes-parent and child themes, using featured images, configuring settings, user and user roles and profiles, adding external links, extending word press with plug-ins. Customizing the site, changing the appearance of site using css , protecting word press website from hackers.

III. References

1. Chris Bates, Web Programming Building Internet Applications, Second Edition, Wiley (2007)
2. Paul S.WangSanda S. Katila, an Introduction to Web Design plus Programming, Thomson (2007).
3. Head First HTML and CSS, Elisabeth Robson, Eric Freeman, O'Reilly Media Inc.
4. An Introduction to HTML and JavaScript: for Scientists and Engineers, David R. Brooks. Springer, 2007
5. Schaum's Easy Outline HTML, David Mercer, Mcgraw Hill Professional.
6. Word press for Beginners, Dr.Andy Williams.
7. Professional word press, Brad Williams, David damstra, Hanstern.
8. Web resources:
    a. http://www.codecademy.com/tracks/web
    b. http://www.w3schools.com
    c. https://www.w3schools.in/wordpress-tutorial/
    d. http://www.homeandlearn.co.uk
9. Other web sources suggested by the teacher concerned and the college librarian including reading material.

IV. Co-Curricular Activities

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

1. **For Teacher**: Field related training of students by the teacher in laboratory/field for not less than 15 hours on identifying the case study to build a website, designing the format, structure, menus, submenus etc for a website and finally to build a website.

2. **For Student**: Students shall (individually) search online and visit any of the agencies like hotels, hospitals, super bazaars, organizations, etc. where there is a need for a website and identify any one case study and submit a hand-written Fieldwork/Project work/Project work/Project work/Project work Report not exceeding 10 pages. Example: Choosing a firm or business to develop a website, identifying various business entities to be included in the website, identifying menu bar and content to be placed in their websites.

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

4. Suggested Format for Fieldwork/Project work/Project work/Project work/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. Build a website with 10 pages for the case study identified.
2. Training of students by related industrial experts.
3. Assignments
4. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
5. Presentation by students on best websites.

Course 6A: Web Interface Designing Technologies – PRACTICAL SYLLABUS

V. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. Create a basic website with the help of HTML and CSS.
2. Acquire the skill of installing word press and various plugins of Word press.
3. Create a static website with the help of Word press.
4. Create an interface for a dynamic website.
5. Apply various themes for their websites using Word press.

VI. Practical (Laboratory) Syllabus: *(30 hrs.)*

HTML and CSS:

1. Create an HTML document with the following formatting options:

   (a)Bold, (b) Italics, (c) Underline, (d) Headings (Using H1 to H6 heading styles), (e) Font (Type, Size and Color), (f) Background (Colored background/Image in background), (g) Paragraph, (h) Line Break, (i) Horizontal Rule, (j) Pre tag

2. Create an HTML document which consists of:

   (a) Ordered List (b) Unordered List (c) Nested List (d) Image

3. Create a Table with four rows and five columns. Place an image in one column.
4. **Using "table" tag, align the images as follows:**



5. Create a menu form using html.
6. Style the menu buttons using css.
7. Create a form using HTML which has the following types of controls:

   (a) Text Box (b) Option/radio buttons (c) Check boxes (d) Reset and Submit buttons

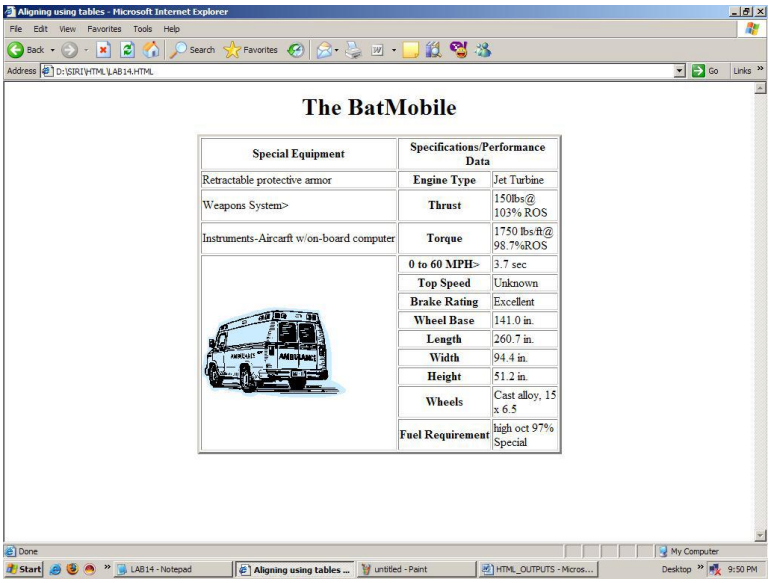
8. Embed a calendar object in your web page.

9. Create an applet that accepts two numbers and perform all the arithmetic operations on them.

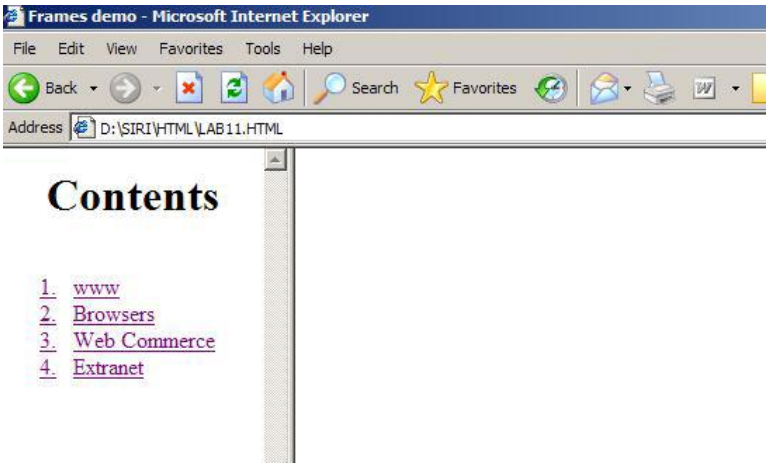
10. Create nested table to store your curriculum.

11. Create a form that accepts the information from the subscriber of a mailing system.

12. Design the page as follows:



13. Create a help file as follows:



14. Create a webpage containing your bio data (assume the form and fields).

15. Write a html program including style sheets.

16. Write a html program to layers of information in web page.

17. Create a static webpage.

Word press:

18. Installation and configuration of word press.
19. Create a site and add a theme to it.
20 Create a child theme
21. Create five pages on COVID – 19 and link them to the home page. .
22. Create a simple post with featured image.
23. Add an external video link with size 640 X 360.
24. Create a user and assign a role to him.
25. Create a login page to word press using custom links
26. Create a website for your college.

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

Course Code:

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

Max Marks: 100 + 50

Course 7A: Web Applications Development using PHP & MYSQL
(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

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

1. Write simple programs in PHP.
2. Understand how to use regular expressions, handle exceptions, and validate data using PHP.
3. Apply In-Built functions and Create User defined functions in PHP programming.
4. Write PHP scripts to handle HTML forms.
5. Write programs to create dynamic and interactive web based applications using PHP and MYSQL.
6. Know how to use PHP with a MySQL database and can write database driven web pages.

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

Unit-1: (10 hours)

The 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: What is function?, Calling functions, Defining Functions, Returning the values from User-Defined Functions, Variable Scope, Saving state between Function calls with the static statement, more about arguments.

Unit-2: (10 hours)

Working with Arrays: What are 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-3: (10 hours)

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, and 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-4: (10 hours)

Working with Files and Directories: Including Files with inclue(), 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-5: (10 hours)

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.

III. References

1. Julie C. Meloni, SAMS Teach yourself PHP MySQL and Apache, Pearson Education (2007).

2. Steven Holzner , PHP: The Complete Reference, McGraw-Hill

3. Robin Nixon, Learning PHP, MySQL, JavaScript, CSS & HTML5, Third Edition O'reilly, 2014

4. Xue Bai Michael Ekedahl, The web warrior guide to Web Programming, Thomson (2006).

5. Web resources:

e. http://www.codecademy.com/tracks/php
f. http://www.w3schools.com/PHP
g. http://www.tutorialpoint.com

6. Other web sources suggested by the teacher concerned and the college librarian including reading material.

IV. Co-Curricular Activities:

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

1. **For Teacher**: Field related training of students by the teacher in laboratory/field for not less than 15 hours on demonstrating various **interactive and dynamic websites** available online, addressing the students on identifying the case study to build an interactive and database driven website, forms to be used in website, database to be maintained, reports to be produced, etc.

2. **For Student**: Students shall (individually) search online and visit any of the agencies like malls, hotels, super bazaars, etc. where there is a need for an interactive and database driven website and submit a hand-written Fieldwork/Project work/Project work/Project work/Project work Report not exceeding 10 pages. Example: Choosing a firm or business to develop a website, identifying forms to be placed in the websites, back end databases to be maintained and reports to be generated and placed in the websites.

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

4. Suggested Format for Fieldwork/Project work/Project work/Project work/Project work: *Title page, student details, index page, details of place or websites visited, structure of the website and acknowledgements*.
5**.** Unit tests (IE).

b) Suggested Co-Curricular Activities

1. Arrange expert lectures by IT experts working professionally in the area of web content development
2. Assignments (in writing or implementing contents related to syllabus or outside the syllabus. Shall be individual and challenging)
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Preparation by students on best websites.
5. Arrange a webpage development competition among small groups of students.

Course 7A: Web Applications Development using PHP & MYSQL– PRACTICAL SYLLABUS

V. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. Write, debug and implement the Programs by applying concepts and error handling techniques of PHP.
2. Create an interactive and dynamic website.
3. Create a website with reports generated from a database.
4. Write programs to create an interactive website for e-commerce sites like online shopping, etc.

VI. Practical (Laboratory) Syllabus: *(30 hrs.*)

1. Write a PHP program to Display "Hello"
2. Write a PHP Program to display the today's date.
3. Write a PHP program to display Fibonacci series.
4. Write a PHP Program to read the employee details.
5. Write a PHP program to prepare the student marks list.
6. Write a PHP program to generate the multiplication of two matrices.
7. Create student registration form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page.
8. Create Website Registration Form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page.
9. Write PHP script to demonstrate passing variables with cookies.
10. Write a program to keep track of how many times a visitor has loaded the page.
11. Write a PHP application to add new Rows in a Table.
12. Write a PHP application to modify the Rows in a Table.
13. Write a PHP application to delete the Rows from a Table.
14. Write a PHP application to fetch the Rows in a Table.
15. Develop an PHP application to implement the following Operations

i. Registration of Users.
ii. Insert the details of the Users.
iii. Modify the Details.
iv. Transaction Maintenance.
    a) No of times Logged in
    b) Time Spent on each login.
    c) Restrict the user for three trials only.
    d) Delete the user if he spent more than 100 Hrs of transaction.

16. Write a PHP script to connect MySQL server from your website.
17. Write a program to read customer information like cust-no, cust-name, item-purchased, and mob-no, from customer table and display all these information in table format on output screen.
18. Write a program to edit name of customer to "Kiran" with cust-no =1, and to delete record with cust-no=3.
19. Write a program to read employee information like emp-no, emp-name, designation and salary from EMP table and display all this information using table format in your website.
20. Create a dynamic web site using PHP and MySQL.

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

Course Code:

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

Max Marks: 100 + 50

Course 6B: INTERNET OF THINGS
(Skill Enhancement Course (Elective), Credits: 05)

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

1. Appreciate the technology for IoT
2. Understand various concepts, terminologies and architecture of IoT systems.
3. Understand various applications of IoT
4. Learn how to use various sensors and actuators for design of IoT.
5. Learn how to connect various things to Internet.
6. Learn the skills to develop simple IOT Devices.

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

Unit - I (10 hours)

Fundamentals of IoT: Introduction, Definitions & Characteristics of IoT, IoT Architectures, Physical & Logical Design of IoT, Enabling Technologies in IoT, History of IoT, About Things in IoT, The Identifiers in IoT, About the Internet in IoT, IoT frameworks, IoT and M2M.

Applications of IoT: Home Automation, Smart Cities, Energy, Retail Management, Logistics, Agriculture, Health and Lifestyle, Industrial IoT, Legal challenges, IoT design Ethics, IoT in Environmental Protection.

Unit - II (10 hours)

Sensors Networks : Definition, Types of Sensors, Types of Actuators, Examples and Working, IoT Development Boards: Arduino IDE and Board Types, RaspberriPi Development Kit, RFID Principles and components, Wireless Sensor Networks: History and Context, The node, Connecting nodes, Networking Nodes, WSN and IoT.

Unit - III (10 hours)

Wireless Technologies for IoT: WPAN Technologies for IoT: IEEE 802.15.4, Zigbee, HART, NFC, Z-Wave, BLE, Bacnet And Modbus.
IP Based Protocols for IoT IPv6, 6LowPAN, LoRA, RPL, REST, AMPQ, CoAP, MQTT. Edge connectivity and protocols.

Unit - IV (10 hours)

Arduino Simulation Environment: Arduino Uno Architecture, Setting up the IDE, Writing Arduino Software, Arduino Libraries, Basics of Embedded C programming for Arduino, Interfacing LED, push button and buzzer with Arduino, Interfacing Arduino with LCD.

Sensor & Actuators with Arduino: Overview of Sensors working, Analog and Digital Sensors, Interfacing of Temperature, Humidity, Motion, Light and Gas Sensors with Arduino, Interfacing of Actuators with Arduino, Interfacing of Relay Switch and Servo Motor with Arduino.

Unit - V (10 hours)

Developing IOT's: Implementation of IoT with Arduino, Connecting and using various IoT Cloud Based Platforms such as Blynk, Thingspeak, AWS IoT, Google Cloud IoT Core etc. Cloud Computing, Fog Computing, Privacy and Security Issues in IoT.

III. References

9. Internet of Things - A Hands-on Approach, ArshdeepBahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547
10. Vijay Madisetti and ArshdeepBahga, "Internet of Things (A Hands-onApproach)", 1st Edition, VPT, 2014
11. Daniel Minoli, ― "Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications", ISBN: 978-1-118-47347-4, Willy Publications
12. Pethuru Raj and Anupama C. Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press
13. Open source software / learning websites

    a. https://github.com/connectIOT/iottoolkit
    b. https://www.arduino.cc/
    c. https://onlinecourses.nptel.ac.in/noc17_cs22/course
    d. http://www.cse.wustl.edu/~jain/cse570-15/ftp/iot_prot/index.html
    e. Contiki (Open source IoT operating system)
    f. Ardudroid (open source IoT project)
    g. https://blynk.io (Mobile app)
    h. IoT Toolkit (smart object API gateway service reference implementation)

6. Other web sources suggested by the teacher concerned and the college librarian including reading material.

IV. Co-Curricular Activities:

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

1. **For Teacher**: Field related training of students by the teacher in laboratory/field for not less than 15 hours on identifying the case study for the IoT, design an IoT solution, build physical IoT device, connect it to a mobile app and deploy the IoT device.

2. **For Student**: Students shall (individually) search online and visit any of the places like aquaculture farms, agencies using IOT devices, etc to identify problems for IoT solution and submit a hand-written Fieldwork/Project work/Project work/Project work/Project work Report not exceeding 10 pages. Example: Choosing a Problem for IoT solution (agriculture, aquaculture, smart home appliances, testing moisture levels, oxygen levels, etc), reasons why IoT solution is feasible for the said problem, material required, Design and architecture for the proposed IoT device, method of implementation and how to connect the device to mobile.

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

4. Suggested Format for Fieldwork/Project work/Project work/Project work/Project work: *Title page, student details, index page, details of websites searched, place visited, observations, findings, proposed IOT problem, and design of the IOT device, implementation and acknowledgements*.

5. Unit tests (IE).

b) Suggested Co-Curricular Activities

1. Training of students by related industrial experts.
2. Assignments
3. Preparation and presentation of power-point slides, which include videos, animations, pictures, graphics, etc by the students.
4. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
5. Field visits to identify the problems for IoT solutions.

Course 6B: Internet of Things – PRACTICAL SYLLABUS

V. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. Acquire the skills to design a small IoT device.
2. Connect various sensors, actuators, etc to Arduino board.
3. Connect the things to Internet
4. Design a small mobile app to control the sensors.
5. Deploy a simple IoT device.

VI. Practical (Laboratory) Syllabus: *(30 hrs*)

1. Understanding Arduino UNO Board and Components
2. Installing and work with Arduino IDE
3. Blinking LED sketch with Arduino
4. Simulation of 4-Way Traffic Light with Arduino
5. Using Pulse Width Modulation
6. LED Fade Sketch and Button Sketch
7. Analog Input Sketch (Bar Graph with LEDs and Potentiometre)
8. Digital Read Serial Sketch (Working with DHT/IR/Gas or Any other Sensor)
9. Working with Adafruit Libraries in Arduino
10. Spinning a DC Motor and Motor Speed Control Sketch
11. Working with Shields
12. Design APP using Blink App or Things peak API and connect it LED bulb.
13. Design APP Using Blynk App and Connect to Temperature, magnetic Sensors.

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Course Code:

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

Max Marks: 100 + 50

Course 7B: APPLICATION DEVELOPMENT USING PYTHON
(Skill Enhancement Course (Elective), Credits: 05)

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

1. Understand and appreciate the web architecture and services.
2. Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
3. Demonstrate proficiency in handling Strings and File Systems.
4. Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
5. Interpret the concepts of Object-Oriented Programming as used in Python.
6. Apply concepts of Python programming in various fields related to IOT, Web Services and Databases in Python.

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

Unit - I (10 hours)

Python basics, Objects- Python Objects, Standard Types, Other Built-in Types, Internal Types, Standard Type Operators, Standard Type Built-in Functions, Categorizing the Standard Types, Unsupported Types

Numbers - Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers, Operators, Built-in Functions, Related Modules

Sequences - Strings, Lists, and Tuples, Mapping and Set Types

Unit – II (10 hours)

Files: File Objects, File Built-in Function [open()], File Built-in Methods, File Built-in Attributes, Standard Files, Command-line Arguments, File System, File Execution, Persistent Storage Modules, Related Modules

Exceptions: Exceptions in Python, Detecting and Handling Exceptions, Context Management, Exceptions as Strings, Raising Exceptions, Assertions, Standard Exceptions, Creating Exceptions, Why Exceptions (Now)?, Why Exceptions at All?, Exceptions and the sys Module, Related Modules

Modules: Modules and Files, Namespaces, Importing Modules, Importing Module Attributes, Module Built-in Functions, Packages, Other Features of Modules

Unit – III (10 hours)

Regular Expressions: Introduction, Special Symbols and Characters, Res and Python Multithreaded Programming: Introduction, Threads and Processes, Python, Threads, and the Global Interpreter Lock, Thread Module, Threading Module, Related Modules

Unit – IV (10 hours)

GUI Programming: Introduction, Tkinter and Python Programming, Brief Tour of Other GUIs, Related Modules and Other GUIs

Web Programming: Introduction, Wed Surfing with Python, Creating Simple Web Clients, Advanced Web Clients, CGI-Helping Servers Process Client Data, Building CGI Application, Advanced CGI, Web (HTTP) Servers

Unit – V (10 hours)

Database Programming: Introduction, Python Database Application Programmer's Interface (DBAPI), Object Relational Managers (ORMs), Related Modules

III. References

1. **C**ore Python Programming, Wesley J. Chun, Second Edition, Pearson.
2. Think Python, Allen Downey, Green Tea Press.
3. Introduction to Python, Kenneth A. Lambert, Cengage.
4. Python Programming: A Modern Approach, Vamsi Kurama, Pearson.
5. Learning Python, Mark Lutz, O' Really.
6. Web sources suggested by the teacher concerned and the college librarian including reading material.

IV. 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 laboratory/field for not less than 15 hours on field related skills like building an IOT device with the help of Python.

2. **For Student**: Students shall (individually) identity the method to link their IOT project done in Paper 7A with Python and submit a hand-written Fieldwork/Project work/Project work/Project work/Project work Report not exceeding 10 pages. It should include a brief report on the selected case study of IOT device, algorithm and Python program to operate the IOT device.

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

4. Suggested Format for Fieldwork/Project work/Project work/Project work/Project work: *Title page, student details, index page, design of the IOT device, implementation of Python program to connect the IOT device, findings and acknowledgements*.

5**.** Unit tests (IE).

b) Suggested Co-Curricular Activities

1. Training of students by related industrial experts.
2. Assignments
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Presentation by students on best websites.

Course 7B: Application Development Using Python– <u>PRACTICAL SYLLABUS</u>

V. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. Implement simple programs in Python
2. Implement programs related to various data structures like lists, dictionaries, etc.
3. Implement programs related to files.

4. Implement applications related to databases, Web services and IOT.

VI. Practical (Laboratory) Syllabus: *(30 hrs.*)

1. Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.

2. Write a python program to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria :
   Grade A: Percentage >=80
   Grade B: Percentage>=70 and <80
   Grade C: Percentage>=60 and <70
   Grade D: Percentage>=40 and <60
   Grade E: Percentage<40

3. Write a python program to display the first n terms of Fibonacci series.

4. Write a python program to calculate the sum and product of two compatible matrices.

5. Write a function that takes a character and returns True if it is a vowel and False otherwise.

6. Write a menu-driven program to create mathematical 3D objects
   I. curve
   II. sphere
   III. cone
   IV. arrow
   V. ring
   VI. Cylinder.

7. Write a python program to read n integers and display them as a histogram.

8. Write a python program to display sine, cosine, polynomial and exponential curves.

9. Write a python program to plot a graph of people with pulse rate p vs. height h. The values of P and H are to be entered by the user.
10. Write a python program to calculate the mass m in a chemical reaction. The mass m (in gms) disintegrates according to the formula m=60/ (t+2), where t is the time in hours. Sketch a graph for t vs. m, where t>=0.

11. A population of 1000 bacteria is introduced into a nutrient medium. The population p grows as follows:
    P (t) = (15000(1+t))/ (15+ *e)*

12. Where the time t is measured in hours. WAP to determine the size of the population at given time t and plot a graph for P vs t for the specified time interval.

13. Input initial velocity and acceleration, and plot the following graphs depicting equations of motion:
    I. velocity wrt time (v=u+at)
    II. distance wrt time (s=u*t+0.5*a*t*t)

III. distance wrt velocity (s=(v*v-u*u)/2*a)

14. Write a program that takes two lists and returns True if they have at least one common member.

15. Write a Python program to print a specified list after removing the 0th, 2nd, 4th and 5th elements.

16. Write a program to implement exception handling.

17. Try to configure the widget with various options like: bg=”green”, family=”times”, size=20.

18. Write a Python program to read last 5 lines of a file.

19. Design a simple database application that stores the records and retrieve the same

20. Design a database application to search the specified record from the database.

21. Design a database application to that allows the user to add, delete and modify the records.

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Course Code:

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

Max Marks: 100 + 50

Course 6C: DATA SCIENCE
(Skill Enhancement Course (Elective), Credits: 05)

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

1. Develop relevant programming abilities.
2. Demonstrate proficiency with statistical analysis of data.
3. Develop the ability to build and assess data-based models.
4. Demonstrate skill in data management
5. Apply data science concepts and methods to solve problems in real-world contexts and will communicate these solutions effectively

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

UNIT I (10 hours)

Introduction: The Ascendance of Data, What is Data Science? , Finding key Connectors, Data Scientists You May Know, Salaries and Experience, Paid Accounts, Topics of Interest, Onward.

Python: Getting Python, The Zen of Python, Whitespace Formatting, Modules, Arithmetic, Functions, Strings, Exceptions, Lists, Tuples, Dictionaries, Sets, Control Flow, Truthiness, Sorting, List Comprehensions, Generators and Iterators, Randomness, Object – Orienting Programming, Functional Tools, enumerate, zip and Argument Unpacking, args and kwargs, Welcome to Data Sciencester!

Visualizing Data: matplotlib, Bar charts, Line charts, Scatterplots.

Linear Algebra: Vectors, Matrices

UNIT II (10 hours)

Statistics: Describing a Single Set of Data, Correlation, Simpson's Paradox, some Other Correlation Caveats, Correlation and Causation.

Probability: Dependence and Independence, Conditional Probability, Bayes's Theorem, Random Variables, Continuous Distributions, The Normal Distribution, The Central Limit Theorem.

Hypothesis and Inference: Statistical Hypothesis Testing, Example: Flipping a Coin, Confidence Intervals, P-hacking, Example: Running an A/B Test, Bayesian Inference.

Gradient Descent: The Idea behind Gradient Descent, Estimating the Gradient, Using the Gradient, Choosing the Right Step Size, Putting It All Together, Stochastic Gradient Descent.

UNIT III (10 hours)

Getting Data: stdin and stdout, Reading Files – The Basics of Text Files, Delimited Files, Scraping the Web - HTML and the parsing Thereof, Example: O'Reilly Books About Data, Using APIs – JSON (and XML), Using an Unauthenticated API, Finding APIs.

Working with Data: Exploring Your Data, Exploring One-Dimensional Data, Two Dimensions Many Dimensions, Cleaning and Munging, Manipulating Data, Rescaling, Dimensionality Reduction.

Machine Learning: Modeling, What Is Machine Learning? Over fitting and under fitting, Correctness, The Bias-Variance Trade-off, Feature Extraction and Selection

UNIT IV (10 hours)

K-Nearest Neighbors: The Model, Example: Favorite Languages, The Curse of Dimensionality.

Naive Bayes: A Really Dumb Spam Filter, A More Sophisticated Spam Filter, Implementation, Testing Our Model.

Simple Linear Regression: The Model, Using Gradient Descent, Maximum Likelihood Estimation.

Multiple Regression: The Model, Further Assumptions of the Least Squares Model, Fitting the Model, Interpreting the Model, Goodness of Fit.

UNIT V (10 hours)

Logistic Regression: The Problem, The Logistic Function, Applying the Model, Goodness of Fit Support Vector Machines.

Decision Trees: What Is a Decision Tree? Entropy, The Entropy of a Partition, Creating a Decision Tree, Putting It All Together, Random Forests.

Neural Networks: Perceptron, Feed-Forward Neural Networks And Back propagation, Example: Defeating a CAPTCHA.

Clustering: The Idea, The Model, Example: Meetups , Choosing k, Example: Clustering Colors, Bottom-up Hierarchical Clustering.

III. References

1. Data Science from Scratch by Joel Grus O'Reilly Media
2. Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython", O'Reilly, 2nd Edition, 2018.
3. Jake VanderPlas, "Python Data Science Handbook: Essential Tools for Working with Data", O'Reilly, 2017.
4. Web resources:
    a. https://www.edx.org/course/analyzing-data-with-python
    b. http://math.ecnu.edu.cn/~lfzhou/seminar/[Joel_Grus]_Data_Science_from_Scratch_First_Princ.pdf
5. 9. Other web sources suggested by the teacher concerned and the college librarian including reading material.

IV. Co-Curricular Activities:

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

1. **For Teacher**: Field related training of students by the teacher in laboratory/field for not less than 15 hours on identifying, analyzing and presenting the data and then to predict the future instances.

2. **For Student**: Students shall (individually) search online and visit any of the agencies like Statistical cell, weather forecasting centers, pollution control boards, manufacturing industries, agriculture departments, etc. to observe the manual process going on to collect the data, maintain the data, present the data and to predict the data for future instances and submit a hand-written Fieldwork/Project work/Project work/Project work/Project work Report not exceeding 10 pages.

3. Max marks for Fieldwork/Project work/Project work/Project work/Project work/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work/Project work/Project work/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
3. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
4. Presentation by students in related topics.

Course 6C: Data Science – PRACTICAL SYLLABUS

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

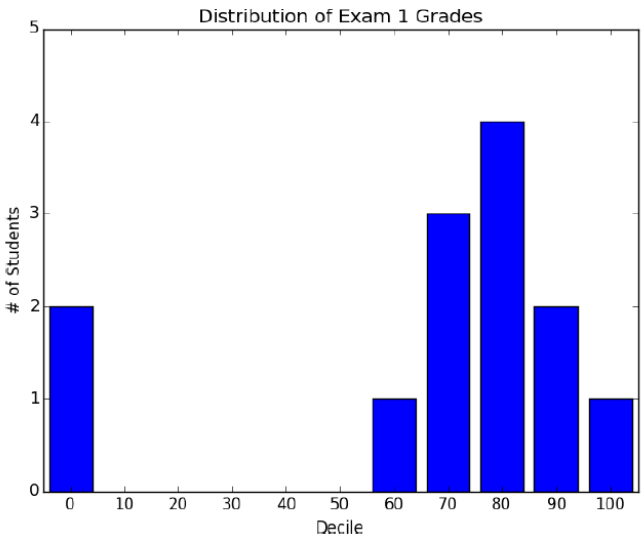
1. Apply data science solutions to real world problems.
2. Implement the programs to get the required data, process it and present the outputs using Python language.
3. Execute statistical analyses with Open source Python software.

VI. Practical (Laboratory) Syllabus: *(30 hrs.*)

1. Write a Python program to create a line chart for values of year and GDP as given below



2. Write a Python program to create a bar chart to display number of students secured different grading as given below



3. Write a Python program to create a time series chart by taking one year month wise stock data in a CSV file
4. Write a Python program to plot distribution curve
5. Import a CSV file and perform various Statistical and Comparison operations on rows/columns. Write a python program to plot a graph of people with pulse rate p vs. height h. The values of P and H are to be entered by the user.
6. Import rainfall data of some location with the help of packages available in R Studio and plot a chart of your choice.

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

Course Code:

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

Max Marks: 100 + 50

Course 7C: Python for Data Science
(Skill Enhancement Course (Elective), Credits: 05)

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

1. Identify the need for data science and solve basic problems using Python built-in data types and their methods.
2. Design an application with user-defined modules and packages using OOP concept
3. Employ efficient storage and data operations using NumPy arrays.
4. Apply powerful data manipulations using Pandas.
5. Do data pre-processing and visualization using Pandas

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

Unit - I (10 hours)

Introduction to Data Science - Why Python? - Essential Python libraries - Python Introduction- Features, Identifiers, Reserved words, Indentation, Comments, Built-in Data types and their Methods: Strings, List, Tuples, Dictionary, Set - Type Conversion- Operators. Decision Making- Looping- Loop Control statement- Math and Random number functions. User defined functions - function arguments & its types.

UNIT –II (10 hours)

User defined Modules and Packages in Python- Files: File manipulations, File and Directory related methods - Python Exception Handling.
OOPs Concepts -Class and Objects, Constructors – Data hiding- Data Abstraction- Inheritance.

UNIT –III (10 hours)

NumPy Basics: Arrays and Vectorized Computation- The NumPy ndarray- Creating ndarrays- Data Types for ndarrays- Arithmetic with NumPy Arrays- Basic Indexing and Slicing - Boolean Indexing-Transposing Arrays and Swapping Axes.
Universal Functions: Fast Element-Wise Array Functions- Mathematical and Statistical Methods-Sorting- Unique and Other Set Logic.

UNIT –IV (10 hours)

Introduction to pandas Data Structures: Series, Data Frame and Essential Functionality: Dropping Entries- Indexing, Selection, and Filtering- Function Application and Mapping- Sorting and Ranking.
Summarizing and Computing Descriptive Statistics- Unique Values, Value Counts, and Membership. Reading and Writing Data in Text Format

UNIT –V (10 hours)

Data Cleaning and Preparation: Handling Missing Data - Data Transformation: Removing Duplicates, Transforming Data Using a Function or Mapping, Replacing Values, Detecting and Filtering Outliers- String Manipulation: Vectorized String Functions in pandas.

Plotting with pandas: Line Plots, Bar Plots, Histograms and Density Plots, Scatter or Point Plots.

III. References

1. Y. Daniel Liang, "Introduction to Programming using Python", Pearson, 2012.
2. Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython", O'Reilly, 2nd Edition, 2018.
3. Jake VanderPlas, "Python Data Science Handbook: Essential Tools for Working with Data", O'Reilly, 2017.
4. Wesley J. Chun, "Core Python Programming", Prentice Hall, 2006.
5. Mark Lutz, "Learning Python", O'Reilly, 4th Edition, 2009.
6. Web resources:
    a. https://www.edx.org/course/python-basics-for-data-science
    b. https://www.edx.org/course/analyzing-data-with-python
    c. https://www.coursera.org/learn/python-plotting?specialization=data-science-python
    d. https://www.programmer-books.com/introducing-data-science-pdf/
    e. https://www.cs.uky.edu/~keen/115/Haltermanpythonbook.pdf
7. Other web sources suggested by the teacher concerned and the college librarian including reading material.

IV. Co-Curricular Activities:

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

1. **For Teacher**: Field related training of students by the teacher in laboratory/field for not less than 15 hours on collecting the data, analyzing the data and presenting the data using Python language with some real time data.

2. **For Student**: Students shall (individually) visit any of the agencies like Agriculture dept, statistical cell, irrigation department, Ground water department, CPO office, Rural Water Supply and Sanitation department etc or search online to get real time data like Aids database, weather forecasting database, social networking data, etc and identify any one database, implement and present the necessary charts in Python language and submit a hand-written Fieldwork/Project work/Project work/Project work/Project work Report not exceeding 10 pages. Example: Identifying a database, get the data, present the data in required charts and to predict the future instances if possible.

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

4. Suggested Format for Fieldwork/Project work/Project work/Project work/Project work: *Title page, student details, index page, and details of place visited, observations, method of data collection, database identified, and implementation in Python language, other findings and acknowledgements*.

5. Unit tests (IE).

b) Suggested Co-Curricular Activities

2. Training of students by related industrial experts.
3. Assignments
4. Seminars, Group discussions, Quiz, Debates etc. (on related topics).
5. Presentation by students on the topics within and outside the syllabus.

Course 7C: Python for Data Science – PRACTICAL SYLLABUS

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

1. Implement simple programs in Python.
2. Implement programs related to various structures like arrays, lists, Data frames, etc.
3. Implement programs related to files.
4. Implement applications related to data science.

VI. Practical (Laboratory) Syllabus: *(30 hrs.*)

1. Perform Creation, indexing, slicing, concatenation and repetition operations on Python built-in data types: Strings, List, Tuples, Dictionary, Set
2. Apply Python built-in data types: Strings, List, Tuples, Dictionary, Set and their methods to solve any given problem.
3. Handle numerical operations using math and random number functions
4. Create user-defined functions with different types of function arguments.
5. Create packages and import modules from packages.
6. Perform File manipulations- open, close, read, write, append and copy from one file to another.
7. Write a program for Handle Exceptions using Python Built-in Exceptions
8. Write a program to implement OOP concepts like Data hiding and Data Abstraction.
9. Create NumPy arrays from Python Data Structures, Intrinsic NumPy objects and Random Functions.
10. Manipulation of NumPy arrays- Indexing, Slicing, Reshaping, Joining and Splitting.
11. Computation on NumPy arrays using Universal Functions and Mathematical methods.
12. Load an image file and do crop and flip operation using NumPy Indexing.
13. Create Pandas Series and Data Frame from various inputs.
14. Import any CSV file to Pandas Data Frame and perform the following:
    (a) Visualize the first and last 10 records
    (b) Get the shape, index and column details
    (c) Select/Delete the records (rows)/columns based on conditions.
    (d) Perform ranking and sorting operations.

    (e) Do required statistical operations on the given columns.

(f) Find the count and uniqueness of the given categorical values.
(g) Rename single/multiple columns

15. Import any CSV file to Pandas Data Frame and perform the following:
    (a) Handle missing data by detecting and dropping/ filling missing values.
    (b) Transform data using apply () and map() method.
    (c) Detect and filter outliers.
    (d) Perform Vectorized String operations on Pandas Series.
    (e) Visualize data using Line Plots, Bar Plots, Histograms, Density Plots and Scatter Plots.

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Draft Syllabus prepared by:

1. *Dr. A.V. Kavitha, Asst. Professor in Computer Science, Government Degree College for Women, Guntur.*

2. *Dr. M. Hussainaiah, Asst. Professor, Department of Computer Science, Vikram Simhapuri University, Nellore.*

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: **Computer Applications for Sciences**
Skill Enhancement Courses (SECs) for Semester V, from 2022-23 *(Syllabus/Curriculum)*
Pair Options 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	Big data Analytics using R	3	25	75	3	3	50	2
	7A	Data Science using Python	3	25	75	3	3	50	2
		OR							
	6B	Mobile application development	3	25	75	3	3	50	2
	7B	Cyber security and malware analysis	3	25	75	3	3	50	2
		OR							
	6C	E– commerce application development	3	25	75	3	3	50	2
	7C	Real time governance system(RTGS)	3	25	75	3	3	50	2
		OR							
	6D	Multimedia Tools and Applications	3	25	75	3	3	50	2
	7D	Digital imaging	3	25	75	3	3	50	2
		OR							
	6E	Biological databases and applications	3	25	75	3	3	50	2
	7E	Essentials of Bioinformatics	3	25	75	3	3	50	2

*(For Each Course: Maximum Marks: Theory: 100 + Practical: 50. Total hours: 90. Total Credits: 05)

Note-1: For Semester–V, for the domain subject Computer Applications, any one of the above 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 (ABCDE 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.*

Note-3: *The courses are connected to the Computer Programming and the usage of software tools. The faculty members can follow the demo/illustration method of teaching. Hence, all the assigned 90 hours can be used as a whole to cover the entire theory as well as the laboratory/practical sessions.*

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

Four Year B.Sc. (Hons) - Semester – V (from 2022-23)
Subject: **Computer Applications for Sciences**

Course Code: Max Marks:100 + 50

Course-**6A: BIGDATA ANALYTICS USING R**
(Skill Enhancement Course (Elective), 5 credits)

I. **Learning Outcomes**:

Upon successful completion of the course, a student will be able to:

1. Understand data and classification of digital data.
2. Understand Big Data Analytics.
3. Load data in to R.
4. Organize data in the form of R objects and manipulate them as needed.
5. Perform analytics using R programming.

II. Syllabus: (Total Hours:90 including Theory, Practical, Skills Training, Unit tests etc.)

Unit – 1: Introduction to Big data (12 h)

Data, classification Of Digital Data--structured, unstructured, semi-structured data, characteristics of data, evaluation of big data, definition and challenges of big data , what is big data and why to use big data ?, business intelligence Vs big data.

Unit – 2:Big data Analytics (10 h)

What is and isn't bigdata analytics? Why hype around big data analytics? , classification of analytics, top challenges facing big data, importance of big data analytics, technologies needed to meet challenges of big data, data science, data scientist.

Unit – 3: Introduction to R and getting started with R **(**13h)

What is R?Why R? , advantages of R over other programming languages, Data types in R-logical, numeric, integer, character, double, complex, raw, coercion, ls() command, expressions, Variables and functions, control structures, Array, Matrix, Vectors, Factors, R packages.

Unit – 4: Exploring data in R (13h)

Data frames-data frame access, ordering data frames, R functions for data frames dim(), nrow(), ncol(), str(), summary(), names(), head(), tail(), edit() .Load data frames—reading from .CSV files, subsetting data frames, reading from tab separated value files, reading from tables, merging data frames.

Unit – 5: Data Visualization using R (12h)

Reading and getting data into R (External Data): Using CSV files, XML files, Web Data, JSON files, Databases, Excel files.

Working with R Charts and Graphs: Histograms, Boxplots, Bar Charts, Line Graphs, Scatterplots, Pie Charts

BOOKS

1. Seema Acharya ,Subhashini Chellappan --- Big Data And Analytics second edition, Wiley
2. Seema Acharya--Data Analytics using R, McGraw Hill education (India) Private Limited.
3. Big Data Analytics, Introduction to Hadoop, Spark, and Machine-Learning, Raj kamal, Preeti Saxena, McGraw Hill, 2018.
4. Big Data, Big Analytics: Emerging Business intelligence and Analytic trends for Today's Business, Michael Minelli, Michelle Chambers, and AmbigaDhiraj, John Wiley & Sons, 2013

Reference Books:

1. An Introduction to R, Notes on R: A Programming Environment for Data Analysis and Graphics. W. N. Venables, D.M. Smith and the R Development Core Team

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)

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual andchallenging)
2. Student seminars (on topics of the syllabus and related aspects (individualactivity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups asteams))
4. 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

B. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

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. Problem-solving exercises,
4. Practical assignments and laboratory reports.
5. Observation of practical skills,
6. Individual and group project reports like "Creating Text Editor in C".
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

Course-6A: **Big Data Analytics Using R; Lab (Practical) Syllabus**

1. Create a vector in R and perform operations on it.
2. Create integer, complex, logical, character data type objects in R and print their values and their class using print and class functions.
3. Write code in R to demonstrate sum (), min(), max() and seq() functions.
4. Write code in R to manipulate text in R using grep(), toupper(), tolower() and substr() functions.
5. Create a matrix of values in R and perform operations on it.
6. Create a list in R and perform operations on it.
7. Create data frame in R and perform operations on it.
8. Import data into R from text and excel files using read. Table () and read.csv () functions.
9. Write code in R to find out whether number is prime or not.
10. Print numbers from 1 to 100 using while loop and for loop in R.
11. Create a factor in R by specifying levels and print it then modify some values in it.
12. Write a program to import data from csv file and print the data on the console.
13. Write a program to demonstrate histogram in R

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21
Four Year B.Sc.(Hons) - Semester – V (from 2022-23)

Subject: **Computer Applications for Sciences**

Course Code: Max Marks: 100 + 50

Course-**7A: DATA SCIENCE USING PYTHON**

(Skill Enhancement Course (Elective), 5 credits)

Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand basic concepts of data science
2. Understand why python is a useful scripting language for developers.
3. Use standard programming constructs like selection and repetition.
4. Use aggregated data (list, tuple, and dictionary).
5. Implement functions and modules.

II. Syllabus :(Total Hours: 90 including Theory, Practical, Skills Training, Unit tests etc.)

Unit – 1: Introduction to data science (10h)

Data science and its importance, advantages of data science, the process of data science, Responsibilities of a data scientist, qualifications of data scientists, would you be a good data scientist, why to use python for data science.

Unit – 2: Introduction to python (14h)

What is python , features of python, history of python, writing and executing the python program, basic syntax, variables, keywords, data types ,operators ,indentation, Conditional statements-if, if-else, nested if-else, looping statements-for, while, nested loops, break, continue, pass

Unit – 3: Control structures and strings (13h)

Strings - definition, accessing, slicing and basic operations

Lists - introduction, accessing list, operations, working with lists, functions and methods,

Tuples - introduction, accessing tuple, operations.

Dictionaries - introduction, accessing values in dictionaries, working with dictionaries.

Unit – 4: Functions and modules (12h)

Functions - defining a function, calling a function, types of functions, function arguments, local and global variables, lambda and recursive functions, Modules- math, random, OS, date and time

Unit – 5: Pandas (11h)

What is Pandas? Series, Data Frame, Read CSV Files, Analyzing Data Frames, Data Correlations

Data Cleaning: Empty cells, Data in wrong format, Wrong data, Duplicates

Pandas Plotting: plot () method, bar plot, hist plot, box plot, area plot, scatter plot, pie plot

Reference Books:

1. Steven cooper--- Data Science from Scratch, Kindle edition
2. Reemathareja—Python Programming using problem solving approach, Oxford Publication

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)

C. 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 a steams))
4. 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

D. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

11. The oral and written examinations (Scheduled and surprise tests),
12. Closed-book and open-book tests,
13. Problem-solving exercises,
14. Practical assignments and laboratory reports.
15. Observation of practical skills,
16. Individual and group project reports like "Creating Text Editor in C".
17. Efficient delivery using seminar presentations,
18. Viva voce interviews.
19. Computerized adaptive testing, literature surveys and evaluations,
20. Peers and self-assessment, outputs form individual and collaborative work

Course-7A**: Data Science Using Python; Lab (Practical) Syllabus**

1. Python Program to Find the Square Root
2. Python Program to Swap Two Variables
3. Python Program to Generate a Random Number
4. Python Program to Check if a Number is Odd or Even
5. Python Program to Find the Largest Among Four Numbers
6. Python Program to Check Prime Number
7. Python Program to Display the multiplication Table
8. Python Program to Print the Fibonacci sequence
9. Python Program to Check Armstrong Number
10. Python Program to Find the Sum of Natural Numbers
11. Python Program to Make a Simple Calculator
12. Python Program to Find Factorial of Number Using Recursion
13. Python Program to Add Two Matrices
14. Python Program to Multiply Two Matrices
15. Python Program to Check Whether a String is Palindrome or Not
16. Python Program to create a dictionary and print its content.
17. Python program to import data from CSV file using pandas.
18. Python program to demonstrate bar plot

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21
Course Code:
Subject: **Computer Applications for Sciences**
Four Year B.Sc. (Hons) - Semester – V (from 2022-23)
Max Marks: 100 + 50
Course-**6B: MOBILE APPLICATION DEVELOPMENT**
(Skill Enhancement Course (Elective), 5 credits)

Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Identify basic terms ,tools and software related to android systems
2. Describe components of IDE, understand features of android development tools
3. Describe the layouts and controls
4. Explain the significance of displays using the given view
5. Explain the features of services and able to publish android Application
6. Developing interesting Android applications using MIT App Inventor

Syllabus :(Total Hours: 90 including Theory, Practical, Skills Training, Unit tests etc.)

Unit-1: **10 Hrs**

1.1 Introduction to Android ,open headset alliance, Android Ecosystem
1.2 Need of Android
1.3 Features of Android
1.4 Tools and software required for developing an Application
1.5 Android architecture

Unit-2: **12 Hrs**

2.1 operating system, java JDK, Android SDK
2.2 Android development tools
2.3 Android virtual devices
2.4 steps to install and configure Android studio and sdk

Unit-3: **14 Hrs**

3.1 control flow, directory structure
3.2 components of a screen
3.3 fundamental UI design
3.4 linear layout, absolute layout , table layout, relative layout
3.5 text view
3.6 edit text
3.7 button, image button, radio button, toggle button
3.8 radio group, check box, and progress bar
3.9 list view, grid view, image view, scroll view
3.10 time and date picker

Unit-4: **12 Hrs**

4.1 android platform services
4.2 Android system Architecture
4.3 Android Security model
4.4 Applications development: creating small application

Unit-5 12 Hrs

5.1 Introduction of MIT App Inventor
5.2 Application Coding
5.3Programming Basics & Dialog
5.4 More Programming Basics
5.5 Alarm Clock Application
5.6 Audio & Video
5.7 Drawing Application
5.8 File
5.9 Game
5.10 Device Location
5.11 Web Browsing

Text Books:

1. Erik Hellman, "Android Programming – Pushing the Limits", 1st Edition, Wiley India Pvt Ltd, 2014.
2. App Inventor: create your own Android apps by Wolber, David (David Wayne)

Reference Books:

1. Dawn Griffiths and David Griffiths, "Head First Android Development", 1st Edition, O'Reilly SPD Publishers, 2015.
2. J F DiMarzio, "Beginning Android Programming with Android Studio", 4th Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978-8126565580
3. Anubhav Pradhan, Anil V Deshpande, " Composing Mobile Apps" using Android, Wiley 2014, ISBN: 978-81-265-4660-2
4. Android Online Developers Guide
5. http://developer.android.com/reference/ Udacity: Developing Android
6. Apps- Fundamentals
7. https://www.udacity.com/course/developing-android-appsfundamentals--ud853-nd
8. http://www.appinventor.mit.edu/

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)

E. 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. 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

a. Group Discussion
b. Try to solve MCQ's available online.
c. Others

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. Problem-solving exercises,
4. Practical assignments and laboratory reports.
5. Observation of practical skills,
6. Efficient delivery using seminar presentations,
7. Viva voce interviews.
8. Computerized adaptive testing, literature surveys and evaluations,
9. Peers and self-assessment, outputs form individual and collaborative work

Course-6B**: Mobile Application Development: Lab (Practical) Syllabus**

Outcomes:

1. Understand the android platform
2. Design and implementation of various mobile applications

Experiments:

1. Demonstrate mobile technologies and devices
2. Demonstrate Android platform and applications overview
3. Implement User interface design layouts
4. Working with texts , shapes, buttons and lists
5. Develop a calculator application
6. Implement an application that creates a alarm clock

Note: The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.*

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21
Four-year B.Sc. (Hons) - V Semester (from 2022-23)

Course Code: Max Marks: 100 + 50

Domain Subject: **Computer Applications for Sciences**

Course-**7B**: **CYBER SECURITY AND MALWARE ANALYSIS**
(Skill Enhancement Course (Elective), 5 credits)

COURSE OUTCOMES:
Upon successful completion of this course, students should have the knowledge and skills to

1. Understand the computer networks, networking tools and cyber security
2. Learn about NIST Cyber Security Framework
3. Understand the OWASP Vulnerabilities
4. Implement various Malware analysis tools
5. Understand about Information Technology act 2000

Syllabus: (Total Hours: 90 including Theory, Practical, Skills Training, Unit tests etc.)

UNIT 1: Introduction to Networks & cyber security 14hrs

- Computer Network Basics
- Computer network types
- OSI Reference model
- TCP/IP Protocol suite
- Difference between OSI and TCP/IP
- What is cyber, cyber-crime and cyber-security
- All Layer wise attacks
- Networking devices: router, bridge, switch, server, firewall
- How to configure: router
- How to create LAN
- Network tools
    - ❖ IP scanner
    - ❖ port scanner
    - ❖ vulnerability scanner
    - ❖ command tools-- net stack, trace route, lookup
    - ❖ tcp view

UNIT 2: NIST Cyber security framework **10hrs**

- Introduction to the components of the framework
- Cyber security Framework Tiers
- What is NIST Cyber security framework
- Features of NIST Cyber security framework
- Functions of NIST Cyber security framework
- Turn the NIST Cyber security Framework into Reality/ implementing the framework

UNIT 3: OWASP **14hrs**

- What is OWASP?
- OWASP Top 10 Vulnerabilities
    - ❖ Injection
    - ❖ Broken Authentication
    - ❖ Sensitive Data Exposure
    - ❖ XML External Entities (XXE)
    - ❖ Broken Access Control
    - ❖ Security Misconfiguration
    - ❖ Cross-Site Scripting (XSS)
    - ❖ Insecure Deserialization
    - ❖ Using Components with Known Vulnerabilities
    - ❖ Insufficient Logging and Monitoring
- OWASP Juice Shop
- Web application firewall

UNIT 4: MALWARE ANALYSIS **12hrs**

- What is malware
- Types of malware
    - ❖ Key loggers
    - ❖ Trojans
    - ❖ Ran some ware
    - ❖ Rootkits
- Antivirus
- Firewalls
- Malware analysis
    - ❖ VM ware
    - ❖ How to use sandbox
    - ❖ How to create virtual machine
    - ❖ Process explorer
    - ❖ Process monitor

- ❖ SYS-internals Suite
- ❖

- SOC-security operations controls - Solar winds (study the tools)
- Network intrusion detection
  - ❖ Wire shark
  - ❖ IDS
  - ❖ IPS
  - ❖ Snort

UNIT 5: CYBER SECURITY: Legal Perspectives 10hrs

- Cybercrime and the legal landscape around the world
- Indian IT ACT 2000 --Cybercrime and Punishments
- Weak areas of IT ACT 2000
- Challenges to Indian law and cybercrime scenario in India
- Amendments of the Indian IT Act

Textbooks:

1. Computer Networks | Fifth Edition | By Pearson (6th Edition) |Tanenbaum, Feamster & Wetherall
2. Computer Networking | A Top-Down Approach | Sixth Edition | By Pearson | Kurose James F. Ross Keith W.
3. Cyber Security by Sunit Belapure, Nina Godbole|Wiley Publications
4. TCP/IP Protocol Suite |Mcgraw-hill| Forouzan| Fourth Edition

Website References:

- https://csrc.nist.gov/Projects/cybersecurity-framework/nist-cybersecurity-framework-a-quick-start-guide
- https://owasp.org/www-project-top-ten/
- https://owasp.org/www-project-juice-shop/

Co-Curricular Activities:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. 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. 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)

B. General

1. Group Discussion
2. Try to solve MCQ's available online.

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. Practical assignments and laboratory reports,
4. Observation of practical skills,
5. Individual and group project reports.
6. Efficient delivery using seminar presentations,
7. Viva-Voce interviews.
8. Computerized adaptive testing, literature surveys and evaluations,
9. Peers and self-assessment, outputs form individual and collaborative work

Course-7B: Cyber Security and Malware Analysis; Lab (Practical) Syllabus

Learning Objectives:

The purpose of this course is to impart practical understanding on Cyber security and protection of electronic systems and information from malware attacks.

1. Configure a LAN by using a switch
2. Configure a LAN by using Router
3. Steps to attack a victim computer by using "ProRat" Trojan tool
4. Perform the packet sniffing mechanism by download the "wire shark" tool and extract the packets
5. Perform the task of creating mail messages by using fake mail id by using the "fake mailer" website (
https://emkei.cz)
6. Perform the IP scanning mechanism by using "tracert"and "arp" commands
7. Perform the port scanning mechanism by using NMAP tool
8. Perform an SQL Injection attack and its preventive measure to avoid Injection attack
9. Perform an activity to access a locked computer without knowing the user's password.

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A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21
Four-year B.Sc. (Hons) - V Semester (from 2022-23)

Course Code: Max Marks: 100 + 50

Domain Subject: **Computer Applications for Sciences**
IV Year B. Sc./B.Com, – Semester – V
Course-**6C**: **E– Commerce Application Development**
(Skill Enhancement Course (Elective), 5 credits)

Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. To apply in an integrative and summative fashion the students' knowledge in all fields of business studies by drafting a website presence plan.
2. To understand the factors needed in order to be a successful in ecommerce
3. To gain the skills to bring together knowledge gathered about the different components of building a web presence
4. To critically think about problems and issues that might pop up during the establishment of the web presence
5. To apply Word Press as a content management system (CMS), Plan their website by choosing colour schemes, fonts, layouts, and more

Syllabus:(Total Hours: 90 including Theory, Practical, Skills Training, Unit tests etc.)

Unit-1 :(10h)

1.1 Introduction to E– commerce:
1.2 Meaning and concept – E– commerce
1.3 E– commerce v/s Traditional Commerce
1.4 E– Business & E– Commerce – History of E– Commerce
1.5 EDI – Importance, features & benefits of E– Commerce
1.6 Impacts, Challenges & Limitations of E– Commerce

Unit-2: (12h)

2.1 Business models of E – Commerce: Business to Business
2.1.2 Business to customers
2.1.3Customers to Customers
2.1.4 Business to Government
2.1.5 Business to Employee
2.2 E – Commerce strategy
2.3 Influencing factors of successful E– Commerce
2.4 Architectural framework of Electronic Commerce
2.5 Web based E Commerce Architecture.
2.6 Internet Commerce

Unit-3: **(12h)**

3.1 Electronic data Interchange (EDD: Definitions: Examples
3.2 EDI Technology
3.3 EDl- Communications
3.4 Implementation
3.5 EDI Agreements –
3.6 Security Purchasing Online
3.7 E– Commerce payment system.
3.8 Digital Economy

Unit -4: **(14h)**

4.1 A Page on the web - HTML Basics
4.2 Client Side scripting -JAVA SCRIPT basics
4.3 Server side Scripting- PHP basics.
4.4 The elements of e-commerce: Internet e-commerce security
4.5 A web site Evaluation Model

Unit-5: **(12h)**

5.1 Logging in to Your Word press Site
5.2 word press dash board
5.3 creating your first post
5.4 adding photos and images
5.5 creating hyper link
5.6 adding categories and tags
5.7 changing your theme
5.8 editing an existing post
5.9 usage of E-commerce plug-in such as Woo Commerce

Textbooks:

1. Turban, Rainer, and Potter, Introduction to E-Commerce, second edition, 2003
2. H. M. Deitel, P. J. Deitel and T. R. Nieto, E-Business and E-Commerce: How to Programe, Prentice hall, 2001
3. WordPress All-in-One For Dummies -written by Lisa Sabin Wilson with contributions by Michael Torbert, Andrea Rennick, Cory Miller, and Kevin Palmer

Reference Books:

1. Elias. M. Awad, “Electronic Commerce", Prentice-Hall of India Pvt Ltd.
2. RaviKalakota, Andrew B. Whinston, "Electronic Commerce-A Manager's guide", Addison-Wesley
3. https://w3cschools.com
4. David Whiteley, E-Commerce: Strategy, Technologies and Applications, Tata McGraw Hill.

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)

A. 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))

B. General

1. Group Discussion
2. Others

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. Efficient delivery using seminar presentations,
4. Computerized adaptive testing, literature surveys and evaluations,
5. Peers and self-assessment, outputs form individual and collaborative work

Course-6C**: E– Commerce Application Development; Lab (Practical) Syllabus**

Case study of e –commerce

1. Home page design of web site
2. Validation using PHP
3. Implement Catalog design
4. Implement Access control mechanism(eg: username and password)
5. Implement Session management (php session management)
6. Implement Shopping cart
7. Case study on business model of bookstore

Note: The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.*

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21
Four-year B.Sc. (Hons) - V Semester (from 2022-23)

Course Code: Max Marks: 100 + 50

Domain Subject: **Computer Applications for Sciences**

Course-**7C: REAL TIME GOVERNANCE SYSTEM (RTGS)**
(Skill Enhancement Course (Elective), 5 credits)

COURSE OUTCOMES:
Upon successful completion of this course, students will have the knowledge and skills to

1. Understand the terms regarding Governance, E-Governance and RTGS
2. Learn about E-Governance Infrastructure
3. Understand the E-Governance implementation in several countries
4. Understand the E-Governance implementation in several Indian states
5. Understand the applications of RTG

Syllabus: (Total Hours: 90 including Theory, Practical, Skills Training, Unit tests etc.)

UNIT 1: Introduction to E-Governance 12hrs

- Government, Governance and Good Governance
- What is E-Governance or Electronic Governance?
- E-Government and E-Governance: A conceptual Analysis
    - ❖ Objectives
    - ❖ Components
    - ❖ application domains
    - ❖ four phase model
    - ❖ implementing E-Governance
    - ❖ issues while implementing E-Governance
    - ❖ Opportunities and challenges
- Types of E-Governance
- What is Real-Time Governance (RTG)
- Real Time Governance Society (RTGS)

UNIT 2: E-Governance Infrastructure 15hrs

- Data Systems infrastructure
    - ❖ Executive Information Systems
    - ❖ Management Information Systems
    - ❖ Knowledge Management Systems
    - ❖ Transaction Processing Systems

- Legal Infrastructural preparedness
  - ❖ IT Act 2000
  - ❖ Challenges to Indian law and cybercrime scenario in India
  - ❖ Amendments of the Indian IT Act
- Institutional Infrastructural preparedness
  - ❖ Internet
  - ❖ intranet
  - ❖ extranet
- Human Infrastructural preparedness
  - ❖ Top-level management
  - ❖ Middle-level management
  - ❖ Low-level management
  - ❖ Human Resource Management System
- Technological Infrastructural preparedness
  - ❖ Information and communications technology
  - ❖ Data Warehousing
  - ❖ Cloud Computing
  - ❖ Data Farms

UNIT 3: E-Governance: Country Experience 11hrs

- US
- UK
- AUSTRALIA
- NEW ZELAND
- INDIA
- DUBAI

UNIT 4: E-Governance in India 11hrs

- Andhra Pradesh
- Karnataka
- Kerala
- Uttar Pradesh
- Madhya Pradesh
- West Bengal
- Gujarat
- Od

UNIT 5: Latest Applications in Real Time Governance (11h)

- Agriculture
- Rural Development
- Health care
- Education
- Tourism
- Commerce and Trade

Textbooks:

1. E-Governance: concepts and case studies| CSR Prabhu| Prentice-Hall|
2. E-Governance| Niranjanpani, Sanhari Mishra | Himalaya Publishing House

Website References:

1. http://www.egov4dev.org/success/case/
2. https://vikaspedia.in/e-governance/resources-for-vles
3. https://altametrics.com/en/information-systems/information-system-types.html
4. https://core.ap.gov.in/CMDashBoard/Index.aspx

Co-Curricular Activities:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. 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. 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)

B. General

1. Group Discussion
2. Try to solve MCQ's available online.

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:
Some of the following suggested assessment methodologies could be adopted;

10. The oral and written examinations (Scheduled and surprise tests),
11. Closed-book and open-book tests,
12. Practical assignments and laboratory reports,
13. Observation of practical skills,
14. Individual and group project reports.
15. Efficient delivery using seminar presentations,
16. Viva-Voce interviews.
17. Computerized adaptive testing, literature surveys and evaluations,
18. Peers and self-assessment, outputs form individual and collaborative work

Course-7C: Real Time Governance System (RTGS); Lab (Practical) Syllabus

Note: Here the students have to gather the details in computer lab by surfing several websites & Google search engines and submit the report to the class/lab instructor before leaving the lab.

Week 1: Write a Report on the role of Nationwide Networking in E-Governance

Week 2: Write a Report on SETU: A Citizen Facilitation Centre in India, regarding its successful or failure journey.

Week 3: Write a Report on National Cyber Security Policy, how it is useful to Indian citizens.

Week 4: Write a Report on mee-seva/Village Secretariat/Ward secretariat, a new paradigm in citizen services.

Week 5: Write a Report on any "State Data Centre (SDC)": Regarding the features, key applications, etc.

Week 6: Write a Report on how Andhra Pradesh is implementing RTGS in Agriculture.

Week 7: Write a Report on how Andhra Pradesh is implementing RTGS in social welfare schemes

Week 8: Write a Report on how Andhra Pradesh is implementing RTGS in waste lands, agricultural lands and house properties.

Week 9: Write a Report on Electronic Birth Registration in any of the four states of our country.

Week 10: Write a detailed report on "types of e-governance" with real-life implementation in India with suitable examples.

Week 11: Write a detailed report on "types of computer networks" available to implement RTGS.

Week 12: Write a detailed report on ICT concept and its usage in schools and college education.

Website References:

- http://www.egov4dev.org/success/case/

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21
Four-year B.Sc. (Hons) - V Semester (from 2022-23)

Course Code: Max Marks: 100 + 50

Domain Subject: **Computer Applications for Sciences**

Course-**6D: Multimedia Tools and Applications**

(Skill Enhancement Course (Elective), 5 credits)

Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Gain knowledge on the concepts related to Multimedia.
2. Understand the concepts like image data representation and color modes.
3. Understand the different types of video signals and digital audio.
4. Know about multimedia data compression types and audio compression standards
5. Know about basic video compression techniques.

Syllabus: (Total Hours: 90 including Theory, Practical, Skills Training, Unit tests etc.)

Unit-1:Introduction to multimedia: 12Hr

1. What is Multimedia?
2. Components of Multimedia System
3. Multimedia Research Topics and Projects
4. Multimedia and Hypermedia
5. Multimedia Authoring metaphors
6. Multimedia Production
7. Multimedia Presentation
8. Some Technical Design Issues
9. Automatic Authoring

Unit-2: Image Data Representations and color models: 12Hr

1. Color science Human vision Image data types:
2. 2.Black & white images
   2.1 1-bit images (Binary image)
   2.2 8 -bit (Gray -level images)
3. Color images
   3.1 24-bit color images
   3.2 8-bit color images
4. Color models

Unit-3: Fundamental concepts in video: 12Hr

1. Types of Video Signals
   1.1 Analog Video
   1.2 Digital Video

Basics of Digital Audio:

2. What is Sound?

2.1 Digitization of Sound

2.2 Quantization and Transmission of Audio

2.2.1 Pulse code modulation

2.2.2 Differential coding of audio

2.2.3 Predictive coding

2.2.4 DPCM

Unit-4:

Multimedia Data Compression: 12Hr

1. Introduction

1.1 Basics of Information Theory

1.2 Lossless Compression Algorithms

1.2.1 Fix-Length Coding

1.2.2 Run-length coding

1.2.3 Differential coding

1.2.4 Dictionary-based coding

1.3. Variable Length Coding

1.3.1 Shannon-Fano Algorithm

1.3.2 Huffman Coding Algorithm

Audio Compression standards:

2. Introduction

2.1 Psychoacoustics model

2.2 MPEG Audio

Unit-5: Basic Video Compression Techniques: 12Hr

1. Introduction to Video compression

2. Video Compression with Motion Compensation

3. Video compression standard H.261

4. Video compression standard MPEG-1

Text Books:

Fundamentals of Multimedia by Ze-Nian Li & Mark S. Drew. Publisher: Prentice Hall

Reference Books:

1. An introduction to digital multimedia by Savage, T. M. and Vogel, K. E. 2008.

2. Digital Multimedia by Nigel Chapman & Jenny Chapman. 2009.

Online Resources: https://ksuit342.wordpress.com/lectuers/

https://www.tutorialspoint.com/multimedia

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)

A. Measurable

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4. 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))

B. **General**

1. Group Discussion
2. Others

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. Programming exercises,
4. Observation of practical skills,
5. Efficient delivery using seminar presentations,
6. Viva voce interviews.
7. Computerized adaptive testing, literature surveys and evaluations,
8. Peers and self-assessment, outputs form individual and collaborative work

Suggested Software

1) Image Editing – GIMP
2) Audio Editing – Audacity
3) Video Editing – video pad
4) NCH software tools.

Course-6D**: Multimedia Tools and Applications; Lab (Practical) Syllabus**

1. Editing images using GIMP
2. Improve the Quality of your Image in GIMP
3. Introduction to Layer Masks. Au
4. Create an impressive background in GIMP
5. Applying Shadow & Highlight effects in images
6. Black& white and color photo conversion.
8. Using File Seizer Software for Audio compression.
9. Using File seizer Software for Video compression.

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21
Four-year B.Sc. (Hons) - V Semester (from 2022-23)

Course Code: Max Marks: 100 + 50

Domain Subject: **Computer Applications for Sciences**

Course-**7D: DIGITAL IMAGING**

(Skill Enhancement Course (Elective), 5 credits)

Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Gain knowledge about Types of Graphics, Types of Objects, Types of video editing tools
2. Show their skills in editing and altering photographs for through a basic understanding of the tool box.
3. Gain knowledge in using the layers.
4. Gain knowledge in using the selection tools, repair tools.
5. Gain knowledge in using selection tools, applying filters and can show their skills.

Syllabus: (Total Hours: 90 including Theory, Practical, Skills Training, Unit tests etc.)

UNIT-I **12 Hrs**

1. Types of Graphics
    - 1.1 Raster vs Vector Graphics
2. Types of Objects
    - 2.1 Audio formats
    - 2.2 Video formats
    - 2.3 Image formats
    - 2.4 Text document formats
3. Types of video editing
4. Different color modes.
5. Image Scanner
    - 5.1 Types of Image Scanners

UNIT-II **12 Hrs**

1. What is GIMP?
2. GIMP tool box window
3. Layers Dialog
4. Tool Options Dialog
5. Image window
6. Image window menus

UNIT-III **12 Hrs**

Improving Digital Photos

1.1 Opening files

1.1.1 Rescaling saving files

1.2. Cropping

1.3. Brightening & Darkening

1.4. Rotating

1.5. Sharpening

1.6. Fixing Red Eye

Introduction to layers

2. What is layer?

2.1. Using layer to add text

2.2. Using move tool

2.3. Changing colors

2.4. Simple effects on layers

2.5 Linking layers together

2.6 Performing operations on layers

2.7 Using layers to copy and paste

2.8 Tour of layers dialog

UNIT-IV **12 Hrs**

Drawing:

1.1 Drawing lines and curves

1.2 Changing colors and brushes

1.3 Erasing

1.4 Drawing rectangles

1.5 Circles and other shapes

1.6 Outlining and filling regions

1.7 Filling with patterns and gradients

1.8 Importing brushes or gradients or making your own.

Selection:

2.1 Working with selections

2.2 Select by color and fuzzy

2.3 Select Bezier paths

2.4 Intelligent scissors tool

2.5 Modifying selections with selection modes

UNIT-V **12 Hrs**

Erasing and Touching Up:

1.1 Dodge and burn tool
1.2 Smudging tool
1.3 Clone tool
1.4 Sharpening using convolve tool
1.5 Blurring with Gaussian Blur
1.6 Correcting Color Balance
1.7 Hue
1.8 Saturation
1.9 Color balance using curves and levels.

Filters:

2.1 Filters
- 2.1.1 Blur
- 2.1.2 Enhance
- 2.1.3 Distort
- 2.1.4 Noise Filters

References:

Textbook: Beginning GIMP from Novice to professional by Akkana Peck,
Second Edition, A press

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)

A. Measurable

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4. 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))

B. **General**

1. Group Discussion
2. Others

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. Programming exercises,
4. Observation of practical skills,
5. Efficient delivery using seminar presentations,
6. Viva voce interviews.
7. Computerized adaptive testing, literature surveys and evaluations,
8. Peers and self-assessment, outputs form individual and collaborative work

Course-7D**: DIGITAL IMAGING; Lab (Practical) Syllabus**

1. Designing a Visiting card
2. Design Cover page of a book
3. Paper add for calling tenders
4. Passport photo design
5. Design a Pamphlet
6. Brochure designing
7. Titles designing
8. Custom shapes creation
9. Black & white and color photo conversion
10. Image size modification
11. Background changes
12. Texture and patterns designing
13. Filter effects & Eraser effects

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21
Four-year B.Sc. (Hons) Semester-5 (from 2022-23)

Course Code: Max Marks: 100 + 50

Domain Subject: **Computer Applications for Sciences**

Course-**6E: BIOLOGICAL DATABASES AND APPLICATIONS**
(Skill Enhancement Course (Elective), 5 credits)

Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. To provide a system level understanding of interactions of computers with biological systems.
2. To model the biological macromolecular structures and structure prediction methods
3. To gain knowledge about the methods to characterize and manage different types of biological data

II. Syllabus :(Total Hours: 90 including Theory, Practical, Skills Training, Unit tests etc.)

Unit – 1: Basic concept of open access bibliographic resources related to life sciences, the Significances and the need for such resources, the major content of the databases, how to search and use these resources/databases with special references to Pub Med. (12 h)

Unit – 2: (10 h)
Contents and formats of databases entries, retrieval of data using text based search Using ENTREZ, sources of data, method for deposition of data to databases.

Unit – 3: (12 h)
Nucleic acid sequence databases, GenBank, EMBL, DDBJ. Protein Sequence Databases: SWISSPROT, Tr-EMBL, PIR-PSD, Genome Databases at NCBI, EBI , TIGR, SANGER.

Unit – 4: (12 h)
Secondary Structure Prediction of Protein, Tertiary Structure Prediction of Protein, Bioinformatics Perspectives on Human Diseases, Markov and Hidden Markov Models

Unit – 5: (14 h)

Machine Learning Techniques, Algorithms and techniques for Microarray analysis, Medical Informatics, Bioinformatics & systems biology

Textbooks:

1. Introduction to Bioinformatics – Attwood & Parry-Smith, Pearson Education.
2. Bioinformatics-Methods and applications, Rastogi, S.C.Mendiratta, N. and Rastogi P

Reference Books:

1. Introduction to Bioinformatics – Attwood & Parry-Smith, Pearson Education
2. Bioinformatics- A beginner's guide by Jean-Michel Claverie, John Wiley & Sons.

3 .Structural Bioinformatics by Philip E. Bourne and HelgeWeissing, Wiley

4. Bioinformatics-Methods and applications, Rastogi,S.C.Mendiratta, N. andRastogi P, Prentice-Hall of India Pvt. Ltd, New Delhi
5. Essential Bioinformatics-JinXiong, Cambridge University Press
6. Bioinformatics – Sequence and Genome anlysis, Mount DW, Cold Spring Harbour Laboratory Press, New York

7. Bioinformatics - BaxevanisAD&Quellette BFF, John Wiley & Sons Inc.

Reference Links

1. https://www.nature.com/articles/ng1199supp_84b
2. https://www.coursera.org/learn/machine-learning

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)

F. 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 a steams))
4. 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)

G. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

21. The oral and written examinations (Scheduled and surprise tests),
22. Closed-book and open-book tests,
23. Problem-solving exercises,
24. Practical assignments and laboratory reports.
25. Observation of practical skills,
26. Individual and group project reports like "Creating Text Editor in C".
27. Efficient delivery using seminar presentations,
28. Viva voce interviews.
29. Computerized adaptive testing, literature surveys and evaluations,
30. Peers and self-assessment, outputs form individual and collaborative work

Course-6E**: Biological Databases and Applications; Lab (Practical) Syllabus**

1. Information retrieval from NCBI
2. Demonstration on the possible usage of Gene databases
3. Demonstration of structure and applications of Protein databases
4. Demonstration on sequence alignment (pair wise) using any biological database
5. Demonstration on sequence alignment (MSA) using any biological database
6. Demonstration of various functions/applications on biological databases using BLAST tool.

Note: The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.*

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2020-21
Four-year B.Sc. (Hons) Semester – V (from 2022-23)
Subject: **Computer Science for Sciences**

Course Code: Max Marks: 100 + 50

Course-**7E: ESSENTIALS OF BIO INFORMATICS**
(Skill Enhancement Course (Elective), 5 credits)

Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. To get the basic knowledge on the concepts of Bioinformatics and its significance in Biological data analysis.
2. To know the methods to characterise and manage the different types of Biological data.
3. To get insight into the basics of sequence alignment and analysis.
4. To get overview about biological macromolecular structures and structure prediction methods.

II. Syllabus :(Total Hours: 90 including Theory, Practical, Skills Training, Unit tests etc.)

Unit – 1: (12 h)

Introduction: What is Bioinformatics, Goal, Scope, Applications and Limitations
Introduction to Biological Databases: What is a Database, types of Databases, biological databases, pitfalls of biological databases, information Retrieval from biological data bases.

Unit – 2: (12 h)

Pairwise sequence Alignment-Evolutionary basis, sequence homology versus sequence similarity, sequence similarity versus sequence identity, Global and local alignment methods, scoring matrices, statistical significance of sequence alignment

Unit – 3: (14 h)

Database similarity searching- Unique requirements of database searching, heuristic database searching, Basic Local Alignment Search Tool (BLAST), FASTA, comparison of FASTA and BLAST, database searching with Smith-Waterman Method.

Unit – 4: (10 h)

Multiple sequence alignments- clustal-w, Homology modeling, phylogenetic tree construction, applications of sequence alignments.

Unit – 5: (12 h)

Gene Prediction- Categories of Gene Prediction programs, Gene Prediction in Prokaryotes, Gene Prediction in Eukaryotes, Protein structure basis-Amino Acids, Secondary Structures, Tertiary Structures, Protein Structure database.

Textbooks:

1. Essential Bioinformatics-Jinxing, Cambridge University Press

Books for Reference:

1. Introduction to Bioinformatics – Attwood & Parry-Smith, Pearson Education.
2. Bioinformatics-Methods and applications, Rastogi,S.C. Mendiratta, N. and Rastogi
3. F. Crick, "Central dogma of molecular biology," *Nature*, vol. 227 pp. 561-563, 1970.
4. P. K. Gupta, "Cell and molecular biology," 5th Edition, *Rastogi Publications*, 2005.
5. J. D. Watson, A. B. Tania, P. B. Stephen, G. Alexander, L. Michael, and L. Richard, "Molecular biology of the gene," 7th Ed, *Pearson Education*, 2017

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)

H. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
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3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. 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

I. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

31. The oral and written examinations (Scheduled and surprise tests),
32. Closed-book and open-book tests,
33. Problem-solving exercises,
34. Practical assignments and laboratory reports.
35. Observation of practical skills,
36. Individual and group project reports like "Creating Text Editor in C".
37. Efficient delivery using seminar presentations,
38. Viva voce interviews.
39. Computerized adaptive testing, literature surveys and evaluations,
40. Peers and self-assessment, outputs form individual and collaborative work

Course-7E**: Essentials of Bioinformatics; Lab (Practical) Syllabus**

1. Demonstration of various functional features of NCBI web page
2. Demonstration on sequence retrieval of a given Gene
3. Demonstration on sequence retrieval of a known Protein
4. Demonstration on sequence alignment of given two sequences.
5. Homology prediction using BLAST
6. Phylogenetic tree construction
7. Protein 2^0 (secondary) structure prediction by UniProt.

Note: The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool-based exercises can be prepared by the concerned faculty members.*

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Draft Syllabus prepared by:

1. Dr. M. Babu Reddy, Krishna University, Machilipatnam
2. Mr.Kavuri Sridhar, PB Sidhartha College of Arts & Science, Vijayawada
3. Mr. SAB Nehru, Andhra Layola College, Vijayawada

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 analyticalSolid geometry & Three dimensional analyticalSolid 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:

1. After successful completion of this course, the student will be able to; Solve linear differential equations
2. Convert nonexact homogeneous equations to exact differential equations by using integratingfactors.
3. Know the methods of finding solutions of differential equations of the first order but not of the first degree.
4. Solve higher-order linear differential equations, both homogeneous and non homogeneous, withconstant 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 notcontain 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, $\frac{1}{f}$ is expressed as partial fractions.

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

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.

P.I. 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, miscellaneous differential 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 ofIndia 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 byS.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 UniversityPress.

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; Planesections 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 ofa 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/ ProblemSolving.

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 thetheorems.
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 elementaryproperties Finite and Infinite groups – examples – order of a group, Composition tables with examples.

UNIT – II (12 Hours)

SUB - GROUPS :

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 fortesting 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 forseries tests for convergence of series, Series of Non-Negative Terms.

1. P-test
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 extensionsof 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 asthe 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 & CompanyPvt. 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 aVector 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.4^{th} Edition, 2007.

Recommended Question Paper Patterns and Models

BLUE PRINT FOR QUESTION PAPER PATTERNCOURSE-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 notof 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 DifferentialEquations (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 EQUATIONSMATHEMATICS 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$(D^3 + D^2 - D - 1)y$

(Or)

$= \cos 2x$.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 $2x + \ -4 \ = 0 \ = \ y \ + 2z$ 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 thecentre 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 thepoint 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 axesin 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. Alsofind 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 itsequation.

(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 whosebase 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 thattouches 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 itsgenerators parallel to the line x=y=z.

BLUE PRINT FOR QUESTION PAPER PATTERNCOURSE-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 normalsubgroup.

5. Examine whether the following permutations are even or oddi)

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

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 n^{th} 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 theother.

(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 productof 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 evenpermutations. 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 PATTERNCOURSE-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 MeanValue 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 <u>FIVE</u> questions. Each question carries <u>FIVE</u> marks 5 X 5 M=25 M

1.Prove that every convergent sequence is bounded.

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

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

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 <u>ALL</u> the questions. Each question carries <u>TEN</u> 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$\rightarrow$ R be such that

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

$= c$ 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 isuniformly 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 PATTERNCOURSE-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 <u>FIVE</u> questions. Each question carries <u>FIVE</u> 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) ofelements 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 $\alpha+\beta, \beta+\gamma, \gamma+\alpha$ arealso linearly independent.

3. Prove that every set of $(n+1)$ or more vectors in an n dimensional vector space islinearly 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 alinear 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) andH (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 reciprocalsof 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 inthe inner product space $R^3(R)$ with the standard inner product.

SECTION - B

Answer <u>ALL</u> the questions. Each question carries <u>TEN</u> 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 setof V. Prove that the necessary and sufficient condition for W to be a subspace of V is .

$a, b \in F$ and $\alpha, \beta \epsilon V \Rightarrow a\alpha + b\beta \epsilon W$

(OR)

(b) Prove that the four vectors (1,0,0), (0,1,0), (0,0,1) and (1,1,1) of $V_3(C)$ formlinearly 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 orthonormalbasis using Gram-Schmidt orthogonalisation process.

SUBJECT EXPERTS

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Dr.K.Chitti Babu,

Lecturer in Mathematics,

Govt. Degree College,

Ramachandrapuram

SYLLABUS VETTED BY

Prof.D.Bharathi,
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.

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.

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)

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)

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)

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.

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 $\mathrm{Pn}(x)$ 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.

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.

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.	
2.	
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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)

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.

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.

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.	
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)

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.

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.

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)

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.

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.

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.

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)

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 $\Lambda(n)$.

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.

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.	
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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)

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 it applications and 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 motion and 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 out the 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 Moment of inertia tensor, Euler equations, Precession of a spinning top, Gyroscope, Precession of atom and nucleus in magnetic field, 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, absolute frames, 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 examples and 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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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 Lasers and 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, polarimeter and making finer measurements of wavelength of light using Newton Rings experiment, 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 method andthe 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.

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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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), Practical applications of substances at 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.

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UNIT-I

1. Electrostatics: (6hrs)

Gauss's law-Statement and its proof, Electric field intensity due to (i) uniformly charged 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)uniformly charged sphere

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: (6hrs)

Idea of displacement current, Maxwell's equations-Derivation, Maxwell's wave equation (with derivation), 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, Input and output characteristicsofa transistor in CE mode, Relation between alpha, beta and gamma; 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, DeMorgan's laws-Statements and Proofs, Basic logic gates, 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 Course IV: 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 complementarily.

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(Infinite Potential 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)

Nano materials – 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 covering all the five units in the syllabus*]

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SUBJECT EXPERTS

Prof.K.T.Rama Krishna Reddy
Dept of Physics,
S V University,
Tirupati

Dr.M.Ravi Kumar,
Lecturer in Physics,
Govt. Degree College,
Ananthapuram

SYLLABUS VETTED BY

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

AP STATE COUNCIL OF HIGHER EDUCATION

RevisedB.Sc. PHYSICS SYLLABUS UNDER CBCS

[For Non-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.of Hrs/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

I YEAR B.Sc. -I SEMESTER

[2020-21 Batch onwards]

Course I: MECHANICS,WAVES AND OSCILLATIONS

(For Non-Maths Combinations)

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 Newton's laws of motion and the law of conservation of linear momentum and its application to rocket motion, the concepts of concepts of impact parameter, scattering cross section and Distinguish between elastic and inelastic collisions.*
- *Formulate the rotational kinematic relations, learn the working principle of gyroscope and its applications and explain the precessional motion of a freely rotating symmetric top.*
- *Analyse 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.*
- *State the postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence.*
- *Understand the phenomena of simple harmonic motion and the distinction between undamped, damped and forced oscillations and the concepts of resonance and quality factor with reference to damped harmonic oscillator.*
- *State the laws of transverse vibrations in a stretched string and their verification using a*

  sonometer and learn the formation of harmonics and overtones in a stretched string.
- *Acquire knowledge on Ultrasonic waves, their production and detection and theirapplications in different fields.*

UNIT-I:

1. Mechanics of Particles(06 hrs)

Review of Newton's Laws of Motion, Conservation of linear momentum, Collisions, Elastic and inelastic collisions, Collisions in one and two dimension, Rocket propulsion, Impact parameter, Scattering cross-section, Rutherford scattering (No derivation-Qualitative ideas only)

2.Mechanics of Rigid body: (06hrs)

Rigid body, Rotational kinematic relations, Rotational kinetic energy and moment of inertia, Angular momentum, Torque, Relation between torque and angular momentum, Conservation of angular momentum, Illustrations, Gyroscopic motion (No derivation - Qualitative ideas only), Precession of the equinoxes.

UNIT-II:

3. Central forces: (12hrs)

Central force-Definition& examples, General Characteristics of Central forces, Conservative nature of central forces, Planetary motion-Kepler's laws (Statements & Explanation), Deduction of Newton's law of gravitation from Kepler's law, Geostationary Satellite Motion, Uses of communication satellites, Basic idea of Global Positioning System (GPS) andtheir applications.

UNIT-III:

4. Relativistic Mechanics (12 hrs)

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 (No derivations); length contraction; time dilation; addition of velocities; Einstein's mass –energy equation

UNIT-IV:

5. Undamped, Damped and Forced Oscillations (12hrs)

Simple harmonic motion, Characteristics of SHM, Equation of motion and solution, Combination of Simple harmonic motions along a line and perpendicular to each other-Lissajous figures& uses, Damped vibrations: Explanation and examples, Distinction between damped and undamped vibrations, Forced vibrations: Explanation and examples, Resonance,

examples – Sharp resonance and Flat resonance, Sharpness of resonance, Q-factor, Volume Resonator- Determination of frequency of a given tuning fork.

UNIT-IV:

6. Wave motion :(06hrs)

Progressive waves-Equation of a progressive wave, Velocity of transverse waves in elastic media, Standing waves, overtones and harmonics, Sonometer-Verification of laws of transverse vibrations in a stretched string, Phenomenon of beats (qualitative ideas only).

7. Ultrasonics :(06hrs)

Ultrasonics, properties, production of ultrasonics by piezoelectric and magnetostriction methods, detection of ultrasonics, Applications of ultrasonic waves.

REFERENCE BOOKS:

- BSc Physics, Vol.1 -Telugu Academy, Hyderabad
- Physics for Biology and Premedical Students –D.N. Burns & SGG Mac Donald
- Unified Physics Vol.I- Mechanics,Waves and Oscillations; Jai PrakashNath&Co.Ltd., Meerut.
- Properties of Matter - D.S. Mathur, S.Chand& Co, New Delhi ,11thEdn., 2000
- Properties of Matter - Brijlal&Subrmanyam, S.Chand&Co. 1982
- Waves and Oscillations- S. Badami, V. Balasubramanian and K. Rama Reddy, Orient Longman.
- Waves and Oscillations- N. Subramaniyam and Brijlal, Vikas Publishing House Private Limited.

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.*
- *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.*

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 Centers to understand the basic principles of mechanics with live examples.
- Visit to and related industries
- Study the rate of flow of water in water works department in local municipality.

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
- Individual and group project reports
- Efficient delivery using seminar presentations
- Viva voce interviews.

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B.Sc. PHYSICS SYLLABUS UNDER CBCS

I YEAR B.Sc.-II SEMESTER

[2020-21 Batch onwards]

Course II: WAVE OPTICS

(For Non-Maths Combinations)

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

Course outcomes:

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

- *Explain about the different aberrations in lenses and discuss the methods of minimizing them.*
- *Understand the phenomenon of interference of light and its formation in Lloyd's single mirror Thin films and Newton's rings.*
- *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 principles of laser and fibre optic communication and their applications.*

UNIT –I: Geometric optics **(12 hrs)**

Aberrations in lenses-Chromatic Aberration-Achromatic Combination of lenses-Monochromatic defects-Spherical aberration-Astigmatism; Coma; Curvature and Distortion-Minimizing aberration.

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

The superposition principle, Condition for Interference, Classification of Interferences methods-Young's double slit experiment-Theory, Intensity in interference pattern- Phase change on reflection ; Lloyd's single mirror; Interference due to plane parallel wedge shaped

films, Colors in thin films-Newton rings, Determination of wavelength of light using Newton's rings.

UNIT-III: Diffraction (12 hrs)

Fresnel and Fraunhoffer diffraction phenomena, Differences between interference and diffraction, Fraunhoffer diffraction of single Slit; Diffraction grating- Determination of wavelength of light using diffraction grating (Normal incidence and Minimum deviation); Resolving power; Rayleigh's criterion –limits of resolution for telescopes and microscope, Zone plate-construction and its comparison with convex lens

UNIT-IV: Polarization (12 hrs)

Polarized light: Production of plane polarized light by reflection, Double refraction; Brewster's law; Malus law; Nicol prism; Nicol prism as polarizer and analyzer- Quarter wave plate, Half wave plate- Production and detection of plane, circularly and elliptically polarized light, Optical activity, determination of specific rotation by Laurent's half shade polarimeter

UNIT V: Lasers& Fiber Optics(12 hrs)

Lasers-characteristics; Stimulated and Spontaneous emission, Population inversion, Laser principle, Ruby laser, He-Ne laser, Applications of lasers

Introduction to fibres, Different types of fibres, Principles of fiber communication (qualitative treatment only), Advantages of optical fibre communication

REFERENCE BOOKS

- BSc Physics, Vol.2, Telugu Academy, Hyderabad
- Physics for Biology and Premedical Students –D.N. Burns & SGG Mac Donald
- Unified Physics Vol.II, Optics and Thermodynamics,*JaiPrakashNath&Co.Ltd., Meerut*.
- Optics, AjoyGhatak, Tata Mc Graw-Hill.
- Fundamentals of Optics, H.R. Gulati and D.R. Khanna, 1991, R. Chand Publication
- Introduction of Lasers – Avadhanulu, S.Chand& Co.
- Principles of Optics- BK Mathur, Gopala Printing Press, 1995

Practical Course II: Wave Optics

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

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, polarimeter and making finer measurements of wavelength of light using Newton Rings experiment, 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 method and 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 fiber by wedge method
10. Determination of refractive index of liquid-Boy's method.

RECOMMENDED CO-CURRICULAR ACTIVITIES:

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

1. Group Discussion
2. Visit to Research Stations/laboratories and related industries
3. Others

RECOMMENDED 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. Individual and group project reports,
4. Efficient delivery using seminar presentations,
5. Viva voce interviews.

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B.Sc. PHYSICS SYLLABUS UNDER CBCS

II YEAR B.Sc. -III SEMESTER

[2020-21 Batch onwards]

Course-III: HEAT AND THERMODYNAMICS

(For Non-Maths Combinations)

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

Course outcomes:

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

- *Develop an understanding on the concepts of Thermodynamics, Thermoelectricity, Low temperature Physics and Quantum theory of Radiation.*
- *Develop critical understanding of concept of Thermodynamic potentials and formulation of Maxwell's equations.*
- *Get familiarized with the principles of Seebeck effect, Thomson effect and Peltier effect.*
- *Understand the different methods of production of low temperatures and study the applications of substances at low temperatures.*
- *Examine the nature of black body radiations.*

UNIT-I:Kinetic theory of Gases: (12 Hrs)

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; Zeroth law of thermodynamics, Measurement of temperature- Platinum resistance thermometer, Thermoelectric thermometer.

UNIT-II: Thermodynamics : (12 Hrs)

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 irreversibleprocesses,Entropy and disorder-Entropy of universe.

UNIT-III: Low temperature Physics: (12 Hrs)

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), Principle of refrigeration,Practical applications of substances at low temperatures.

UNIT-IV: Measurement, Laws and Theories of Radiation: (12 Hrs)

Black body,Ferry's black body, Distribution of energy in the spectrum of Black body,Kirchoff's law, Wein's displacement law, Stefan-Boltzmann's law and Rayleigh-Jean's law (Statements only), Planck's radiation formula (no derivations), Types of pyrometers, Disappearing filament optical pyrometer and its working; Solar constant and its determination using Angstrom pyroheliometer, Estimation of surface temperature of Sun.

UNIT-V: Thermoelectricity :(12 Hrs)

Seebeck effect, Variation of thermoemf with temperature; Thermo electric series; Measurement of thermoemf using potentiometer, Law of intermediate metals and intermediate temperatures - Peltier effect, Thomson effect; Thermoelectric diagrams and their uses, Thermoelectric power; Applications of thermoelectric effects.

REFERENCE BOOKS

- BSc Physics, Vol.2, Telugu Academy, Hyderabad
- Physics for Biology and Premedical Students –D.N. Burns & SGG Mac Donald
- Unified Physics Vol.II, Optics and Thermodynamics,JaiPrakashNath&Co.Ltd., Meerut.
- Heat and Thermodynamics, N.Subramanyam and L.Brijlal, S.Chand& Co.
- Electricity and Magnetism, N.Subramanyam and L.Brijlal, S.Chand& Co.
- 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 basic experiments in thermal Physics, such as, 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
    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))
6. General
7. Group Discussion
8. Visit to Research Stations and related industries
9. Others

RECOMMENDED ASSESSMENT METHODS

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Problem-solving exercises,
3. Observation of practical skills,
4. Individual and group project reports,
5. Efficient delivery using seminar presentations,

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B.Sc. PHYSICS SYLLABUS UNDER CBCS

II YEAR B.Sc. -IV SEMESTER

[2020-21 Batch onwards]

Course IV: ELECTRICITY, MAGNETISM AND ELECTRONICS

(For Non-Maths Combinations)

Work load: 60 hrs 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 Electricity, Magnetism and Electronics and their applications.*
- *Understand the Gauss's law in electrostatics and the concepts of electric potential, equipotential surfaces and the classifications of dielectric materials.*
- *Distinguish between magnetic effect of electric current and electromagnetic induction and apply the related laws in appropriate circumstances.*
- *Comprehend the role and importance of Faraday's laws and Lenz 's law in electromagnetic induction.*
- *Understand Biot and Savart's law and Ampere's circuital law to describe and explain the generation of magnetic fields by electrical currents.*
- *Understand the Kirchoff's laws and its application to Wheatstone's bridge*
- *Disseminate the fundamentals of digital electronics and principles of p-n junction diodes and transistors.*

UNIT-1:

1. Electric field and Potential (12 Hrs)

Coulomb's law ; Electric field and Electric lines of force, Electric flux; Gauss's law statement and its proof; Deduction of Coulomb's law from Gauss's law, Applications of Gauss Law: Electric field intensity due to (i) Uniformly charged sphere (ii) an infinite conducting sheet of charge (No Derivation- qualitative ideas only); Electrical potential; Equipotential surfaces with examples; Potential due to electric dipole.

UNIT-II:

2. Capacitance and Dielectrics(12 Hrs)

Electric capacitance ; Principle of condenser, Capacity of a parallel plate capacitor with and without dielectric; Energy stored in a capacitor, Electric dipole moment; Di-electrics and examples, Types of dielectrics; Effect of electric field on dielectrics; Electric displacement D, electric polarization P, Dielectric constant, Permeability & Susceptibility (Definitions only); Relation between D,E and P

UNIT-III:

3. Current Electricity(12 Hrs)

Electric current and current density, drift velocity; Relationship between current density and drift velocity, Electrical resistance and resistivity, conductivity, Ohm's law and its limitations; Kirchhoff's laws –Statements and explanations; Application of Kirchhoff's laws to Wheatstone bridge, sensitivity of Wheatstone bridge

UNIT-IV:

4. Electromagnetism: (12 Hrs)

Biot-Savart's law-Explanation; Application of Biot-Savart's law to circular coil carrying current (No derivation-qualitative treatment only) ; Ampere's law ; Force on (i) charged particles and (ii) current carrying conductor in the magnetic field, Hall effect and its applications.

5. Electromagnetic induction: Faraday's laws of electromagnetic induction, Lenz's law, Phenomena of Self induction and Mutual induction, Self inductance of a long solenoid, Transformer-Principle and working; Energy stored in a magnetic field

UNIT-V:

6. Basic Electronics: (06Hrs)

PN junction diode and its V-I characteristics, Half and full wave rectifiers (working-qualitative ideas only); Action of filters- L-type and π- type filters; Transistors- PNP and NPN transistors& their working; CE, CC and CB Configurations, CE transistor –Input and output characteristics, Transistor as an amplifier.

7. Digital Electronics: (06 Hrs)

Number system, conversion of binary to decimal and vice versa, De Morgan's theorems Statements& Proofs; Basic Logic gates and their verification of truth tables, NAND and NOR gates as universal gates, Half and Full adders.

REFERENCE BOOKS

- B.Sc., Physics, Vol.3, Telugu Academy, Hyderabad
- Modern Physics by R. Murugeshan and Kiruthiga Siva Prasath – S. Chand & Co.
- Electricity and Magnetism, Brijlal and Subramanyam. RatanPrakashanMandir.
- Principles of Electronics, V.K. Mehta, S.Chand& Co.,
- Digital Principles and Applications, A.P. Malvino and D.P.Leach, McGrawHill Edition.

Practical Course IV: 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 circuits.*
- *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

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)
6. General
7. Group Discussion
8. Visit to Research Stations and related industries
9. Others

RECOMMENDED ASSESSMENT METHODS

Some of the following suggested assessment methodologies could be adopted;

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

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B.Sc. PHYSICS SYLLABUS UNDER CBCS

II YEAR B.Sc. -IV SEMESTER

[2020-21 Batch onwards]

Course V: MODERN PHYSICS

(For Non-Maths Combinations)

Work load: 60 hrs 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 theory and nuclear physics.*
- *Develop critical understanding of concept of Matter waves and Uncertainty principle.*
- *Get familiarized with the phenomenon of photoelectriceffect and Compton effect*
- *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.*
- *Increase the awareness and appreciation of superconductors and their practical applications.*
- *Develop an understanding on the nanomaterials, their properties and applications.*
- *Conduct experiments using skills appropriate to the units*

UNIT-I:

1. Atomic and Molecular Physics:(12 hrs)

Bohr's theory of Hydrogen atom ; Spectral series of Hydrogen atom and energy levels, Elementary ideas of Sommerfeld elliptical theory, Vector atom model-Quantum numbers associated with vector atom model; Zeeman effect –Experimental arrangement,Paschen-Back effect and Stark effect (Elementary ideas only); Raman effect, Quantum theory of Raman effect; Experimental arrangement to observe Raman effect and its applications.

UNIT-II :

2. Fundamentals of Quantum theory:(12 hrs)

Inadequacy of classical physics, spectral radiation, Plank's quantum theory, Photoelectric effect; Experimental demonstration, Laws of photoelectric emission- Threshold frequency and work function; Einstein's Photoelectric equation and its verification by Millikan's experiment ; Compton effect (no derivation) and its experimental verification

UNIT-III:

3. Matter Waves and Uncertainty principle (12 hrs)

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 principle, Complementary principle of Bohr.

UNIT-IV:

4. Nuclear Physics (12 hrs)

Nuclear Structure: General Properties of Nuclei, Mass defect, Binding energy; *Nuclear forces*: Characteristics of nuclear forces; 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. Nanomaterials:(7hrs)

Nanomaterials – Introduction, Electron confinement-Size effect-Surface to volume ratio; Classification of nano materials– (0D, 1D, 2D); Examples: CNT, Graphene, nano wires; Distinct properties of nano materials (Mention-*mechanical, optical, electrical, and magnetic properties*); Applications of nanomaterials

6. Superconductivity: (5 hrs)

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

- B.Sc Physics, Vol.4, Telugu Academy, Hyderabad.
- Molecular Structure and Spectroscopy by G. Aruldhas. Prentice Hall of India, New Delhi.
- Physics for Biology & Premedical Students –D.N. Burns & SG Mac Donald, Addison Wiley.
- S.K. Kulkarni, Nanotechnology: Principles & Practices (Capital Publ.Co.)
- K.K. Chattopadhyay and A. N. Banerjee, Introduction to Nanoscience and Technology(PHI Learning Priv.Limited).
- Nano materials, A K Bandopadhyay. New Age International Pvt Ltd (2007)
- Textbook of Nanoscience and Nanotechnology, BS Murthy, P Shankar, BaldevRaj,BBRath 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

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) 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

1. Group Discussion
2. Visit to Research Stations and related industries
3. Others

RECOMMENDED ASSESSMENT METHODS

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Practical assignments and laboratory reports,
3. Observation of practical skills,
4. Individual and group project reports,
5. Efficient delivery using seminar presentations,
6. 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 both 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. 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.

8. 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.

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

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

11. 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**

B.Sc. PHYSICS

[For Non-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

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SUBJECT EXPERTS

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Ananthapuram

SYLLABUS VETTED BY

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Dept of Physics,
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Anantapur

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

(A Statutory body of the Government of Andhra Pradesh)

(Implemented from AcademicYear 2020-21)

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.*

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

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

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.

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.

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.

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.

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.

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).

(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, Pyranometer-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

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

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/

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. **Capacito**r-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)

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.

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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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.

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.

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,

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Dr. Y. Narasimha Murthy, Associate Prof of Physics, S.S.B.N.College, Anantapur
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Structure of ZOOLOGY Syllabus

(Under CBCS for 4-year B.Sc. Hons. 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: FOUR-YEAR B.Sc. Hons.

(**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 ofBiology 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 insocietal 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 for Five 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/presentationin 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 to Coelenterata 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

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

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*

Unit – IV

Phylum Annelida

4.1 General characters and classification up to classes with suitable examples

4.2 Evolution of Coelom and Coelomoducts

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

4.6 Metamorphosis in Insects

4.7 *Peripatus* - Structure and affinities

4.8 Social Life in Bees 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

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*

REFERENCE BOOKS

1. L.H. Hyman '*The Invertebrates' Vol I, II and V.* – M.C. Graw Hill Company Ltd.

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.

5. Barrington. E.J.W., '*Invertebrate structure and Function'* by ELBS.

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.

8. Barnes, R.D. (1982). *Invertebrate Zoology*, V Edition"

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

1.
2.
3.
4.
5.
6.
7.
8.

II. Answer any FIVE of the following: **5x10=50**

Draw labeled diagrams wherever necessary

9.

OR

10.

OR

11.

OR

12.

OR

13.

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 of Fishes

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 Amphibiaup 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 of Aves

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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- R.L.Kotpal, 2000. Modern textbook of zoology, Vertebrates. (Rastogi Publ., Meerut). 632 pages.
- E.L. Jordan & P.S. Verma, 1998. Chordate zoology. (S. Chand & Co.). 1092 pages.
- 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

□□□□□

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

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.

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4. Rastogi, Cytology
5. Varma & Aggarwal, Cell Biology
6. C.B. Pawar, Cell Biology
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8. Snustad, D.P., Simmons, M.J. (2009). Principles of Genetics. V Edition. John Wiley and Sons Inc.
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14. Instant Notes in Molecular Biology by Bios scientific publishers and Viva Books Private Limited
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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

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OR

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OR

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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.
2. Gardner EF. 1975. *Principles of Genetics.* John Wiley & Sons, Inc. New York.
3. Harth and Jones EW. 1998. *Genetics – Principles and Analysis.* Jones and BarHett Publ. Boston.
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7. Rastogi VB. 1991. *Organic Evolution.*KedarNath Ram Nath Publications, Meerut,Uttar Pradesh, India.
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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

2.1 Nerve impulse transmission - Resting membrane potential, origin and propagation of action potentials along myelinated and non-myelinated nerve fibers

2.2 Muscle 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

4.1 Carbohydrate 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

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2. Floray E. *An Introduction to General and Comparative Animal Physiology.* W.B. Saunders
   Co., Philadelphia.
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7. Developmental Biology by Balinksy
8. Developmental Biology by Gerard Karp
9. Chordate embryology by Varma and Agarwal
10. Embryology by V.B. Rastogi
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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

9.

OR

10.

OR

11.

OR

12.

OR

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

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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 Histo compatibility Complex in terms ofimmune 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.

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 histo compatibility complexes

2.4 Exogenous and Endogenous pathways of antigen presentation and processing

2.5 Hypersensitivity – Classification and Types

Unit – III Techniques

2.1 Animal Cell, Tissue and Organ culture media: Natural and Synthetic media,

2.2 Cell cultures: Establishment of cell culture (primary culture, secondary culture, types of cell lines; Protocols for Primary Cell Culture); Established Cell lines (common examples such as MRC, HeLa, CHO, BHK, Vero); Organ culture; Cryopreservation of cultures

2.3 Stem cells: Types of stem cells and applications

2.4 Hybridoma Technology: Production & applications of Monoclonal antibodies (mAb)

Unit – IV Applications of Animal Biotechnology

3.1 Genetic Engineering: Basic concept, Vectors, Restriction Endonucleases andRecombinant DNA technology

3.2 Gene delivery: Microinjection, electroporation, biolistic method (gene gun),liposome and viral-mediated gene delivery

3.3 Transgenic Animals: Strategies of Gene transfer; Transgenic - sheep, - fish; applications

3.4 Manipulation of reproduction in animals: Artificial Insemination, *In vitro* fertilization, super ovulation, Embryo transfer, Embryo cloning

Unit - V

1.1. PCR: Basics of PCR.

4.2 DNA Sequencing: Sanger's method of DNA sequencing- traditional and automated sequencing (2 hrs)

4.3 Hybridization techniques: Southern, Northern and Western blotting

4.4 DNA fingerprinting: Procedure and applications

4.5 Applications in Industry and Agriculture: Fermentation: Different types of Fermentation and Downstream processing; Agriculture: Monoculture in fishes, polyploidy in fishes

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

1.

2.

3.

4.

5.

6.

7.

8.

II. Answer any FIVE of the following: **5x10=50**

Draw labeled diagrams wherever necessary

9.

OR

10.

OR

11.

OR

12.

OR

13.

OR

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

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Dr.G.Srinivas
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SYLLABUS VETTED BY

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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.

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

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 his to 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 his to 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 of Fin & Shell Fish (Observation of his to pathological slides / Charts/ Models of Bacterial pathogens in fin/ shell fish – One edible specimen can be used for observation of same in the laboratory)

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 fornotlessthan15 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

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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: 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, Using glass, 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*.

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

PRACICAL 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

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/fieldfornotlessthan15hourson 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) <u>Suggested Co-Curricular Activities</u>

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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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 of milk.

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

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 in semi nation (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–Jadish 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 fornotlessthan15hoursonprinciples 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) <u>Suggested Co-Curricular Activities</u>

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.

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 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 full cream 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

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.50Marks)

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 fornotlessthan15 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) visita 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 inn 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.

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 -2Scientific 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-3Diversified 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-4Desi 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

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 notlessthan15hours 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.

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 –VY

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

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.50Marks)

1. Poultry Viral diseases – Observation of histopathological slides
2. Poultry Fungal Diseases- Observation of histopathological slides
3. Poultry Bacterial Diseases-Observation of histopathological 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 fornotlessthan15hourson skills in different practices employed in poultry with regard to the disease management – analysis of poultry project- preparation of flow chart – Observation of Poultry 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) <u>Suggested Co-Curricular Activities</u>

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.

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-1A 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-2Sericultural Botany.
2.1Taxonomy 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 3Floral 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.

**** 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.50Marks)

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.

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 notlessthan15hourson 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.

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.

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/DisplaySInformation.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.50Marks)

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

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 notlessthan15hourson 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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Suggested Question Paper Pattern

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: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
(Atleast1questionshould be given from each Unit)

14. .…….
15. ……
16. …….
17. ……
18. …….
19. ……..

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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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HINDU COLLEGE : : GUNTUR



COMMERCE SYLLABUS

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: Four-Year B.Com (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 4-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	5	4	25	75
2		I	1B	Business Organization and Management	5	4	25	75
3		I	1C	Business Environment	5	4	25	75
4		II	2A	Financial Accounting	5	4	25	75
5		II	2B	Business Economics	5	4	25	75
6		II	2C	Banking Theory &Practice	5	4	25	75
7		III	3A	Advanced Accounting	5	4	25	75
8		III	3B	Business Statistics	5	4	25	75
9		III	3C	Marketing	5	4	25	75
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	Auditing	5	4	25	75
15		IV	4F	Goods and Service Tax	5	4	25	75
Total					**75**	**60**	**375**	**1125**

PROGRAMME: FOUR-YEAR B Com

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 – Rectification of Errors – Suspense Account (including 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 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: FOUR-YEAR B COM

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 - Principles of Organisation – Line and staff of Organisation

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: FOUR-YEAR B COM

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 - IBRD– Trade Blocks, BRICS, SAARC, ASEAN in Globalisation

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: FOUR-YEAR B COM

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 - Normal and Abnormal Losses (including Problems).

Unit-V: Joint Venture Accounts: JointVenture - Features - Difference between Joint-Venture and Consignment – Accounting Procedure – Methods of Keeping Records–One Vendor Keeps the Accounts and Separate Set off Books Methods (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: FOUR-YEAR B COM

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: FOUR-YEAR B COM

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: FOUR-YEAR B COM

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: FOUR-YEAR B COM

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: FOUR-YEAR B COM

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: FOUR-YEAR B COM

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: FOUR-YEAR B COM

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: FOUR-YEAR B COM

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, Residential Status of Individual -Incidence of Tax – Incomes Exempt 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: FOUR-YEAR B COM

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: FOUR-YEAR B COM

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: FOUR-YEAR B COM

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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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.Com. (Hons)

Domain Subject**: Commerce**

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 Three pairs from the Nine alternate pairs of SECs)

(For each SEC: Hours/Week: 05, Credits: 4, Max Marks: 100)

Pairs of Skill Enhancement Courses (SEC) under each series in Commerce for Semester-V.

Course No.	***Series-A: Accountancy***	***Course No.***	***Series-B: Services***	***Course No.***	***Series-C: E commerce***
	Course Name		*Course Name*		*Course Name*
16-A	Advanced Corporate Accounting	16-B	Advertising and Media Planning	16-C	Digital Marketing
17-A	Software Solutions to Accounting	17-B	Sales Promotion and Practice	17-C	Service Marketing
18-A	Management Accounting	18-B	Logistics Services and Practice	18-C	Income Tax Procedure& Practice
19-A	Cost Control Techniques	19-B	EXIM Procedure and practice	19-C	GST Procedure &Practice
20-A	Stock Markets	20-B	Life Insurance with Practice	20-C	E Commerce
21-A	Stock Market Analysis	21-B	General Insurance with practice	21-C	E filing

Note-1: In Semester-V a B.Com. General students have to study Three pairs of SECs (a total of 6 courses). The Pairs are, SEC numbers 16 & 17, 18 & 19 and 20 &21.As there shall be choice to students under CBCS, a total of 9 pairs shall be offered from which B.Com. General students have to choose a total of Three pairs of SECs.

The 9 pairs are from 3 series namely (A) Accountancy, (B) Services and (C) E-Commerce. Students can, however, choose their **Three pairs** from any of the **Nine** pairs but a pair shall not be broken.

For example students can choose any Three pairs like the following;
16-A &17-A (from Accountancy), 18-B, 19-B (from Services) and 20-C, 21-C from E-Commerce.

Or 16-A&17-A, 18-C &19-C and 20-B &21-B
Or 16-B &17-B, 18-A &19-A and 20-C &21-C
Or 16-B &17-B, 18-C &19-Cand 20-A &21-A
Or 16-C &17-C, 18-B & 19-B and 20-A &21-A
Or 16-C &17-C, 18-A &19-A and 20-B, 21-B

Whereas, B.Com Computers Students can choose any two pairs from the above 9 pairs.

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.Com. (Hons)
Domain Subject: **COMMERCE**
IV Year B. Com. (Hons) – Semester – V

Max Marks: 100

Course 16-A. ADVANCED CORPORATE ACCOUNTING

(Skill Enhancement Course (Elective), 4 Credits)

I: Course Learning Outcomes

After completing the course, the student shall be able to:

1. Understand Corporate Accounting environment
2. Record Transactions related to Purchase of Business, Amalgamation and Reconstruction
3. Analyze the situations of Purchase of Business and Liquidation
4. Create formulas and calculations relating to Amalgamation, Internal Reconstruction and Holding company accounts
5. Acquire skills of Accounting Procedure of Advanced Corporate Accounting Environment.

II. Syllabus: Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

Unit-I: Purchase of Business

Meaning - Purchase Consideration - Methods for determining Purchase Consideration-Discharge of Purchase Consideration-Accounting Treatment.

Unit-II: Amalgamation of Companies

Meaning and Objectives - Provisions for Amalgamation of Companies as per Accounting Standard 14 - Accounting Treatment.

Unit-III: Internal Reconstruction of Companies

Meaning - Forms of Internal Reconstruction - Alteration of Share Capital and Reduction of Share Capital- Accounting Treatment.

Unit-IV: Accounts of Holding Companies

Meaning of Holding Companies and Subsidiary companies- Consolidated Financial Statements- Legal requirements on Consolidation-Calculation of Minority Interest- Accounting Treatment.

Unit-V: Liquidation

Meaning - Modes of Winding up of a Company- - Liquidator's Final Statement of Account - Calculation of Liquidator's Remuneration - Preparation of Statement of Affairs and Deficiency Account- Accounting Treatment

III. References:

1. Goyal, Bhushan Kumar. Corporate Accounting. Taxmann, New Delhi
2. Kumar, Alok. Corporate Accounting. Kitab Mahal
3. Monga, J. R. Fundamentals of Corporate Accounting. Mayur Paper Backs, New Delhi
4. Sah, Raj Kumar, Concept Building Approach to Corporate Accounting, Cengage
5. Sehgal Ashok & Sehgal Deepak. Corporate Accounting
6. Tulsian P. C. Corporate Accounting. S Chand & Co. New Delhi
7. *https://thebookee.net/ad/advanced-corporate-accounting-and-accounting-standards*
8. Web resources suggested by the Teacher concerned and the College Librarian including reading material

IV. Co-Curricular Activities:

A. Mandatory(*student training by teacher in related real time field skills: total 10 hours*)**:**

1. **For Teachers**: Training of students by the teacher (using actual field material) in classroom and field for a total of not less than 10 hours on techniques in Advanced Corporate Accounting. Accounts and calculation in the event of recent Mergers, Liquidations and Internal Reconstruction.
   a. Calculation of Purchase Consideration for a given purchase of business (ref. unit-1)
   b. Preparation of Accounts for Recent Banking Companies mergers (ref. unit-2)
   c. Design Reconstruction formula for a current sick Company. (Ref. unit-3)
   d. Calculate Minority Interest for a given Company (ref. unit 4)
   e. Preparation of Statement of Affairs for a recent Liquidation (ref. unit.5)
2. **For Students:** Individual Fieldwork/Project work on identified real time situations with respect to Amalgamation, Liquidation, Purchase Consideration. On practical aspects dealt with by an Auditor. Each student has to make observations and submit to the teacher a handwritten Fieldwork/Project work Report, not exceeding 10 pages, on his/her observations etc.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work Report: (not more than 10 pages**):** Title page, student details, contents, objective, step-wise work done, findings, conclusions and acknowledgements.
5. Unit tests (IE).

B. Suggested Co-Curricular Activities

1. Training of students by a related field expert.
2. Assignments including technical assignments like Working with Audit Company for Observation of Purchase Consideration and Observation of recent Amalgamations in Banking Sector and Corporate Sector
3. Seminars, Conferences, discussions by inviting concerned institutions
4. Field Visit
5. Invited Lectures and presentations on related topics .

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 hrs

SECTION - A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks)
Out of Eight covering all units
SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×10 Marks)
Out of Eight covering all units.

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

Course Code:

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

Max Marks: 100

Course 17- A. SOFTWARE SOLUTIONS TO ACCOUNTING
(Skill Enhancement Course (Elective), 4 Credits)

I: Course Learning Outcomes

After completing the course, the student shall be able to:

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

1. Understand the technical environment of accounting softwares.
2. Highlight the major accounting softwares in India.
3. Apply basics of accounting softwares into business firms for accounting transactions.
4. Understand the various versions of Tally and other softwares.
5. Integrate the concept of different Accounting softwares for accounting purpose
6. Design new approaches for use of accounting software environment.

II. Syllabus: Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

Unit-1: Computerized Accounting
Microsoft Excel Spread Sheet- Functions in Excel- Preparation of Accounts, Statements and Budgets using MS Excel- Analysis and Interpretation.

Unit-II: Introduction to Leading Accounting Softwares - Busy - Marg – Quick Books - Zoho Books -Tally- Features and Accounting.

Unit-III: Tally ERP-9 - Company Creation -Tally Startup Screen- Gateway of Tally- Create a Company - Alter & Delete company- Backup and Restore- Security Features in Tally.

Unit-IV: Tally- Accounting Masters- Groups- Create Ledgers- Alter& Delete - **Inventory Masters**- Creating Stock Groups - Stock Items- Unit of Measurement- Alter & Delete.

Unit- V: Tally-Voucher Entry -Vouchers Types - Vouchers Entry - Alter and deleting Settings Purchase Vouchers and Sales Vouchers including Tax component –Reports Generation.

III: References

1. Nadhani, Ashok K, Tally ERP 9 Training Guide, BPB Publications
2. Tally 9 in Simple Steps, Kogent Solutions Inc., John Wiley & Sons.
3. Tally 9.0 (English Edition), (Google eBook) Computer World
4. Tally.ERP 9 Made Simple Basic Financial Accounting by BPB Publisher.

5. Tally ERP 9 For Real Time Accounting by Avichi Krishnan
6. Fundamentals of Computers, by V. Rajaraman, PHI.
7. Tally ERP 9 book advanced user, Swayam Publication (www.tallyerp9book.com)
8. *Web resources suggested by the Teacher concerned and the College Librarian including reading material*

IV. Co-Curricular Activities

A. Mandatory(*student training by teacher in related real time field skills: total 10 hours*)**:**

1. **For Teachers**: Training of students by the teacher (using actual field material) in classroom and field for a total of not less than 10 hours on techniques in Computerized Accounting, working with Accounting Software. Train the students in Computerized Accounts with selected Accounting software.
   a. Working with Excel-Spread sheet calculations and tabulation Lab Practice (Ref. unit-1)
   b. Working with any accounting software- analyze the special characters (ref. unit-2)
   c. Company Creation Lab Practice-(ref. unit-3)
   d. Creating Masters in Tally with a given Company- Lab Work .Lab Work (ref. Unit 4)
   e. Voucher Entry for Given Transactions- Generation of Reports for a given Company Lab Work (ref.Unit.5)
2. **For Student**: Each student has to visit at least one business organization dealt with Computerized Accounting. Collect data relating to the business transactions and practice in college computer lab. Each student has to prepare one System based accounting during the semester. They shall write their observations and submit a 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 (not more than 10 pages**):** Title page, student details, Contents, objective, step-wise work done, findings, conclusions and acknowledgements.
5. Unit tests (IE**).**

B. Suggested Co-Curricular Activities

1. Training of students by a related field expert.
2. Assignments including technical assignments like Working with Excel & Tally
3. Seminars, Conferences, Discussions by inviting concerned institutions
4. Field Visit
5. Invited lectures and presentations on related topics

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 hrs

SECTION - A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks)

SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×5 Marks)
OUT OF EIGHT Questions COVERING ALL UNITS

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

Course Code:

Four-Year B. Com. (Hons)
Domain Subject: **COMMERCE**
IV YEAR B. COM. (HONS) - Semester -V

Max Marks: 100

Course 18 A: MANAGEMENT ACCOUNTING AND PRACTICE
(Skill Enhancement Course (Elective), Credits: 04)

I. Learning Outcomes

Upon successful completion of the course the student will be able to

1. Understand the nature and scope of management accounting and differentiate management accounting, financial accounting and cost accounting.
2. Compute ratios and draw inferences
3. Analyze the performance of the organization by preparing funds flow statement and cash flow statements
4. Prepare cash budget, fixed budget and flexible budget.

II. Syllabus :*(Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)*

UNIT I: Introduction

Nature & Scope of Management Accounting – Management Accounting Principles – Significance of Management Accounting - Difference between management accounting, financial accounting and Cost accounting – Limitations of Management Accounting – Installation of Management Accounting – Tools of Management Accounting.

UNIT 2: Ratio Analysis

Meaning - Advantages and Limitation of Ratio Analysis – Types of Ratios –Profitability Ratios- Gross Profit Ratio (GPR) – Net Profit Ratio (NPR) – Operating Ratio –Solvency Ratios- Current Ratio – Liquidity Ratio – Debt-Equity Ratio-Turnover Ratios-Fixed Assets Turnover Ratio – Working Capital Turnover Ratio – Debtors Turnover Ratio – Creditors Turnover Ratio - Stock Turn Over Ratio - Return on Investment (ROI)-Calculation and interpretation.

UNIT 3: Fund Flow and Cash Flow Analysis as per AS3

Meaning and Concept of Working Capital (Fund) – Fund Flow Statement –Meaning and Uses of Funds Flow Statement – Preparation of Funds Flow Statement. Cash Flow Statement – Meaning and Uses of Cash Flow Statement – Preparation of Cash Flow Statement – Difference between Cash Flow Statement and Funds flow Statement.

UNIT 4: Budgeting and Budgetary Control

Meaning of Budget – Forecast and Budget - Elements of Budget – Features – objectives and budget procedure -– Classification of Budgets - Meaning of Control – Meaning of Budgetary control – objectives of Budgetary control system – Advantages and Limitations of Budgetary control system. Prepare cash budget, fixed budget and flexible budget.

UNIT 5: Management Reporting:

Reports - Meaning –- Modes of Reporting – Requisites of a good report — Kinds of Reports – General formats of Reports - Need for Management Reporting- financial reporting Vs. Management Reporting - Strategies for Writing Effective Reporting.

III. References

1. Management Accounting and financial control S.N. Maheswari, Sultan Chand and Sons.
2. Principles of Management Accounting by Manmohan & Goyal, Publisher: PHI Learning
3. Cost and Management Accounting by SP Jain and KL Narang
4. Introduction to Management Accounting – Horn green and Sundlem
Publisher: PHI Learning
5. Cost and Management Accounting by M.N. Arora, Vikas Publishing House PVT ltd.,
6. Management Accounting: Text, Problems & Cases by Khan & Jain, Tata McGraw Hill (TMH)

Web Sources: Web sources suggested by the concerned teacher and college librarian including reading material.

IV. Co-Curricular Activities:

A Mandatory: (*student training by teacher in related real time field skills: total 10 hours)*

1.Teachers: Teacher shall provide students with financial data relating to business organizations and train them (using actual field material)to present such data in a more meaningful manner to facilitate managerial decision making, preparation of various budgets, forecast, analyze, interpret and present such information in different reporting forms.

2. Student: Students shall visit any local company and collect their financial data or from web sources. Differentiate management accounting, financial accounting and cost accounting. Extract the Financial data of any company and Compute Ratios and draw inferences, prepare Cash budgets, Fixed and flexible budgets and submit a brief report after analyzing such data.

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

4. Suggested Format for Fieldwork/Project work (not more than 10 pages): Title page, student details, contents, objective, step-wise work done, findings, conclusions and acknowledgements.

5. Unit tests (IE).

B. Suggested Co-Curricular Activities

1. Organize short term training on specific technical skills in collaboration with Computer Department or skill training institution (Government or Non-Government Organization).
2. Seminars/Conference/ Workshops on management accountant profession, skills required for Management accountant Professional Development, integration of technical and analytical s kills for effective job performance, Ethical behavior of management accountant.
3. On job work with ICMA professional duration of work be decided on the basis of feasibility and opportunity.
4. Interaction with Area Specific Experts.

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 hrs

SECTION A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks)
OUT OF EIGHT COVERING ALL UNITS

SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×5 Marks)
OUT OF EIGHT Questions COVERING ALL UNITS

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

Course Code:

Four-Year B. Com. (Hons)
Domain Subject: COMMERCE
IV YEAR B. COM. (HONS) - Semester -V

Max Marks: 100

Course19 A: COST CONTROL TECHNIQUES
(Skill Enhancement Course (Elective) 4 credits)

I. Learning Outcomes

Up on completion of the course the student will be able to

1. Differentiate cost control, cost reduction concepts and identify effective techniques.
2. Allocate overheads on the basis of Activity Based Costing.
3: Evaluate techniques of cost audit and rules for cost record.
4: Appraise the application of marginal costing techniques to evaluate performances, fix selling price, make or buy decisions.

II. Syllabus: (Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

Unit 1: Introduction-Nature and Scope

Introduction**:** Meaning of Cost Control – Cost Control Techniques – Requisites of effective Cost Control System – Cost Reduction – meaning – essentials for an effective cost Reduction Program – Scope of cost reduction - Difference between Cost Control and Cost Reduction –Meaning of cost audit – Types of Cost Audit – Auditing techniques.

Unit 2: Activity Based Costing

Concept of ABC – Characteristics of ABC – Categories of ABC – Allocation of Overheads under ABC – Cost Reduction under ABC – advantages of implementing ABC –Application on overhead allocation on the basis of ABC-

Unit 3: Cost Volume Profit Analysis (CVP Analysis)

Applications of Marginal Costing – profit planning – Evaluation of Performance-fixing selling price – Key Factor –Make or Buy decision – Accept or Reject - closing down or suspending activities –

Unit 4: Standard Costing and Variance Analysis

Concept of Standard Cost and Standard Costing – Advantages and limitations – analysis of variances-importance of Variance Analysis - computation and application of variances relating to material and labour.

Unit 5: Application of Modern Techniques

Kaizen Costing – Introduction – objectives – scope –Principles – 5 S (Sort, Set in Order, Shine, Standardize, and Sustain) in Kaizen Costing– Advantages and Disadvantages of Kaizen Costing. Learning Curve Analysis-concept and Application.

III. References

1. Cost and Management Accounting by SP Jain and KL Narang.
2. Cost Accounting by M.C. Shukla, T. S. Grewal & Dr M. P. Gupta, S. Chand and Company Private Limited, New Delhi

3. Cost Accounting: Principles & Practice Bookby M. N. Arora, Vikas Publishing House Private Limited.

4. Advanced Cost Accounting: JK Mitra, New Age International

5. Advanced Cost Accounting: SN Maheswari, S. Chand and Company Private Limited, New Delhi.

Web Sources: Web sources suggested by the concerned teacher and college librarian including reading material**.**

IV. Co-Curricular Activities:

A. Mandatory (*student training by teacher in related real time field skills: total 10 hours)*

1. **For Teachers:** Teacher should train students (using actual field material) in classroom/field for not less than10 hours on techniques relating to determine fixed Costs, variable costs based on the data of concerned firm, to identify and analyze of cost variances and to prepare budgeting reports of business/industry houses.

2. **Students:** Students should develop skills by adopting techniques on differences between cost controls and cost reduction, allocation of overheads on the basis of Activity Based Costing. Should visit any business and learn the methods and techniques of ascertaining costs of various products using with same material, machine and money under same management (For example, Dairy, Sweet, Leather products etc.) and identify the reasons for variances in estimated and actual cost and submit a report in the given format not exceeding 10 pages to the teacher

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

4. Suggested Format for Fieldwork/Project work (not more than 10 pages): Title page, student details, contents, objective, step-wise work done, findings, conclusions and acknowledgements.

5. Unit tests (IE).

B. Suggested Co-Curricular Activities

1. Organize short term training on specific technical skills in collaboration with Computer Department or skill training institution (Government or Non-Government Organization). Like Zoho, Fresh book, MS Excel….

2. Seminars/Conference/ Workshops on Cost accountant profession, skills required for cost accountant Professional Development, integration of technical and analytical skills for effective job performance, Ethical behaviour of management accountant.

3. Real time work experience with ICMA professional duration of work be decided on the basis of feasibility and opportunity.

4. Arrange for Interaction with Area Specific Experts.

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 hrs

SECTION - A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks)

OUT OFN EGHIT COVERING ALL UNITS

SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×10 Marks)

OUT OF EGHITCOVERING ALL UNITS

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

Course Code:

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

Max Marks: 100

Course-20 A: STOCK MARKETS
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

By the completion of the course, the students will be able to

1. Expose to theory and functions of the Share Market in Financial Sector as job careers
2. Study the functioning of capital markets and create awareness among the public
3. Acquire knowledge on operations of Share Market and Research skills
4. Involve in activities of Mutual Funds and stock market firms
5. Enhance their skills by practicing in preparation of accounting statements

II. Syllabus: (Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

UNIT 1: Introduction, Nature, Scope and basics of stock market

Introduction of Investments-Need of Investment-Short and Long Term investment- Money market Vs Capital Market-Primary Market-Secondary Market-Depositories-Buy Back Shares-Forward Contract and Future Contract- Types of Investors- Speculators, Hedgers, Arbitragers.

UNIT 2: Capital Markets

Definition-Participants of Capital Market Participants-Primary Market issues of Equity Shares and Preference Shares and Debentures its types Mutual Funds –Secondary Market-/Stock Exchange-National Stock Exchange of India-Over the Counter Exchange of India –Qualified Individual/Institutional Buyers -Under writers.

UNIT 3. - **Financial Intermediaries**

Depositories- -Buy Back of Shares-- Forward Contract and Future Contract- differences – Participants in Future Contract- Clearing of Mechanism.

UNIT 4. **Stock Indices**

Index and its types-SENSEX- Calculation Methodology-Types of Clearing Members.

UNIT 5. –**Regulatory Mechanism**

Security and Exchange Board of India (SEBI)-Powers, functions,-Over The Counter Exchange (OTCE) of India-Functions and Mechanism.

III. References:

1. I.M.Pandey. ,Financial Management, Vikas Publishing House
2. Prasanna Chandra, Fincial Management TaTa Mc Graw Hill
3. Bhole.L.M. Financial Markets and Institutions, Tata McGraw Hill Publishing House
4. Khan MY,Jain PK, Financial Management, Tata McGraw Hill
5. Kishore Ravi.M., Financial Management, Taxman Publication

6. *Web resources suggested by the Teacher concerned and the College Librarian including reading material*

IV Co-Curricular Activities:

A. Mandatory *(student training by teacher in real time field skills: 10 hours***):**

1. **For Teachers: Training** of students by the teacher(using actual field material) in classroom and field for not less than 10 hours on techniques in valuation of shares of selected companies, preparation of documents, identification of local individuals / institutions who are involved in share markets. Listing out Local Money Market institutions, Identifying the investors and their experience in operational activities
   Analysis of various companies Financial Statements and interpretations
2. **For Students:** Students shall **i**ndividually study the work of stock market professionals and agencies and make observations. Their observations shall be written as the Fieldwork/Project work Report in the given format not exceeding 10 pages and submit to the teacher.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work (not more than 10 pages**):** Title page, student details, contents, objectives, step-wise work done, findings, conclusions and acknowledgements.
5. Unit tests (IE).

B. **Suggested Co-Curricular Activities**

1. Training of students by a related field expert.
2. Assignments (including technical assignments like identifying the investors and their activities in share markets
3. Seminars, Conferences, discussions by inviting concerned institutions
4. Visits to local Investment Institutions ,offices,
5. Invited lectures and presentations on related topics by field experts.

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 hrs

SECTION - A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks)
Out of Eight covering All units

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SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×10 Marks)
Out of Eight covering All units

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

Course Code:

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

Max Marks: 100

Course 21 A: STOCK MARKETS ANALYSIS

(Skill Enhancement Course (Elective) 4 credits)

II. Learning Outcomes:

By the completion of the course, the students are able to

1. Expose to theory and functions of the monetary and Financial Sector as job careers
2. Study the functioning of local Capital markets and
3. Create awareness among the public by giving reporting after analysis
4. Acquire knowledge on operations of Share Market and Research skills
5. Enhance their skills by involving activities of Share Market analysis

II. Syllabus: Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

UNIT 1: Introduction, Nature, Scope and basics of stock market analysis

Introduction of Investments- Need of Security Analysis-Types of analysis-Fundamental Analysis, Technical Analysis, Quantity Analysis.

UNIT 2:Fundamental Analysis-Based on Company's Records and Performance-EPS Ratio-Price to Sales Ration-P/Earnings Ratio, P/Equity Ratio, ROI,D/P Ratio- Intrinsic Value-

UNIT 3. –**Technical Analysis**- Based on Share Price Movement and Market Trends-Bullish Pattern-Bearish pattern

UNIT 4-**Quantity Analysis:** Based on data for special Research purpose (Descriptive, Correlation, Comparative and Experimental) by preparing questionnaire, observation, focus groups and interviews – Dow Theory

UNIT 5. –**Mutual Funds**

Importance and the role of Mutual Fund –Types of Mutual Funds-Various schemes in India-Growth Fund, Income Fund, Growth and Income Fund, Tax planning schemes ,other categories, Asset Management Mutual Funds-its method of analysis's

III. References:

1. Khan.M.Y. Financial Management, Vikas Publishing House
2. Bhole.L.M. Financial Markets and Institutions, Tata McGraw Hill Publishing House
3. Prasanna Chandra,Investment Analysis and Portfolio Management, Tata McGraw Hill
4. DamodharanAswath, Valuation: Security Analysis for Investment and corporate Finance.,Johnwiely, Newyork
5. Francis.J.C., Investment Analysis and Management, Tata Mc Graw Hill

6 Web resources suggested by the Teacher concerned and the College Librarian including reading material

IV Co-Curricular Activities:

B. Mandatory: *(student training by teacher in real time field skills: 10 hours)*

1. For Teachers: Training of students by the teacher (using actual field material)in classroom and field for not less than 10 hours on Security Markets analysis, preparation of documents and Analysis of Shares and debentures, Fundamental Analysis of various companies Financial Statements and interpretations, Technical Analysis of Various Financial Statements, Quantity Analysis of various companies Financial statements and interpretations, Analysis of Mutual fund operations and their performances

Case Studies of various companies' performances based on analysis of their securities and the success stories of investors.

2. For Students: Students shall individually study the data of selected institutions and their performance by analyzing the statements learning from practical experiences from Charted Accountants and Cost Accountants. They shall record their observations in a hand written Fieldwork/Project work report not exceeding 10 pages in the given format and submit to the teacher.

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

4. Suggested Format for Fieldwork/Project work Report **(**not more than 10 pages): Title page, student details, contents, objective, step-wise work done, findings, conclusions and acknowledgements.

5. Unit tests (IE).

B. **Suggested Co-Curricular Activities**

1. Training of students by a related field expert.
2. Assignments (including technical assignments like identifying sources of local financial institutions,
3. Seminars, Conferences, discussions by inviting concerned institutions
4. Visits to local Financial Institutions like HDFC securities, ICICI Direct Securities Reliance Securities etc.
5. Invited lectures and presentations on related topics by field experts.

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 hrs

SECTION - A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks)

OUT OF EIGHT COVERING ALL UNITS

SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×10 Marks)

OUT OF EIGHT UNITS COVERING ALL UNITS

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.Com. (Hons)

Domain Subject**: Commerce**

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 Three pairs from the Nine alternate pairs of SECs)

(For each SEC: Hours/Week: 05, Credits: 4, Max Marks: 100)

Pairs of Skill Enhancement Courses (SEC) under each series in Commerce for Semester-V.

Course No.	***Series-A: Accountancy***	***Course No.***	***Series-B: Services***	***Course No.***	***Series-C: E commerce***
	Course Name		*Course Name*		*Course Name*
16-A	Advanced Corporate Accounting	16-B	Advertising and Media Planning	16-C	Digital Marketing
17-A	Software Solutions to Accounting	17-B	Sales Promotion and Practice	17-C	Service Marketing
18-A	Management Accounting	18-B	Logistics Services and Practice	18-C	Income Tax Procedure& Practice
19-A	Cost Control Techniques	19-B	EXIM Procedure and practice	19-C	GST Procedure &Practice
20-A	Stock Markets	20-B	Life Insurance with Practice	20-C	E Commerce
21-A	Stock Market Analysis	21-B	General Insurance with practice	21-C	E filing

Note: In Semester-V a B.Com. General students have to study Three pairs of SECs (a total of 6 courses). The Pairs are, SEC numbers 16 & 17, 18 & 19 and 20 &21.As there shall be choice to students under CBCS, a total of 9 pairs shall be offered from which B.Com. General students have to choose a total of Three pairs of SECs.

The 9 pairs are from 3 series namely (A) Accountancy, (B) Services and (C) E-Commerce. Students can, however, choose their **Three pairs** from any of the **Nine** pairs but a pair shall not be broken.

For example students can choose any Three pairs like the following;
16-A &17-A (from Accountancy), 18-B, 19-B (from Services) and 20-C, 21-C from E-Commerce.

Or 16-A&17-A, 18-C &19-C and 20-B &21-B
Or 16-B &17-B, 18-A &19-A and 20-C &21-C
Or 16-B &17-B, 18-C &19-Cand 20-A &21-A
Or 16-C &17-C, 18-B & 19-B and 20-A &21-A
Or 16-C &17-C, 18-A &19-A and 20-B, 21-B

Whereas, B.Com Computers Students can choose any two pairs from the above 9 pairs.

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 situation.

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

PROGRAMME**: FOUR-YEAR B Com. (Hons)**

Domain Subject**: Commerce**

Semester-wise Syllabus under CBCS (w.e.f. 2020-21 Admitted Batch)

Course Code:
Max marks 100

Skill Enhanced Courses

IV Year B Com (Hons)– Semester-V

Course- 16- B. ADVERTISING AND MEDIA PLANNING

(Skill Enhancement Course (Elective), 4 Credits)

I: Learning Outcomes:

At the successful completion of the course students are able to:

- Understand the role of advertising in business environment
- Understand the legal and ethical issues in advertising
- Acquire skills in creating and developing advertisements
- Understand up-to-date advances in the current media industry.
- Acquire the necessary skills for planning an advertising media campaign.

II: SYLLABUS: Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

UNIT-I: Introduction, Nature and Scope Advertising- Nature and Scope- Functions - Impact on Social, Ethical and Economical Aspects - Its Significance – Advertising as a Marketing Tool and Process for Promotion of Business Development - Criticism on advertising

UNIT-II: Strategies of Advertisements

Types of Advertising Agencies and their Strategies in Creating Advertisements - Objectives - Approach - Campaigning Process - Role of Advertising Standard Council of India (ASCI) - DAGMAR approach

UNIT-III: Process of Advertisement

Creativeness and Communication of Advertising –Creative Thinking – Process – Appeals – Copy Writing - Issues in Creation of Copy Testing –Slogan Elements of Design and Principles of Design

UNIT-IV: Media Planning

Advertising Media - Role of Media - Types of Media - Print Media - Electronic Media and other Media - Advantages and Disadvantages – Media Planning - Selection of Media

UNIT-V: Analysis of Market Media

Media Strategy – Market Analysis -Media Choices - Influencing Factors - Target, Nature, Timing, Frequency, Languages and Geographical Issues - Case Studies

III: References:

1. Bhatia. K.Tej - Advertising and Marketing in Rural India - Mc Millan India
2. Ghosal Subhash - Making of Advertising - Mc Millan India
3. Jeth Waney Jaishri& Jain Shruti - Advertising Management - Oxford university Press
4. Advertising Media Planning, Seventh Edition Paperback – by Roger Baron (Author), Jack Sissors (Author)
5. Media Planning and Buying in 21st Century – Ronald DGeskey
6. Media Planning and Buying: Principles and Practice in the Indian Context – Arpita Menon
7. Publications of Indian Institute of Mass Communications
8. Advertising and Salesmanship. P. Saravanavel, Margham Publications
9. Publications of ASCI
10. Web resources suggested by the Teacher concerned and the College Librarian including reading material

IV. Co-Curricular Activities:

A - Mandatory: (student training by teacher in the related field skills: total 10 hours**):**

1. For Teacher:

Students shall be practically trained, (using actual field material) in classroom and field for 10 hours, in the skills/techniques related to advertising and media planning. Training shall include;

- Collection of data and material, handling of material and sample advertisement preparation.
- slogan preparation, making of advertisement and advertisement strategies
- working with media and report preparation on ethical issues
- preparation of net based advertisements and media planning

2. For Student: Students shall individually choose a local or regional advertising agency, visit, study it's processes, strategies, business aspects etc. They may also make a comparative study of media advertisements. Each student has to submit his/her observations as a handwritten 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 (not more than 10 pages**):** Title page, student details, contents, objective, step-wise work done, findings, conclusions and acknowledgements.

5. Unit tests (IE).

B - Suggested Co-Curricular Activities

- Survey on existing products advertisements
- Creation of advertising on several products
- Invited Lectures
- Hands on experience with the help of field experts

- Debates, Seminars, Group Discussions, Quiz, etc.
- Assignments, Case studies, Compilation of paper cuttings, Preparation of related videos, Class exhibitions.

Suggested Question Paper:

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

SECTION - A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks)

OUT OF EIGHT COVERING ALL UNITS

.

SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×10 Marks)

OUT OF EIGHT COVERING ALL UNITS

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

PROGRAMME: FOUR-YEAR B Com. (Hons)

Domain Subject**: Commerce**

Semester-wise Syllabus under CBCS (w.e.f. 2020-21 Admitted Batch)

Skill Enhanced Courses IV Year B Com (Hons)– Semester-V

Course Code:

Max Marks: 100

Course:17- B. SALES PROMOTION AND PRACTICE

(Skill Enhancement Course (Elective), 4 Credits)

I: Learning Outcomes:

By the end of the course students are able to:

1. Analyse various sales promotion activities
2. Get exposed to new trends in sales Promotion
3. Understand the concepts of creativity in sales promotion
4. Enhance skills to motivate the salesperson to reach their targets
5. Develop the skills of designing of sales promotion events

II: SYLLABUS: Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

UNIT-I: Introduction to Sales Promotion: Nature and Scope of Sales Promotion- Influencing Factors - Sales Promotion and Control - Strengths and Limitations of Sales Promotion – Sales Organization - Setting-up of Sales Organization - Types of Sales Organization.

UNIT-II: Sales Promotion and Product Life Cycle: Types of Sales Promotion - Consumer Oriented - Trade Oriented - Sales Oriented - Various Aspects -Sales Promotion methods in different Product Life Cycle – Cross Promotion - Sales Executive Functions- Theories of Personal Selling - Surrogate Selling.

UNIT-III: Strategies and Promotion Campaign: Tools of Sales Promotion - Displays, Demonstration, Fashion Shows, Conventions - Conferences, Competitions –Steps in designing of Sales Promotion Campaign – Involvement of Salesmen and Dealers – Promotional Strategies - Ethical and Legal issues in Sales Promotion.

Unit-IV: **Salesmanship and Sales Operations**: Types of Salesman - Prospecting - Pre-approach and Approach - Selling Sequence - Sales budget, Sales territories, Sales Quota's - Point of Sale – Sales Contests - Coupons and Discounts - Free Offers - Showrooms and Exhibitions - Sales Manager Qualities and functions.

Unit-V: **Sales force Management and Designing:** Recruitment and Selection - Training - Induction - Motivation of sales personnel - Compensation and Evaluation of Sales Personnel - Designing of Events for Enhancing Sales Promotion

III: References:

1. Don.E. Schultz - Sales Promotion Essentials- Mc Graw hill India
2. S.H.H Kazmi & Satish K Batra, Advertising and Sales Promotion- Excel Books
3. Jeth Waney Jaishri& Jain Shruti - Advertising Management - Oxford university Press
4. Dr.ShailaBootwala Dr.M.D. Lawrence and Sanjay R.Mali -Advertising and Sales Promotion- NiraliPrakashan
5. Successful Sales Promotion – Pran Choudhury
6. Advertising and Sales Promotion Paperback – S. H. H. Kazmi & Satish Batra
7. Publications of ASCI
8. Kazmi & Batra, ADVERTISING & SALES PROMOTION, Excel Books, 2008
9. Web resources suggested by the Teacher concerned and the College Librarian including reading material

IV. Co-Curricular Activities: (Lecturer Participation: Total 10 Hours)

A. Mandatory: (*student training by teacher in the related field skills: total 10 hours*)**:**

1 For Teacher:

Training of students by the teacher (using actual field material)for 10 hours in the classroom and field for not less than 10 hours on techniques in areas such as;

- Design special tools and techniques for sales promotion
- Planning of sales promotion and strategic planning for given product
- Report Writing on Success Stories of Sales promotion agencies
- Preparation of report on legal issues in sales promotion techniques.

2. For Student:

Students have to get individually training in the field the functional aspects of sales promotion, advertisement, strategic planning, sales promotion agencies and related legal issues, Students have to involve the sales promotion activities as practical training. Take up survey on sales promotional activities of existing products. Each student has to record his/her observations and prepare a handwritten Fieldwork/Project work Report, not exceeding 10 pages, and submit to teacher in the given format.

3) Max marks for Fieldwork/Project work Report: 10
4) Suggested Format for Fieldwork/Project work Report (not more than 10 pages**):** Title page, student details, contents, objective, step-wise work done, findings, conclusions and acknowledgements.

5. Unit tests (IE).

V: Suggested Co-Curricular Activities

Assignments, Class seminars, Case studies, Compilation of paper cuttings, Group discussions, Debates, Quiz, Class exhibitions, Preparation of related videos, Invited lectures etc.

Suggested Question Paper

Max. Marks 75 Time: 3 hrs

SECTION - A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks)

OUT OF EIGHT COVERING ALL UNITS

SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×10 Marks)

OUT OF EIGHT COVERING ALL UNITS

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`A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2021-22

Course Code:

Four-Year B. Com. (Hons)
Domain Subject: COMMERCE
IV YEAR B.COM (Hons) - Semester -V 8A

Max Marks: 100

Course 18 B - LOGISTICS SERVICES & PRACTICE
(Skill Enhancement Course (Elective) 4 credits)

I. Learning Outcomes

Upon successful Completion of the course the student will be able to

1. Appraise the Principles of Logistics and its informatics.
2. Examine the Financial Issues in Logistics sector performance.
3. Describe basic EOQ model and ABC analysis.
4. Determine warehouse safety rules, concepts of Retail Logistics and strategies of Supply Chain Management.

II. Syllabus Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

UNIT I: Introduction

Logistics - meaning - Principles of Logistics-Technology & Logistics - Informatics. Warehouse-Meaning - Types –Benefits of Warehousing. Transportation-Meaning - Types – Benefits. Courier/Express-Meaning- Courier Guidelines –Pricing in Courier -Express Sector for international and domestic shipping -Reverse logistics in e-commerce sector.

UNIT 2: Global Logistics

Global Supply Chain-Organizing for Global Logistics-Strategic Issues in Global Logistics -Forces driving Globalization- Modes of Transportation in Global Logistics Barriers to Global Logistics-Markets and Competition-Financial Issues in Logistics Performance.

UNIT 3: Inventory

Need of Inventory-Types of Inventories-Basic EOQ Model-Classification of material - ABC Analysis -VED, HML, - Material Requirement Planning (MRP)- meaning and Advantages Materials handling and storage systems-Principles of Materials Handling.

UNIT 4: Ware housing & Distribution Operations

Need for Warehouse – Importance of warehouse- Stages involved receipt of goods- Advanced shipment notice(ASN)-Warehouse Activities-receiving, sorting, loading, unloading ,Picking, Packing and dispatch - safety rules and Procedures to be observed in a Warehouse.

Unit 5: Retail Logistics and Supply Chain Management

Concepts of Retail Logistics and supply chain- Supply chain efficiency-Fundamentals of Supply Chain and Importance - SCM concepts and Definitions - Supply chain strategy- Strategic Drivers of Supply Chain Performance – key decision areas – External Drivers of Change.

III References

1. Vinod V Sople (2009) Logistic Management (2ndEdn.) Pearson Limited.
2. Logistics Management for International Business: Text and Cases, Sudalaimuthu & Anthony Raj, PHI Learning, First Edition, 2009.
3. Fundamentals of Logistics Management (The Irwin / McGraw-Hill Series in Marketing), Douglas Lambert, James R Stock, Lisa M. Ellram, McGraw-hill/Irwin, First Edition, 1998.
4. Fundamentals of Logistics Management, David Grant, Douglas M. Lambert, James R. Stock, Lisa M. Ellram, McGraw Hill Higher Education, 1997.
5. Logistics Management, Ismail Reji, Excel Book, First Edition, 2008.

Web Sources: Web sources suggested by the concerned teacher and college librarian including reading material.

IV. Co-Curricular Activities:

A. Mandatory: *(Student training by teacher in the related field skills:10 hrs)*

1. **For Teachers**: Shall give hands-on training to students (using actual field material)in classroom and field in operations of (specific unit/s) logistics sector with reference to material handling and storage processes, warehousing design and financial issues confronted in logistics sector.
2. **Students:** Visit any local logistics provider / local mart etc., observe and understand its operations, financial issues, material handling and storage processes, warehouse design and submit a hand written Fieldwork/Project work Report in the given format on the observations made to the teacher

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

4. Suggested Format for Fieldwork/Project work Report (not more than 10 pages): Title page, student details, contents, objective, step-wise work done, findings, conclusions and acknowledgements.

5. Unit tests (IE).

B. Suggested Co-Curricular Activities:

1. Organize short term training on specific technical skills like Zoho, Fresh book, MS Excel….in collaboration with Computer Department or skill training institution (Government or Non-Government Organization).
2. Seminars/Conference/ Workshops on career opportunities in logistics sector, trends in logistics sector, Automation in the sector etc.
3. Real time work experience with logistics sector.
4. Arrange for Interaction with Area Specific Experts.

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 Hrs

SECTION A (Total 25 marks)

Answer any FIVE Questions (5×5 Marks).

OUT OF EIGHT COVERING ALL UNITS

SECTION B (Total 50 marks)

Answer any FIVE Questions (5×10 Marks).

OUT OF EIGHT COVERING ALL UNITS

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

Course Code:

Four - year B.Com. (Hons)
Domain Subject: COMMERCE
IV Year B. Com.(Hons) – Semester – V

Max Marks: 100

Course: 19 B. EXPORT IMPORT PROCEDURE &PRACTICE
(Skill Enhancement Course (Elective) 4 credits)

I. Learning Outcomes:

Upon successful completion of the course the student will be able to

1. Understand the significance of Export and Import Management and its role in Economy and as job careers
2. Acquire knowledge on Procedures of export and import
3. Involve in pre and post EXIM activities
4. Enhance their skills by practicing in foreign trade

II. Syllabus: Total 75hrs (Teaching 60, Training10, Others 05 including IE etc**.)**

UNIT 1: Introduction of EXIM policies and procedures

Objectives of EXIM policies- Role of export houses in the development of Economy- State Trading Corporations and SEZs - Flow of Procedure for export and import process.

UNIT 2: Product planning and for import and export

Export Promotion Councils in India and Commodities Board of India - Its functions and their role - Registration cum Membership Certificate (RCMC) and registration of Export Credit and Guarantee Corporation of India (ECGC)

UNIT 3: Documentation at the time of EXIM goods

Commercial documents- Principal and Auxiliary documents - Regulatory documents (relating to Goods, Shipment, Payment, Inspection, Payment, Excisable and FERA)

UNIT 4: Payment Procedures in foreign trade

Factors determines for Payment and methods of Receiving Amount -Payment in advance-Documentary Bills- Documentary credit under Letter of Credit- Different types of Letters of Credit - Open account with periodical settlement.

UNIT 5: Insurance and Shipment of Goods

Cargo Insurance (Marine)- Types of Marine insurance policies- Kinds of losses - Shipment of goods - Clearing and forwarding agents- its role and significance-Classification of services Essential and Optional services-clearance procedures for export of goods.

III. References

1. Rama Gopal.C; Export and Import Procedure- New Age International Publishers
2. Neelam Arora, Export and Import Procedure and documentation- Himalaya Publishing House
3. Dr.SwapnaPilai, Export and Import Procedure & documentation- Sahityabhawan Publications
4. Sudhir kochhar, Export and Import Procedure- Aggarwal Book house

5. *Web resources suggested by the Teacher concerned and the College Librarian including reading material*

IV Co-Curricular Activities:

A. Mandatory *(Student training by teacher in the related field skills:10 hrs):*

1. **For Teachers:** Training of students by teacher (using actual field material)in classroom and field for not less than 10 hours on techniques of foreign trade by involving students in making observations, preparation of documents, identification of exportable goods and recording experiences of exporters.
2. **For Students:** students shall visit export import houses or related centers and observe processes of identification of exportable goods, registration of RCMC, logistic support and insurance procedures. They shall submit their observations as an individual handwritten Fieldwork/Project work Report in the given format and submit to teacher.
3. Max marks for Fieldwork/Project work Report: 05
4. Suggested Format for Fieldwork/Project work (not more than 10 pages): Title page, student details, contents, objective, step-wise work done, findings, conclusions and acknowledgements.
5. Unit tests (IE).

B. **Suggested Co-Curricular Activities**

1. Training of students by a related field expert.
2. Assignments (including technical assignments like identifying sources of exportable and Excisable goods, Case Studies of export procedures and the success stories and getting practical experiences by exporting Agricultural and local products including DWACRA
3. Seminars, Conferences ,discussions by inviting concerned institutions
4. Visits to exporting units. SEZs and Export houses
5. Invited lectures and presentations on related topics by field experts.

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 hrs

SECTION - A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks)

OUT OF EIGHT COVERING ALL UNITS

.

SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×10 Marks)

OUT OF EIGHT COVERING ALL UNITS

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

Course Code:

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

Max Marks: 100

Course- 20-B. LIFE INSURANCE WITH PRACTICE

(Skill Enhancement Course (Elective), 4 Credits)

I: Course Learning Outcomes

After completing the course, the student shall be able to:

1. Understand the Features of Life Insurance , schemes and policies and insurance companies in India
2. Analyze various schemes and policies related to Life Insurance sector
3. Choose suitable insurance policy for given situation and respective persons
4. Acquire Insurance Agency skills and other administrative skills
5. Acquire skill of settlement of claims under various circumstances

II. Syllabus: Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

Unit-I: Features of Life insurance contract

Life Insurance- Features- Advantages - Group Insurance – Group Gratuity Schemes - Group Superannuation Schemes, Social Security Schemes- Life Insurance companies in India.

Unit-II: Plans of Life Insurance

Types of Plans: Basic - Popular Plans – Term Plans-Whole Life-Endowment-Money Back-Savings-Retirement-Convertible - Joint Life Policies - Children‘s Plans - Educational Annuity Plans - Variable Insurance Plans – Riders

Unit-III: Principles of Life Insurance

Utmost Good Faith- Insurable Interest- Medical Examination - Age proof, Special reports - Premium payment - Lapse and revival – Premium, Surrender Value, Non-Forfeiture Option - Assignment of Nomination- Loans – Surrenders – Foreclosure.

Unit-IV: 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.

Unit-V: Regulatory Framework and Middlemen

Role of IRDAI & other Agencies - Regulatory Framework - Mediators in Life Insurance – Agency services – Development Officers and other Officials.

III: 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.

8. *https://www.irdai.gov.in*
9. https://www.policybazaar.com
10. Web resources suggested by the Teacher concerned and the College Librarian including reading material

IV. Co-Curricular Activities:

A. Mandatory *(Student training by teacher in the related field skills: 10 hrs.):*

1. **For Teachers:** Training of students by teacher (using actual field material) in classroom/field for not less than 10 hours on techniques/skills of life insurance sector from opening of insurance policies to settlement of claims.
   a. Working with websites to ascertain various LIC Companies and their schemes in Life Insurance sector (Ref. unit-1)
   b. Working with websites to ascertain various policies in Life Insurance sector (Ref. unit-2)
   c. Working with websites like policy bazaar.com for Calculation of Premium for Specified policies and ascertain various options under policy (ref. unit-3)
   d. Preparation of statements for claims under various policies working with specified Life Insurance Company for settlement of Claims under different circumstances (Ref. Unit 4)
   e. Prepare the students to choose the Life Insurance field and show the opportunities in public and private insurance companies. (ref. Unit.5)
2. **For Students:** Students shall take up individual Fieldwork/Project work and make observations on the procedures followed in the life insurance activities including identifying customers, filling applications, calculation of premium and settlement of insurance claims. Working with Insurance Agents and Life Insurance companies may be done if possible. Each student shall submit a hand-written Fieldwork/Project work Report on his/her observations in the given format to teacher.
3. Max marks for Fieldwork/Project work Report:05
4. Suggested Format for Fieldwork/Project work (not more than 10 pages**):** Title page, student details, contents, objective, step-wise work done, findings, conclusions and acknowledgements.

5 . Unit tests (IE).

B. Suggested Co-Curricular Activities

1. Training of students by a related field expert.
2. Assignments including technical assignments like Working with any insurance Company for observation of various policies, premiums, claims, loans and other activities.
3. Seminars, Conferences, discussions by inviting concerned institutions
4. Field Visit
5. Invited lectures and presentations on related topics

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 hrs

SECTION - A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks)
Out of Eight Questions covering all units
SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×10 Marks)
Out of Eight Questions covering all units

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

Course Code:

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

Max Marks: 100

Course 21- B. GENERAL INSURANCE PROCEDURE AND PRACTICE

(Skill Enhancement Course (Elective), 4 Credits)

I: Course Learning Outcomes

After completing the course, the student shall be able to:

1. Understand the Features of General Insurance and Insurance Companies in India
2. Analyze various schemes and policies related to General Insurance sector
3. Choose suitable insurance policy under Health, Fire, Motor, and Marine Insurances
4. Acquire General Insurance Agency skills and administrative skills
5. Apply skill for settlement of claims under various circumstances

II. Syllabus: Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

Unit-I: Introduction

General Insurance Corporation Act - General Insurance Companies in India - Areas of General Insurance- Regulatory Framework of Insurance- IRDA - Objectives -Powers and Functions - Role of IRDA- Insurance Advisory Committee.

Unit-II: Motor Insurance

Motor Vehicles Act 1988 - Requirements for compulsory third party insurance – Policy Documentation & Premium- Certificate of insurance – Liability without fault – Compensation on structure formula basis - Hit and Run Accidents.

Unit-III: Fire & Marine Insurance

Kinds of policies – Policy conditions –Documentation- Calculation of premium- Calculation of Loss- Payment of claims.

Unit-IV: Agriculture Insurance

Types of agricultural insurances - Crop insurance - Problems of crop insurance - Crop Insurance Vs Agricultural relief - Considerations in Crop insurance - Live Stock Insurance.

Unit-V: Health & Medical Insurance

Types of Policies-Calculation of Premium- Riders-Comprehensive Plans-Payment of Claims.

III: 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.
7. *https://www.irdai.gov.in*
8. https://www.policybazaar.com

9. Web resources suggested by the Teacher concerned and the College Librarian including reading material.

IV. Co-Curricular Activities

A. Mandatory: *(Student training by teacher in the related field skills: 10 hrs.)*

1. **For Teachers**: Training of students by teacher (using actual field material) in classroom and field for not less than 10 hours on techniques/skills in aspects of General Insurance area including calculation of premium and claim settlements.
   a. Ascertain the regulatory frame work and functions of IRDA and Insurance Advisory Committee with respect to important cases in General Insurance Field (Ref. unit-1)
   b. Working with specified GIC Company and analyze the documentation procedure and Premium payment with respect to Motor & Other insurances (ref. unit-2)
   c. Working with specified GIC Company and analyze the documentation procedure for Policy agreement and payment of Claims of General Insurance (ref. unit-3)
   d. Working with Banks and Cooperative Societies with respect to Crop Insurance and Claims Settlement (Ref.unit 4)
   e. Working with specified Medical Insurance Companies to ascertain various policies under medical insurance and settlement of claims (ref. Unit.5)
2. **For Students**: Students shall individually undertake Fieldwork/Project work and make observations on the procedures and processes of various insurance policies and claims in real time situations. Working with Insurance Agents and General Insurance companies is preferred. Each student shall submit a hand-written Fieldwork/Project work Report on his/her observations in the given format to teacher.

3. Max marks for Fieldwork/Project work Report: 10

4. Suggested Format for Fieldwork/Project work (not more than 10 pages**):** Title page, student details, Contents, objective, step-wise work done, findings, conclusions and acknowledgements.

5. Unit tests (IE**)**

B. **Suggested Co-Curricular Activities**

1. Training of students by a related field expert.
2. Assignments including technical assignments like Working with General Insurance companies for observation of policies and claims under certain policies.
3. Seminars, Conferences, discussions by inviting concerned institutions
4. Field Visit
5. Invited lectures and presentations on related topics

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 hrs

SECTION - A (Total 25 marks)

Answer any FIVE Questions (5×5 Marks)

Out of Eight Questions covering all units

.**SECTION - B (Total 50 marks)**

Answer any FIVE Questions (5×10 Marks)

Out of Eight Questions covering all units

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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

(Implemented from Academic Year 2020-21)

PROGRAMME: FOUR YEAR B.Com. (Hons)

Domain Subject**: Commerce**

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 Three pairs from the Nine alternate pairs of SECs)

(For each SEC: Hours/Week: 05, Credits: 4, Max Marks: 100)

Pairs of Skill Enhancement Courses (SEC) under each series in Commerce for Semester-V.

Course No.	***Series-A: Accountancy***	***Course No.***	***Series-B: Services***	***Course No.***	***Series-C: E commerce***
	Course Name		*Course Name*		*Course Name*
16-A	Advanced Corporate Accounting	16-B	Advertising and Media Planning	16-C	Digital Marketing
17-A	Software Solutions to Accounting	17-B	Sales Promotion and Practice	17-C	Service Marketing
18-A	Management Accounting	18-B	Logistics Services and Practice	18-C	Income Tax Procedure& Practice
19-A	Cost Control Techniques	19-B	EXIM Procedure and practice	19-C	GST Procedure &Practice
20-A	Stock Markets	20-B	Life Insurance with Practice	20-C	E Commerce
21-A	Stock Market Analysis	21-B	General Insurance with practice	21-C	E filing

Note: In Semester-V a B.Com. General students have to study Three pairs of SECs (a total of 6 courses). The Pairs are, SEC numbers 16 & 17, 18 & 19 and 20 &21.As there shall be choice to students under CBCS, a total of 9 pairs shall be offered from which B.Com. General students have to choose a total of Three pairs of SECs.
The 9 pairs are from 3 series namely (A) Accountancy, (B) Services and (C) E-Commerce. Students can, however, choose their **Three pairs** from any of the **Nine** pairs but a pair shall not be broken.
For example students can choose any Three pairs like the following;
16-A &17-A (from Accountancy), 18-B, 19-B (from Services) and 20-C, 21-C from E-Commerce.
Or 16-A&17-A, 18-C &19-C and 20-B &21-B
Or 16-B &17-B, 18-A &19-A and 20-C &21-C
Or 16-B &17-B, 18-C &19-Cand 20-A &21-A
Or 16-C &17-C, 18-B & 19-B and 20-A &21-A
Or 16-C &17-C, 18-A &19-A and 20-B, 21-B

Whereas, B.Com Computers Students can choose any two pairs from the above 9 pairs.

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. Com. (Hons)
Domain Subject: COMMERCE
IV YEAR B.COM (HONS) - Semester -V-

Max Marks: 100 Time: 3 Hrs

Course 16-C: DIGITAL MARKETING
(Skill Enhancement Course (Elective) 4 credits**)**

I. Learning Outcomes

Upon successful completion of the course students will be able to;

1. Analyze online Micro and Macro Environment
2. Design and create website
3. Discuss search engine marketing
4. Create blogs, videos, and share

II. Syllabus: Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

Unit 1: Introduction

Digital marketing: Meaning – importance – traditional online marketing vs digital marketing – online market place analysis Micro Environment – Online Macro Environment - trends in digital marketing – competitive analysis.

Unit – II: Web site planning and creation

Web Site: meaning – objectives – components of website - website creation – incorporation of design and– adding content, installing and activating plugins.

Unit 3: Search Engine Optimization (SEO)

SEO: Meaning – History and growth of SEO –Importance of Search Engine - On page Optimization – off page optimization – Role of Search Engine Operation- google Ad words – Search Engine Marketing: Campaign Creation – Ad Creation, Approval and Extensions.

Unit 4: Social Media Marketing:

Meaning of social media and Social Media Marketing – social Management tools-strategy and planning – social media network – Social Networking – video creation and sharing – use of different social media platforms - Content creation - Blogging – Guest Blogging.

Unit 5: Email marketing:

Meaning – Evolution of email – importance of email marketing – Development and Advancements in e mail marketing - email marketing platforms – creating and Tracking emailers–create forms – create opt-in lists – mapping industry trends and eliminating spam messages.

III. References

1. Digital Marketing for Dummies **by** Ryan Deiss & Russ Henneberry, publisher John Wiley first edition 2020.
2. **Youtility by** JayBaer, Published by Gilda MedialL C Portfolio 2013,
3. **Epic Content Marketing by** Joe Pulizzi, McGraw-Hill Education, 2013

4. New Rules of Marketing and PR byDavid Meerman Scott.Wiley, 2017
5. **Social Media Marketing All-in-one Dummies by** JanZimmerman, DeborahNg, John Wiley &Sons.
6. Digital Marketing 2020 **by** Danny Star, Independently Published, 2019
7. *Web sources suggested by the concerned teacher and college librarian including reading material*.

IV. Co-Curricular Activities:

A. Mandatory *(Student training by teacher in field related skills: 10 hrs.):*

1. **For Teachers**: teacher shall train students (using actual field material)in classroom/field for not less than 10 hours in the skills in digital marketing viz., SEO, SEM, Social media Marketing, content writing, e-mail marketing, web designing and development, Blogging, Google ad words.

2. **Students**: Students shall individually undertake an online study on any aspect such as Analysis of local online Micro and Macro Environment and make a trend analysis of digital marketing, Build a blog on any topic or subject of their interest, Develop website to market for (real/imaginary) product or service, Create video with product or service description to evoke customer attention. Each student has to submit his/her observations as a handwritten 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 (not more than 10 pages): Title page, student details, contents, objective, step-wise work done, findings, conclusions and acknowledgements.

5. Unit tests (IE).

B. Suggested Co-Curricular Activities

1. Organize short term training on Digital Marketing in collaboration with local or online skill providers.
2. Seminars/Conference/ Workshops on significant and emerging areas in Digital Marketing
3. Real time work experience with Digital marketing service providers.
4. Arrange for Interaction with Area Specific Experts.

V. **Suggested Question Paper Pattern**:

Max. Marks 75 Time: 3 hrs

SECTION - A (Total 25 marks)

Answer any FIVE Questions (5×5 Marks)

OUT OF EIGHT. COVER ALL UNITS

SECTION - B (Total 50 marks)

Answer any FIVE Questions (5×10 Marks)

OUT OF EIGHT. COVER ALL UNITS

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

Course Code:

Four-Year B. Com. (Hons)
Domain Subject**: COMMERCE**
IV YEAR B.COM (HONS) - Semester -V

Max Marks: 100 Time: 3Hrs

Course 17 C -Service Marketing

(Skill Enhancement Course (Elective) 4 credits)

I. Learning Out comes

Upon successful completion of the course the student will be able to;

1. Discuss the reasons for growth of service sector.
2. Examine the marketing strategies of Banking Services, insurance and education services.
3. Review conflict handling and customer Responses in services marketing
4. Describe segmentation strategies in service marketing.
5. Suggest measures to improve services quality and their service delivery.

II. Syllabus: Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

Unit 1: Introduction: Nature and Scope of services

Introduction: Nature and Scope of services characteristics of services, classification of services – need for service marketing - reasons for the growth of services sector, Overview of marketing Different Service Sectors -Marketing of Banking Services -Marketing in Insurance Sector - Marketing of Education Services.

Unit-2: Consumer Behavior in Services Marketing

Customer Expectations on Services- Factors influencing customer expectation of services. - Service Costs experienced by Consumer, the Role of customer in Service Delivery, Conflict Handling in Services, Customer Responses in Services, Concept of Customer Delight

Unit-3: Customer Relationship marketing and Services Market Segmentation.

Customer Relationship marketing: Meaning -Importance of customer & customer's role in service delivery, Benefits of customer relationship, retention strategies. Services Market Segmentation: - Market segmentation -Basis & Need for segmentation of services, bases of segmentation services, segmentation strategies in service marketing.

UNIT 4: Customer Defined Service Standards.

Customer Defined Service Standards - Hard and Soft, Concept of Service Leadership and Service Vision -Meeting Customer Defined Service Standards -Service Flexibility Versus Standards - Strategies to Match Capacity and Demand - managing Demand and Supply of Service –applications of Waiting Line and Queuing Theories to Understand Pattern Demand.

Unit 5: Service Development and Quality Improvement.

Service Development – need, importance and Types of New Services - stages in development of new services, service Quality Dimensions - Service Quality Measurement and Service Mapping, Improving Service Quality and Service Delivery, Service Failure and Recovery.

III. References

1. John E.G. Bateson, K.Douglas Hoffman: Services Marketing, Cengage Learning, 4e, 2015 publication
2. Vinnie Jauhari, Kirti Dutta: Services Marketing: Operations and Management, Oxford University Press, 2014.
3. Valarie A. Zeithaml and Mary Jo-Bitner: Services Marketing – Integrating Customer Focus Across The Firm, Tata McGraw Hill Publishing Company Ltd., 6e, 2013.
4. Nimit Chowdhary, Monika Chowdhary, Textbook of Marketing Of Services: The Indian Experience, Macmillan, 2013.
5. K. Rama Mohana Rao, Services Marketing, Pearson, 2e, 2011.
6. Dr. K. Karunakaran, Service Marketing (Text and Cases in Indian Context), Himalaya Publications.
7. *Web sources suggested by the concerned teacher and college librarian including reading material*.

IV. Co-Curricular Activities:

A. Mandatory *(Student training by teacher in field related skills: 10 hrs.):*

1. For Teachers: Teacher shall train students (using actual field material)in classroom/field for 10 hours in the skills in service marketing such as planning and designing marketing strategies for any real/imaginary service of their interest, procedure to identify customer behavior and their satisfaction for any service and issues thereof.

2. Students: Students shall individually take up a study on marketing strategies adopted (w.r.t.) any one specific service product) adopted by any of the service providers like Banking, Insurance, Telecom companies, (BSNL, Reliance Jio, Airtel, etc.) any other sector like electric household appliances, hospitals, hotels etc. Assess Customer expectations and Customer satisfaction feedback on services provided by Network providers. Of Mobile Companies/Banking/Insurance/hospitals Zamoto, Swiggy, etc. Each student has to submit his/her observations as a handwritten 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 (not more than 10 pages): Title page, student details, contents, objective, step-wise work done, findings, conclusions and acknowledgements.

5. Unit tests (IE).

B. Suggested Co-Curricular Activities

1. Organize short term training on specific technical skills in collaboration with Computer Department or skill training institution (Government or Non-Government Organization). Like Zoho, Fresh book, MS Excel….
2. Seminars/Conference/ Workshops on emerging trends in service marketing
3. Real time work experience with service marketing providers
4. Arrange for Interaction with Area Specific Experts.

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 hrs

SECTION - A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks)

OUT OF EIGHT. COVER ALL UNITS

SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×10 Marks)

OUT OF EIGHT. COVER ALL UNITS

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

Course Code:

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

Max Marks: 100 Time: 3 Hrs

Course-18-C. INCOME TAX ASSESSMENT PROCEDURES AND PRACTICE

(Skill Enhancement Course (Elective), 4 Credits)

I: Course Learning Outcomes

After successfully completing the course, the student shall be able to:

1. Understand the basic concepts in computation of tax liability under all heads of income of the individuals.
2. Analyze the clubbing provisions, aggregate income after set-off and carry forward of losses under the Income Tax Act.
3. Compute taxable income and tax liability of individuals and firms.
4. Acquire the ability to file online returns of income.
5. Acquire skills of TDS/TCS and online filing of Tax returns.

II. Syllabus: Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

Unit-I: Computation of Total Income and Tax Liability

Computation of Total Income and Tax Liability of Individuals- Firms and Companies - Procedure for Assessment including Problems in calculation of tax for firms& Companies

Unit-II: Clubbing of Income-Set off of Losses

Meaning of clubbing of income– Different items come under the provisions of clubbing of income

Meaning of set-off of losses and carry-forward and set-off of losses – Types of set-off - Intra-set off and Inter-set off

Unit-III: Tax Payment- Penalties

Advance Payment of Tax - Persons liable to pay Advance Tax – Procedure for Computation of Advance Tax – Due Dates for the Payment of Advance Tax - Consequences of Non-payment of Advance Tax- Refund of tax, interest on refund – Appeals and Revisions

Unit-IV: Returns Filing

Procedure for Assessment - Filing of Return – Prescribed Forms for filing of Returns – PAN & TAN - On-line filing of Returns- 26 AS - Traces.

Unit-V: TDS &TCS and e-Filing

TDS-TCS- Provisions in brief relating to TDS/TCS- Schedule for deposit & Submission of Returns of TDS- Form-16 generation.

III: References:

1. Systematic Approach to Income Tax, Girish Ahuja & Ravi Gupta, Bharat Law House Pvt. Ltd, New Delhi.
2. Income Tax, Vinod K. Sinhania & Monica Sinhania, Taxmann Publications Pvt. Ltd, New Delhi.
3. Taxation Law & Practice, Mehtrotra & Goyal, Sahitya Bhavan Publications, Agra.
4. E.A. Srinivas, Corporate Tax Planning, Tata McGraw Hill.
5. Vinod K. Singhania, Taxman's Direct Taxes Planning and Management.

6. Bhagawati Prasad, Direct Taxes Laws Practice, Vishwa Prakashan.
7. https://incometaxindia.gov.in
8. Web resources suggested by the Teacher concerned and the College Librarian including reading material

IV. Co-Curricular Activities

A. Mandatory *(Student training by teacher in field related skills: 10 hrs.):*

1. For Teachers: Training of students by the teacher (using actual field material) in classroom/field for not less than 10 hours on techniques in tax consultancy, Income Tax calculation and Tax filing. Tax filing in respect to individuals, firms and Corporate. Income Tax Portal for a selected Tax Payer. Each student has to be trained in using forms for filing of returns.

a. Tax Calculation and preparation of Annexure w.r.t employees in the institutions and selected organizations (ref. unit-1)

b. Working with Clubbing income and set of losses/carry forward losses for a given Company/organization (ref. unit-2)

c. Working with CBDT website for Income Tax website for various provisions and Penalties (ref. unit-3)

d. Working with Online tax portal for downloading different formats (ref.unit 4)

e. Preparation of TDS and TCS reports and generating Form 16 from respective DDO (ref. unit.5)

2. For Students: Students shall individually take up a field study and make observations on Tax Assessment and Submission of Tax Return to Income tax department, payment of tax and other formalities. They may also work with an Income Tax Practitioner and participate in the real time submissions of Tax. Each student has to submit his/her observations as a handwritten 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 (not more than 10 pages**):** Title page, student details, Contents, objective, step-wise work done, findings, conclusions and acknowledgements.

5. Unit tests (IE).

B. **Suggested Co-Curricular Activities**

1. Training of students by a related field expert.
2. Assignments including technical assignments like Working with Tax Consultancy for observation of Tax Assessment and Return Filing Procedure.
3. Seminars, Conferences, discussions by inviting concerned institutions
4. Field Visit
5. Invited lectures and presentations on related topics

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 hrs

SECTION - A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks)

SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×10 Marks)

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

Course Code:

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

Max Marks: 100 Time: 3Hrs

Course 19-C-GOODS AND SERVICES TAX WITH TALLY

(Skill Enhancement Course (Elective), 4 Credits)

I: Course Learning Outcomes

After completing the course, the student shall be able to:

1. Understand the concept of Liability and Payment of GST
2. Create a new company in Tally with GST components and establish environment for GST Voucher entry.
3. Comprehend the utilization of input tax credit, and the reverse charge mechanism in GST
4. Acquire Skills of preparation of GST Returns in accordance with GST Law and Tally
5. Acquire skill of online payment of GST through GST Portal.

II. Syllabus: Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

Unit 1: GST- Liability and Payment

Output tax liability - Input tax credit utilization-- Schedule for payment of GST- Interest/penalty for late/non-filing of return-Payment of GST- GST Network

Unit-II: GST – Accounting Masters and Inventory Masters in Tally

Company Creation- General Ledgers & GST Ledgers Creation - Stock Groups , Stock Items and Unit of Measure - GST Rate Allocation to Stocks

Unit-III: GST Voucher Entry

GST Vouchers - Customizing the Existing Voucher types with applicable GST Rates –Mapping of Input Tax Credit on Purchase Vouchers - Output Tax on Sales Vouchers- Purchase and Sales Voucher Entries with Single Rated GST and Multiple Rated GST Goods.

Unit-IV: GST Returns

Regular Monthly returns and Annual Return- Returns for Composition Scheme- Generation of Returns - GSTR-1, GSTR-2, GSTR-3, GSTR-4, GSTR-9, GSTR-3B

Unit-V: Payment of GST online

Payment of GST- Electronic Filing of GST Returns – Refunds – Penalties- Administrative structure of GST Officers- Powers- Jurisdiction.

III: References:

1. Ahuja, Girish, Gupta Ravi, GST & Customs Law.
2. Babbar, Sonal, Kaur, Rasleen and Khurana, Kritika. Goods and Service Tax (GST) and Customs Law. Scholar Tech Press.
3. Bansal, K. M., GST & Customs Law, Taxmann Publication.
4. Singhania,Vinod K. and Singhania Monica. Students' guide to Income Tax. University Edition. Taxmann Publications Pvt Ltd.,New Delhi.
5. Sisodia Pushpendra, GST Law, Bharat Law House.
6. ***Web resources****:*https://cbic-gst.gov.in
7. Web resources suggested by the Teacher concerned and the College Librarian including reading material

IV. Co-Curricular Activities

A. Mandatory *(Student training by teacher in field related skills: 10 hrs.):*

1. For Teachers: Training of students by the teacher (using actual field material) in classroom/ field for not less than 10 hours on techniques in computation of and online submission of GST. On Tally ERP 9 for entering entries of a selected firm.

a. Calculation of output tax liability and input Tax Credit through voucher entries (ref. unit-1)

b. Creation of Company and working with Masters in Tally ERP9 (ref. unit-2)

c. Voucher entry along with Input tax and output taxed entries (ref. unit-3)

d. Preparation of GST Returns for regular dealer and composite dealer in tally (Ref. unit 4)

e. Online Payment of GST using Tally (ref. unit.5)

2. For Students: Students shall take up individual field study on Entry of GST Voucher, Calculation of Input Tax and Output Tax including single rated /multi rated GST with a selected organizations. Submission of online GST Returns for a selected business firm. Each student has to submit his/her observations as a handwritten 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 (not more than 10 pages**):** Title page, student details, contents, objective, step-wise work done, findings, conclusions and acknowledgements.

5. Unit tests (IE).

B. Suggested Co-Curricular Activities

1. Training of students by a related field expert.
2. Assignments including technical assignments like Working with Tally for Observation of real-time entries for transaction of accounting with inventory
3. Seminars, Conferences, discussions by inviting concerned institutions
4. Field Visit
5. Invited lectures and presentations on related topics.

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 hrs

SECTION - A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks).
OUT OF EIGHT COVERIBG ALL UNITS
SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×10 Marks)
OUT OF EIGHT COVERIBG ALL UNITS

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

Course Code:

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

Max Marks: 100 Time: 3 Hrs

Course **20C**: **E COMMERCE**
(Skill Enhancement Course) (Elective 4 Credits)

I. Learning Outcomes:

By the completion of the course, the students are able to

1. Understand the mechanism of ecommerce
2. Equip specialization in website designing for e commerce
3. Enhance their skills in operational services of e commerce
4. Involve in activities of e commerce
5. Able to create awareness among the public one commerce activities

II. Syllabus Total 75hrs (Teaching 60, Training10 and others 05 including IE etc)

UNIT 1: Introduction, Nature and Scope

Introduction- Definition –importance- Nature and scope of e commerce-Advantages and limitations-Types of ecommerce – B2B,B2C,C2B,C2C,B2A,C2A- Framework e commerce

UNIT 2:- Environmental and Technical support Aspects

Technical Components- Internet and its component structure-Internet Vs Intranet, Vs Extranet and their differences-Website design- its structure-designing, developing and deploying the system-

UNIT 3. –Security and Legal Aspects

Security environment –its preliminaries and precautions-protecting Web server with Firewalls-Importance of Digital Signature –its components – Cyber Law-Relevant Provisions of IT Act 2000.

UNIT 4. - Operational Services of e Commerce

E retailing –features- E Services-Banking, Insurance, Travel, Auctions, Learning, Publication and Entertainment-Payment of utilities (Gas, Current Bill, Petrol Products)- On Line Shopping (Amazon, Flip kart, Snap deal etc.)

UNIT 5.–E Payment System

Types of e payment system- its features-Digital payments (Debit Card/Credit Cards, Internet Banking, Mobile wallets- Digital Apps (unified Payment Services-Phone Pay, Google Pay, BHIM Etc.) Unstructured Supplementary Services Data (Bank Prepaid Card, Mobile banking)-

III. References:

1. Bharat Bhaskar , Electronic Commerce Framework, Technology and Application. McGraw Hill Education
2. Bajaj,D.Nag,E Commerce, Tata McGraw Hill Publication
3. Whitely David , E-Commerce, McGraw Hill
4. TN Chhabra ,E Commerce, Dhanapat Rai & Co
5. Dave Chaffey, E Business and E Commerce Management, Pearson Publication
6. Dr.Pratikkumar Prajapati, Dr.M.Patel, E Commerce , Redshine Publication

7. Web resources suggested by the Teacher concerned and the College Librarian including reading material

IV Co-Curricular Activities (teacher participation: total 15 hours):

A. Mandatory

1. For Teachers: Training of students by the teacher (using actual field material) in classroom and field for a total of not less than 10 hours on the skills of listing out the local institutions who are involved in e commerce activities, Identifying the institutions and their experience in operational activities of e commerce, Case studies are to be **a**nalyzed of various problems raised at the time of e payment and operational activities of e commerce

2. For Students: Students shall individually undertake field study by contact website designers and studying various procedures adopted by the merchants and individuals and their experiences. Each student has to record and submit his/her observations in a handwritten 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 Report (not more than 10 pages**):** Title page, student details, contents, objective, step-wise work done, findings, conclusions and acknowledgements.

5. Unit tests (IE).

B. **Suggested Co-Curricular Activities**

1 Training of students by a related field expert.

2.Assignments (including technical assignments like volume of business operated through e commerce, Case Studies of problems raised at the time of e commerce

3. Seminars, Conferences, discussions by inviting concerned institutions

4. Conduct surveys on pros and cons of ecommerce

5. Invited lectures and presentations on related topics by field experts.

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 hrs

SECTION - A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks)

OUT OF EIGHT COVER ALL UNITS
SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×10 Marks)

OUT OF EIGHT COVERING ALL UNITS
******

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

Course Code:

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

Max Marks: 100 Time: 3 Hrs

Course **21 C**: **e FILING**
(Skill Enhancement Course (Elective) 4credits)

Learning Outcomes:

By the completion of the course, the students are able to

- Understand and apply basic knowledge of Indian Tax System
- Equip specialization in taxation system
- Enhance their skills in presenting returns
- Involve in activities of Charted Accountants for filing returns
- file returns of Income Tax and GST

II. Syllabus: Total 75hrs (Teaching 60, Training10, Others 05 including IE etc.)

UNIT 1: Introduction, Nature and Scope

Introduction- Definition –importance and scope of returns--Types of Assesses –under Income Tax and Goods and Service Tax-Sources of income-

UNIT 2:- **Returns filing under Income Tax**

Types of Returns- Mode of filing-Manual-Electronic Bureau of Internal Revenue Form (eBIR) Electronic Filing and Electronic and Payment System (eFPS)-for Individuals-ITR1,ITR2,ITR3,ITR4,For Firms and CompaniesITR5,ITR6,ITR7.

UNIT 3: –Penalties and Prosecution under Income Tax

Nonpayment, failure to comply,-Concealment-, Book Audit, Loans-International transactions, TDS

UNIT 4:-.Returns filing under Goods Service Tax

GSTR1. GSTR1, GSTR2, GSTR2A, GSTR3B, GSTR4, GSTR5, GSTR6

UNIT 5.–Penalties and Prosecution under GST

Differences between fees and penalty-Types of penalties under section 122 to 138

III. References:

1. Varun Panwar ,Jyothi Mahajan Introduction to efiling returns MKM Publishers
2. Hemachandjain and H.N.Tiwari Computer Application in Business Taxman's Publication
3. SusheelaMadan Computer Application in Business MKM Publishers
4. www.incometaxindiafiling.gov.in
5. www.taxguru.in 6. www.bharatlaws.com
7. www.cbic-gst.gov.in 8.. www.taxmann.com

Web resources suggested by the Teacher concerned and the College Librarian including reading material

IV Co-Curricular Activities (teacher participation: total 15 hours):

A. Mandatory

1. For Teachers: Training of students by the teacher (using actual field material) in classroom and field for not less than 10 hours on the skills of Local tax consultants and the problems raised at the time of e filing, Identifying the assesses and their experience in e filing activities, Analysis of various returns filed through manual and e filing and their difficulties and advantages, Listing out assesses who paid penalties and identify the various reasons

2. For Students: Filing of tax returns through the tax experts and concerned websites, Students shall be submitted a project report on filing of returns.

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

4. Suggested Format for Fieldwork/Project work Report (not more than 10 pages**):** Title page, student details, contents, objective, step-wise work done, findings, conclusions and acknowledgements.

5. Unit tests (IE).

B. **Suggested Co-Curricular Activities**

- Training of students by a related field expert.
- Assignments (including technical assignments like collection of submitted returns of various organizations, Case Studies of problems raised at the time of submission of returns.
- Seminars, Conferences ,discussions by inviting concerned institutions
- Visits to local charted Accountants to expose the practical filing procedure
- Invited lectures and presentations on related topics by field experts.

V. Suggested Question Paper Pattern:

Max. Marks 75 Time: 3 hrs.

SECTION - A (Total 25 marks)
Answer any FIVE Questions (5×5 Marks)

.OUT OF EGHIT UNITS COVERING ALL UNITS
SECTION - B (Total 50 marks)
Answer any FIVE Questions (5×10 Marks)

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OUT OF EIGHT COVERING ALL UNITS
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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.Com (Hons)

Domain Subject**: Computer Applications for Arts/Commerce**
Skill Enhancement Courses (SECs) for Semester V, from 2022-23 *(Syllabus/Curriculum)*

Pair Options 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	Hrs. / Week	Max Marks IE	Max Marks EE	Credits
	6A	Big data Analytics using R	5	25	75	4
	7A	Data Science using Python	5	25	75	4
		OR				
	6B	Mobile application development	5	25	75	4
	7B	Cyber security and malware analysis	5	25	75	4
		OR				
	6C	E– commerce application development	5	25	75	4
	7C	Real time governance system (RTGS)	5	25	75	4
		OR				
	6D	Multimedia Tools and Applications	5	25	75	4
	7D	Digital imaging	5	25	75	4

Note-1: For Semester–V, for the domain subject Computer Applications, any one of the above 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 practical 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.*

Note-3: *Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per subject/course.*

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2019-20
Subject: **Computer Applications for Arts/Commerce**
Four year B.A. /B.Com. (Hons) Semester –V (from 2022-23)
Course Code: Max Marks: 100

Course-**6A: BIGDATA ANALYTICS USING R**
(Skill Enhancement Course (Elective), 4 credits)

I. **Learning Outcomes**:

Upon successful completion of the course, a student will be able to:

1. Understand data and classification of digital data.
2. Understand Big Data Analytics.
3. Load data in to R.
4. Organize data in the form of R objects and manipulate them as needed.
5. Perform analytics using R programming.

II. Syllabus: (Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

Unit – 1: Introduction to Big data (12 h)

Data, classification Of Digital Data--structured, unstructured, semi-structured data, characteristics of data, evaluation of big data, definition and challenges of big data , what is big data and why to use big data ?, business intelligence Vs big data.

Unit – 2: Big data Analytics (10 h)

What is and isn't big data analytics? Why hype around big data analytics? Classification of analytics, top challenges facing big data, importance of big data analytics, technologies needed to meet challenges of big data.

Unit – 3: Introduction to R and getting started with R **(**13h)

What is R? Why R? , advantages of R over other programming languages, Data types in R-logical, numeric, integer, character, double, complex, raw, coercion, ls() command, expressions, variables and functions, control structures, Array, Matrix, Vectors, R packages.

Unit – 4: Exploring data in R (13h)

Data frames-data frame access, ordering data frames, R functions for data frames dim(), nrow(), ncol(), str(), summary(), names(), head(), tail(), edit() .Load data frames—reading from .CSV files, sub setting data frames, reading from tab separated value files, reading from tables.

Unit – 5: Data Visualization using R (12h)

Reading and getting data into R (External Data): XML files, Web Data, JSON files, Databases, Excel files.

Working with R Charts and Graphs: Histograms, Bar Charts, Line Graphs, Scatterplots, Pie Charts

BOOKS

1. Seema Acharya , Subhashini Chellappan --- Big Data And Analytics second edition, Wiley
2. Seema Acharya--Data Analytics using R, McGraw Hill education (India) Private Limited.
3. Big Data Analytics, Introduction to Hadoop, Spark, and Machine-Learning, Raj kamal,
   Preeti Saxena, McGraw Hill, 2018.
4. Big Data, Big Analytics: Emerging Business intelligence and Analytic trends for Today's
   Business, Michael Minelli, Michelle Chambers, and Ambiga Dhiraj, John Wiley & Sons,
   2013

Reference Books:

1. An Introduction to R, Notes on R: A Programming Environment for Data Analysis and Graphics. W. N. Venables, D.M. Smith and the R Development Core Team

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)

A. 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 a steams))
4. 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

B. General

1. Group Discussion
2. Try to solve MCQ’s available online.
3. Others

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. Problem-solving exercises,
4. Practical assignments and laboratory reports.
5. Observation of practical skills,
6. Individual and group project reports like "Creating Text Editor in C".
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

Course-6A: **Big Data Analytics Using R---- Lab (Practical) Syllabus (15 Hrs.)**

(Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per semester.)

1. Create a vector in R and perform operations on it.
2. Create integer, complex, logical, character data type objects in R and print their values and their class using print and class functions.
3. Write code in R to to demonstrate sum(), min(), max() and seq() functions.
4. Write code in R to manipulate text in R using grep(), toupper(), tolower() and substr() functions.
5. Create data frame in R and perform operations on it.
6. Import data into R from text and excel files using read.table () and read.csv () functions.
7. Write code in R to find out whether number is prime or not.
8. Print numbers from 1 to 100 using while loop and for loop in R.
9. Write a program to import data from csv file and print the data on the console.
10. Write a program to demonstrate histogram in R.

Note: The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool based exercises can be prepared by the concerned Faculty members.*

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2019-20
Four year B.A./B.Com.(Hons) (Hons)

Course Code:

Subject: **Computer Applications for Arts/Commerce**
Four year B.A. /B.Com. (Hons)Semester –V (from 2022-23)

Max Marks: 100

Course-**7A: DATA SCIENCE USING PYTHON**
(Skill Enhancement Course (Elective), 4 credits)

Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand basic concepts of data science
2. Understand why python is a useful scripting language for developers.
3. Use standard programming constructs like selection and repetition.
4. Use aggregated data (list, tuple, and dictionary).
5. Implement functions and modules.

II. Syllabus :(Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

Unit – 1: Introduction to data science (12h)

Data science and its importance, advantages of data science, the process of data science, Responsibilities of a data scientist, qualifications of data scientists, would you be a good data scientist, why to use python for data science.

Unit – 2: Introduction to python (14h)

What is python , features of python, history of python, writing and executing the python program, basic syntax, variables, keywords, data types ,operators ,indentation, Conditional statements-if, if-else, nested if-else, looping statements-for, while, break, continue, pass

Unit – 3: Control structures and strings (10h)

Strings - definition, accessing, slicing and basic operations

Lists - introduction, accessing list, operations, functions and methods,

Tuples - introduction, accessing tuple

Dictionaries - introduction, accessing values in dictionaries

Unit – 4: Functions and modules (13h)

Functions - defining a function, calling a function, types of functions, function arguments, local and global variables, lambda and recursive functions, Modules- math and random

Unit-5: Classes & Objects (11h)

Classes and Objects, Class method and self-argument, class variables and object variables, public and private data members, private methods, built-in class attributes, static methods.

Reference Books:

1. Steven cooper--- Data Science from Scratch, Kindle edition
2. Reemathareja—Python Programming using problem solving approach, Oxford Publication

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)

C. 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 a steams))
4. 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

D. General

1. Group Discussion
2. Try to solve MCQ's available online.
3. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

11. The oral and written examinations (Scheduled and surprise tests),
12. Closed-book and open-book tests,
13. Problem-solving exercises,
14. Practical assignments and laboratory reports.
15. Observation of practical skills,
16. Individual and group project reports like "Creating Text Editor in C".
17. Efficient delivery using seminar presentations,
18. Viva voce interviews.
19. Computerized adaptive testing, literature surveys and evaluations,
20. Peers and self-assessment, outputs form individual and collaborative work

Course-7A**: Data Science Using Python; Lab (Practical) Syllabus (15 Hrs.)**

(Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per semester.)

1. Python Program to Find the Square Root
2. Python Program to Swap Two Variables
3. Python Program to Generate a Random Number
4. Python Program to Check if a Number is Odd or Even
5. Python Program to Find the Largest Among Three Numbers
6. Python Program to Check Prime Number
7. Python Program to Display the multiplication Table
8. Python Program to Print the Fibonacci sequence
9. Python Program to Find the Sum of Natural Numbers
10. Python Program to Find Factorial of Number Using Recursion
11. Python Program to work with string methods.
12. Python Program to create a dictionary and print its content.
13. Python Program to create class and objects.

Note: The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool based exercises can be prepared by the concerned Faculty members.*

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2019-20
Four year B.A./B.Com.(Hons) (Hons)

Course Code:

Subject: **Computer Applications for Arts/Commerce**
Four year B.A./B.Com.(Hons) Semester –V (from 2022-23)

Max Marks: 100

Course-**6B: MOBILE APPLICATION DEVELOPMENT**
(Skill Enhancement Course (Elective), 4 credits)

Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Identify basic terms ,tools and software related to android systems
2. Describe components of IDE, understand features of android development tools
3. Describe the layouts and controls
4. Explain the significance of displays using the given view
5. Explain the features of services and able to publish android Application
6. Developing interesting Android applications using MIT App Inventor

Unit-1:(Total hours: 75 including Theory, Practical, Training, Unit tests etc.)
10 Hrs

1.1 Introduction to Android ,open headset alliance, Android Ecosystem
1.2 Need of Android
1.3 Features of Android
1.4 Tools and software required for developing an Application

Unit-2: **13Hrs**

2.1 operating system, java JDK, Android SDK
2.2 Android development tools
2.3 Android virtual devices
2.4 steps to install and configure Android studio and sdk
2.5 Android activities

Unit-3: **14Hrs**

3.1 control flow, directory structure
3.2 components of a screen
3.3 fundamental UI design
3.4 linear layout, absolute layout , table layout
3.5 text view
3.6 edit text
3.7 button, image button, radio button
3.8 radio group, check box, and progress bar
3.9 list view, grid view, image view, scroll view

3.10 time and date picker
3.11 toast

Unit-4: **10Hrs**

4.1 android platform services
4.2 Android system Architecture
4.3 Android Security model

Unit-5 13Hrs.

5.1 Introduction of MIT App Inventor
5.2 Application Coding
5.3Programming Basics & Dialog
5.4 Audio& Video
5.5 File

Text Books:

1. Erik Hellman, "Android Programming – Pushing the Limits", 1st Edition, Wiley India Pvt Ltd, 2014.
2. App Inventor: create your own Android apps by Wolber, David (David Wayne)

Reference Books:

1. Dawn Griffiths and David Griffiths, "Head First Android Development", 1st Edition, O'Reilly SPD Publishers, 2015.
2. J F DiMarzio, "Beginning Android Programming with Android Studio", 4th Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978-8126565580
3. Anubhav Pradhan, Anil V Deshpande, " Composing Mobile Apps" using Android, Wiley 2014, ISBN: 978-81-265-4660-2
4. Android Online Developers Guide
5. http://developer.android.com/reference/ Udacity: Developing Android
6. Apps- Fundamentals
7. https://www.udacity.com/course/developing-android-appsfundamentals--ud853-nd
8. http://www.appinventor.mit.edu/

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)

E. 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. 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

a. Group Discussion
b. Try to solve MCQ's available online.
c. Others

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. Problem-solving exercises,
4. Practical assignments and laboratory reports.
5. Observation of practical skills,
6. Efficient delivery using seminar presentations,
7. Viva voce interviews.
8. Computerized adaptive testing, literature surveys and evaluations,
9. Peers and self-assessment, outputs form individual and collaborative work

Course-6B**: Mobile Application Development: Lab (Practical) Syllabus (15 Hrs.)**

(Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per semester.)

Outcomes:

1. Understand the android platform
2. Design and implementation of various mobile applications

Experiments:

1. Demonstrate mobile technologies and devices
2. Demonstrate Android platform and applications overview
3. Working with texts , shapes, buttons and lists
4. Develop a calculator application
5. Implement an application that creates a alarm clock

Note: The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.*

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2019-20
Four year B.A./B.Com.(Hons) (Hons) Semester –V (from 2022-23)
Course Code: Max Marks: 100
Domain Subject: **Computer Applications for Arts/Commerce**
IV Year B. Sc./B.Com (Hons) – Semester – V
Course-**7B**: **CYBER SECURITY AND MALWARE ANALYSIS**
(Skill Enhancement Course (Elective), 4 credits)

COURSE OUTCOMES:
Upon successful completion of this course, students should have the knowledge and skills to

1. Understand the computer networks, networking tools and cyber security
2. Learn about NIST Cyber Security Framework
3. Understand the OWASP Vulnerabilities
4. Implement various Malware analysis tools
5. Understand about Information Technology act 2000

Syllabus: (Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

UNIT 1: Introduction to Networks & cyber security 14hrs

- Computer Network Basics
- Computer network types
- OSI Reference model
- TCP/IP Protocol suite
- Difference between OSI and TCP/IP
- What is cyber, cyber-crime and cyber-security
- All Layer wise attacks
- Networking devices: router, bridge, switch, server, firewall
- How to configure: router
- How to create LAN

UNIT 2: NIST Cyber security framework 12hrs

- Introduction to the components of the framework
- Cyber security Framework Tiers
- What is NIST Cyber security framework
- Features of NIST Cyber security framework
- Functions of NIST Cyber security framework
- Turn the NIST Cyber security Framework into Reality/ implementing the framework

UNIT 3: OWASP **12hrs**

- What is OWASP?
- OWASP Top 10 Vulnerabilities
    - ❖ Injection
    - ❖ Broken Authentication
    - ❖ Sensitive Data Exposure
    - ❖ XML External Entities (XXE)
    - ❖ Broken Access Control
    - ❖ Security Misconfiguration
    - ❖ Cross-Site Scripting (XSS)
    - ❖ Insecure Deserialization
    - ❖ Using Components with Known Vulnerabilities
    - ❖ Insufficient Logging and Monitoring
- Web application firewall

UNIT 4: MALWARE ANALYSIS **12hrs**

- What is malware
- Types of malware
    - ❖ Key loggers
    - ❖ Trojans
    - ❖ Ran some ware
    - ❖ Rootkits
- Antivirus
- Firewalls
- Malware analysis
    - ❖ VM ware
    - ❖ How to use sandbox
    - ❖ Process explorer
    - ❖ Process monitor

UNIT 5: CYBER SECURITY: Legal Perspectives **10hrs**

- Cybercrime and the legal landscape around the world
- Indian IT ACT 2000 --Cybercrime and Punishments
- Challenges to Indian law and cybercrime scenario in India

Textbooks:

1. Computer Networks | Fifth Edition | By Pearson (6th Edition)|Tanenbaum, Feamster & Wetherill
2. Computer Networking | A Top-Down Approach | Sixth Edition | By Pearson | Kurose James F. Ross Keith W.
3. Cyber Security by Sunit Belapure, Nina Godbole|Wiley Publications
4. TCP/IP Protocol Suite |Mcgraw-hill| Forouzan|Fourth Edition

Website References:

- https://csrc.nist.gov/Projects/cybersecurity-framework/nist-cybersecurity-framework-a-quick-start-guide
- https://owasp.org/www-project-top-ten/
- https://owasp.org/www-project-juice-shop/

Co-Curricular Activities:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. 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. 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)

B. General

1. Group Discussion
2. Try to solve MCQ's available online.

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. Practical assignments and laboratory reports,
4. Observation of practical skills,
5. Individual and group project reports.
6. Efficient delivery using seminar presentations,
7. Viva-Voce interviews.
8. Computerized adaptive testing, literature surveys and evaluations,
9. Peers and self-assessment, outputs form individual and collaborative work

Course-7B: Cyber Security and Malware Analysis; Lab (Practical) Syllabus (15 Hrs.)

(Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per semester.)

Experiments:

1. Configure a LAN by using a switch
2. Configure a LAN by using Router
3. Perform the packet sniffing mechanism by download the “wire shark” tool and extract the packets
4. Perform an SQL Injection attack and its preventive measure to avoid Injection attack

Note: The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.*

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2019-20
Four year B.A. /B.Com. (Hons)Semester –V (from 2022-23)
Domain Subject: **Computer Applications for Arts/Commerce**

Course Code: Max Marks: 100

Course-**6C**: **E– COMMERCE APPLICATION DEVELOPMENT**
(Skill Enhancement Course (Elective), 4 credits)

Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. To apply in an integrative and summative fashion the students' knowledge in all fields of business studies by drafting a website presence plan.
2. To understand the factors needed in order to be a successful in ecommerce
3. To gain the skills to bring together knowledge gathered about the different components of building a web presence
4. To critically think about problems and issues that might pop up during the establishment of the web presence
5. To apply Word Press as a content management system (CMS), Plan their website by choosing colour schemes, fonts, layouts, and more

Syllabus: (Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

Unit-1: **(10h)**

1.1 Introduction to E– commerce:
1.2 Meaning and concept – E– commerce
1.3 E– commerce v/s Traditional Commerce
1.4 E– Business & E– Commerce – History of E– Commerce
1.5 EDI – Importance, features & benefits of E– Commerce
1.6 Impacts, Challenges & Limitations of E– Commerce

Unit-2: **(12h)**

2.1 Business models of E – Commerce: Business to Business
2.1.2 Business to customers
2.1.3Customers to Customers
2.1.4 Business to Government
2.1.5 Business to Employee
2.2 Influencing factors of successful E– Commerce
2.3 Architectural framework of Electronic Commerce
2.4 Web based E Commerce Architecture.
2.5 Internet Commerce

Unit-3: **(12h)**

3.1 Electronic data Interchange
3.2 EDI Technology
3.3 EDl- Communications

3.4 EDI Agreements
3.5 E– Commerce payment system.
3.6 Digital Economy

Unit -4: **(13h)**

4.1 A Page on the web - HTML Basics
4.2 Client Side scripting -JAVA SCRIPT basics
4.3 Server side Scripting- PHP basics.

Unit-5: **(13h)**

5.1 Logging in to Your Word press Site
5.2 word press dash board
5.3 creating your first post
5.4 adding photos and images
5.5 creating hyper link
5.6 adding categories and tags

Textbooks:

1. Turban, Rainer, and Potter, Introduction to E-Commerce, second edition, 2003
2. H. M. Deitel, P. J. Deitel and T. R. Nieto, E-Business and E-Commerce: How to Programe, Prentice hall, 2001
3. WordPress All-in-One For Dummies -written by Lisa Sabin Wilson with contributions by Michael Torbert, Andrea Rennick, Cory Miller, and Kevin Palmer

Reference Books:

1. Elias. M. Awad, “Electronic Commerce", Prentice-Hall of India Pvt Ltd.
2. Ravi Kalakota, Andrew B. Whinston, "Electronic Commerce-A Manager's guide", Addison-Wesley
3. https://w3cschools.com
4. David Whiteley, E-Commerce: Strategy, Technologies and Applications, Tata McGraw Hill.

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)

A. 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))

B. General

1. Group Discussion
2. Others

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. Efficient delivery using seminar presentations,
4. Computerized adaptive testing, literature surveys and evaluations,
5. Peers and self-assessment, outputs form individual and collaborative work

Course-6C: E– Commerce Application Development; Lab (Practical) Syllabus (15 Hrs)

(Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per semester.)

Case study of e –commerce

1. Home page design of web site
2. Validation using PHP
3. Implement Catalogue design
4. Implement Access control mechanism(eg: username and password)
5. Case study on business model of online E-Commerce store

Note: The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.*

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2019-20
Four year B.A. /B.Com. (Hons)Semester –V (from 2022-23)

Domain Subject: **Computer Applications for Arts/Commerce**

Course Code: Max Marks: 100

Course-**7C: REAL TIME GOVERNANCE SYSTEM (RTGS)**

(Skill Enhancement Course (Elective), 4 credits)

COURSE OUTCOMES:

Upon successful completion of this course, students will have the knowledge and skills to

1. Understand the terms regarding Governance, E-Governance and RTGS
2. Learn about E-Governance Infrastructure
3. Understand the E-Governance implementation in several countries
4. Understand the E-Governance implementation in several Indian states
5. Understand the applications of RTG

Syllabus: (Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

UNIT 1: Introduction to E-Governance 12hrs

- Government, Governance and Good Governance
- What is E-Governance or Electronic Governance?
- E-Government and E-Governance: A conceptual Analysis
    - ❖ Objectives
    - ❖ Components
    - ❖ application domains
    - ❖ four phase model
    - ❖ implementing E-Governance
    - ❖ issues while implementing E-Governance
    - ❖ Opportunities and challenges
- Types of E-Governance
- What is Real-Time Governance (RTG)
- Real Time Governance Society (RTGS)

UNIT 2: E-Governance Infrastructure 14hrs

- Data Systems infrastructure
    - ❖ Executive Information Systems
    - ❖ Management Information Systems
    - ❖ Knowledge Management Systems

- ❖ Transaction Processing Systems
- Legal Infrastructural preparedness
  - ❖ IT Act 2000
  - ❖ Challenges to Indian law and cybercrime scenario in India
  - ❖ Amendments of the Indian IT Act
- Institutional Infrastructural preparedness
  - ❖ Internet
  - ❖ intranet
  - ❖ extranet
- Human Infrastructural preparedness
  - ❖ Top-level management
  - ❖ Middle-level management
  - ❖ Low-level management
- Technological Infrastructural preparedness
  - ❖ Information and communications technology
  - ❖ Data Warehousing
  - ❖ Cloud Computing

UNIT 3: E-Governance: Country Experience **12hrs**

- INDIA
- US
- UK
- AUSTRALIA
- DUBAI

UNIT 4: E-Governance in India **12hrs**

- Andhra Pradesh
- Karnataka
- Kerala
- Uttar Pradesh
- Madhya Pradesh
- West Bengal
- Gujarat

UNIT 5: Latest Applications in Real Time Governance **10hrs**

- Agriculture
- Rural Development
- Health care
- Education
- Tourism
- Commerce and Trade

Textbooks:

1. E-Governance: concepts and case studies| CSR Prabhu| Prentice-Hall|
2. E-Governance| Niranjanpani, Sanhari Mishra | Himalaya Publishing House

Website References:

1. http://www.egov4dev.org/success/case/
2. https://vikaspedia.in/e-governance/resources-for-vles
3. https://altametrics.com/en/information-systems/information-system-types.html
4. https://core.ap.gov.in/CMDashBoard/Index.aspx

Co-Curricular Activities:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. 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. 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)

B. General

1. Group Discussion
2. Try to solve MCQ's available online.

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

10. The oral and written examinations (Scheduled and surprise tests),
11. Closed-book and open-book tests,
12. Practical assignments and laboratory reports,
13. Observation of practical skills,
14. Individual and group project reports.
15. Efficient delivery using seminar presentations,
16. Viva-Voce interviews.
17. Computerized adaptive testing, literature surveys and evaluations,
18. Peers and self-assessment, outputs form individual and collaborative work

Course-7C: Real Time Governance System (RTGS); Lab (Practical) Syllabus (15 Hrs)

(Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per semester.)

Note: Here the students have to gather the details in computer lab by surfing several websites & Google Search Engines and submit the report to the class/lab instructor before leaving the lab.

Week 1: Write a Report on the role of Nationwide Networking in E-Governance

Week 2: Write a Report on SETU: A Citizen Facilitation Centre in India, regarding it's successful or failure journey.

Week 3: Write a Report on National Cyber Security Policy, how it is useful to Indian citizens.

Week 4: Write a Report on mee-seva/Village Secretariat/Ward secretariat, a new paradigm in citizen services.

Week 5: Write a Report on how Andhra Pradesh is implementing RTGS in Agriculture.

Week 6: Write a Report on how Andhra Pradesh is implementing RTGS in social welfare schemes

Week 7: Write a Report on how Andhra Pradesh is implementing RTGS in waste lands, agricultural lands and house properties.

Week 8: Write a Report on Electronic Birth Registration in any one state of our country.

Note: The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.*

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A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2019-20

Four-year B.A. /B.Com. (Hons) Semester-V (from 2022-23)
Domain Subject: **Computer Applications for Arts/Commerce**

Course Code: Max Marks: 100

Course-**6D: MULTIMEDIA TOOLS AND APPLICATIONS**

(Skill Enhancement Course (Elective), 4 credits)

Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Gain knowledge on the concepts related to Multimedia.
2. Understand the concepts like image data representation and colour modes.
3. Understand the different types of video signals and digital audio.
4. Know about multimedia data compression types and audio compression standards
5. Know about basic video compression techniques.

Syllabus: (Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

Unit-1: Introduction to multimedia: 12Hr

1. What is Multimedia?
2. Components of Multimedia System
3. Multimedia and Hypermedia
4. Multimedia Authoring metaphors
5. Multimedia Production
6. Multimedia Presentation
7. Some Technical Design Issues
8. Automatic Authoring

Unit-2: Image Data Representations and color models: 12Hr

1. Color science Human vision Image data types:
2. 2.Black & white images
   2.1 1-bit images (Binary image)
   2.2 8 -bit (Gray -level images)
3. Color images
   3.1 24-bit color images
   3.2 8-bit color images
4. Color models

Unit-3: Fundamental concepts in video: 12Hr

1. Types of Video Signals
   1.1 Analog Video
   1.2 Digital Video

Basics of Digital Audio:

2. What is Sound?

2.1 Digitization of Sound

2.2 Quantization and Transmission of Audio

2.2.1 Pulse code modulation

2.2.2 Differential coding of audio

2.2.3 Predictive coding

Unit-4:

Multimedia Data Compression: 13Hr

1. Introduction

1.1 Basics of Information Theory

1.2 Lossless Compression Algorithms

1.2.1 Fix-Length Coding

1.2.2 Run-length coding

1.2.4 Dictionary-based coding

1.3. Variable Length Coding

1.3.1 Huffman Coding Algorithm

Audio Compression standards:

2. Introduction

2.1 Psychoacoustics model

2.2 MPEG Audio

Unit-5: Basic Video Compression Techniques: 11Hr

1. Introduction to Video compression

2. Video compression standard H.261

3. Video compression standard MPEG-1

Text Books:

Fundamentals of Multimedia by Ze-Nian Li & Mark S. Drew. Publisher: Prentice Hall

Reference Books:

1. An introduction to digital multimedia by Savage, T. M. and Vogel, K. E. 2008.

2. Digital Multimedia by Nigel Chapman & Jenny Chapman. 2009.

Online Resources: https://ksuit342.wordpress.com/lectuers/

https://www.tutorialspoint.com/multimedia

Recommended Co-Curricular Activities (participation: total 15 weeks):

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. 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. 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))

B. **General**

1. Group Discussion
2. Others

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. Programming exercises,
4. Observation of practical skills,
5. Efficient delivery using seminar presentations,
6. Viva voce interviews.
7. Computerized adaptive testing, literature surveys and evaluations,
8. Peers and self-assessment, outputs form individual and collaborative work

Suggested Software

1) Image Editing – GIMP
2) Audio Editing – Audacity
3) Video Editing – video pad
4) NCH software tools.

Course-6D**: Multimedia Tools and Applications; Lab (Practical) Syllabus (15 Hrs.)**

(Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per semester.)

1. Editing images using GIMP
2. Improve the Quality of your Image in GIMP
3. Create an impressive background in GIMP
4. Applying Shadow & Highlight effects in images
5. Black& white and color photo conversion.

Note: The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.*

A.P. State Council of Higher Education
Semester-wise Revised Syllabus under CBCS, 2019-20
Four-year B.A./B.Com (Hons) Semester-V (from 2022-23)

Domain Subject: **Computer Applications for Arts/Commerce**

Course Code: Max Marks: 100

Course-**7D: DIGITAL IMAGING**

(Skill Enhancement Course (Elective), 4 credits)

Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Gain knowledge about Types of Graphics, Types of Objects and Types of video editing tools
2. Show their skills in editing and altering photographs for through a basic understanding of the tool box.
3. Gain knowledge in using the layers.
4. Gain knowledge in using the selection tools, repair tools.
5. Gain knowledge in using selection tools, applying filters and can show their skills.

Syllabus: (Total hours: 75 including Theory, Practical, Training, Unit tests etc.)

UNIT-I **12 Hrs**

1. Types of Graphics
    1.1 Raster vs Vector Graphics
2. Types of Objects
    2.1 Audio formats
    2.2 Video formats
    2.3 Image formats
    2.4 Text document formats
3. Types of video editing
4. Different color modes.
5. Image Scanner
    5.1 Types of Image Scanners

UNIT-II **12 Hrs**

1. What is GIMP?
2. GIMP tool box window
3. Layers Dialog
4. Tool Options Dialog
5. Image window
6. Image window menus

UNIT-III **12 Hrs**

Improving Digital Photos

1.1 Opening files

1.1.1 Rescaling saving files

1.2. Cropping

1.3. Brightening & Darkening

1.4. Rotating

1.5. Sharpening

Introduction to layers

2. What is layer?

2.1. Using layer to add text

2.2. Using move tool

2.3. Changing colors

2.4. Simple effects on layers

2.5 Performing operations on layers

2.7 Using layers to copy and paste

UNIT-IV **12 Hrs**

Drawing:

1.1 Drawing lines and curves

1.2 Changing colors and brushes

1.3 Erasing

1.4 Drawing rectangles, Circles and other shapes

1.6 Outlining and filling regions

1.7 Filling with patterns and gradients

Selection:

2.1 Working with selections

2.2 Select by color and fuzzy

2.3 Select Bezier paths

2.5 Modifying selections with selection modes

UNIT-V **12 Hrs**

Erasing and Touching Up:

1.1 Dodge and burn tool

1.3 Clone tool

1.4 Sharpening using convolve tool

1.5 Correcting Color Balance

Filters:

2.1 Filters

2.1.1 Blur

2.1.2 Enhance

2.1.3 Noise Filters

References:

Textbook: Beginning GIMP from Novice to professional by Akkana Peck,
Second Edition, Apress

Recommended Co-Curricular Activities (participation: total 15 weeks):
(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. 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. 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))

B. **General**

1. Group Discussion
2. Others

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. Programming exercises,
4. Observation of practical skills,
5. Efficient delivery using seminar presentations,
6. Viva voce interviews.
7. Computerized adaptive testing, literature surveys and evaluations,
8. Peers and self-assessment, outputs form individual and collaborative work

Course-7D**: DIGITAL IMAGING; Lab (Practical) Syllabus (15 Hrs.)**

(Since, the proposed SECs are connected to Computer Programming/Software Tools and Skill enhancement, the students need to get exposure on the syllabus content by practicing on the computer even though there is no formal assignment of credits and laboratory hours for practical sessions. So, as part of the Co-curricular activities and continuous assessment, students should be engaged in practicing on computer for at least 15 hours per semester.)

1. Designing a Visiting card
2. Design Cover page of a book
3. Paper add for calling tenders
4. Design a Pamphlet
5. Brochure designing
6. Titles designing
7. Custom shapes creation
8. Image size modification
9. Background changes
10. Texture and patterns designing

Note: The list of experiments need not be restricted to the above list. *Detailed list of Programming/software tool based exercises can be prepared by the concerned faculty members.*

Draft Syllabus prepared by:

1. Dr. M. Babu Reddy, Krishna University, Machilipatnam
2. Mr.Kavuri Sridhar, PB Sidhartha College of Arts & Science, Vijayawada
3. Mr.SAB Nehru, Andhra Layola College, Vijayawada

HINDU COLLEGE : : GUNTUR

ARTS SYLLABUS

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

Scarcity and Choice as fundamental problems of economics - Opportunity Cost - Production Possibilities Curve - Micro and Macro Analysis - Micro economic analysis – Scope and Importance -Principles of Microeconomics : Allocation of Resources - Optimization, Equilibrium and Marginal analysis -Rationality Principle the concept of Welfare

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 - Changes -Consumer Equilibrium under Indifference Curve Analysis – Consumers' Surplus and Indifference Curve Analysis

Module -3: Theory of Production

Concept and Objectives of Firm - 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 Supply

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 -Types- Kinky demand curve and Price rigidity

Module - 5: Theory of Distribution

The concepts of Functional and Personal Distribution of Income - Marginal Productivity Theory of Distribution - Modern 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 illustrations and 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

c. 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 - Difference between Micro economic and Macro economic Analyses – Circular Flow of Income -National Income: Definitions, Concepts, Measurement of National Income - Difficulties - Importance - Concept of Green Accounting

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 –Brief Review of Relative, Life Cycle and Permanent Income Hypotheses - Investment Function: Marginal Efficiency of Capital -Multiplier and Accelerator - Keynesian Theory of Employment - Applicability to Developing countries

Module – 3: Money and Banking

Definitions of Money - Concepts of Money, Liquidity and Finance - 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 - NBFCs- Factors contributing to their Growth and their Role

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 Assets and 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 - Relevance of Herd (Group) Immunity in the context of COVID 19 - 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 - Modern economic growth – Kuznets' Six Characteristics -Obstacles to economic development - Vicious Circle of Poverty and cumulative causation -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 - Schumpeter Theory -Rostow's Stages of Economic Growth -Harrod-Domar two sector model -Solow's Model and Robinson's Golden Age

Module – 4: Strategies of Economic Development

Strategies of Economic Development – Big Push -Balanced Growth -Unbalanced Growth - Mahalanobis Model - Agriculture vs Industry -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 -Role of Markets - Market Failure and Regulation by State -Public sector vs Private sector -Economic Planning – concept, objectives and types -NITIAyog - Economic Federalism -Financial Institutions and Economic Development -Role of International Institutions-IDBI, 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 - India's Rank in Global Human Development Index .

Module 2 National Income and Demography

Trends in National income - Demographic trends - Poverty and Inequalities – Occupational Structure and Unemployment - Various Schemes of employment generation and eradication of poverty – Issues in Rural Development and Urban Development –Intra-state and Inter-state Labour Migration and unorganized sector Problems of Migrant Labour

M**odule – 3 Agricultural and Industrial Developments**

Indian Agriculture – Agricultural Strategy and Agricultural Policy – Agrarian Crisis and land reforms – Agricultural credit – Minimum Support Prices -Malnutrition and Food Security - Indian Industry - Recent Industrial Policy – Make-in India – Start-up and Stand-up programmes – SEZs and Industrial Corridors - Economic Reforms and their impact - Economic initiatives by government of India during COVID - 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

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 METHODS FOR 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 – Demand forecasting.

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)

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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,
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SYLLABUS VETTED BY

Prof.M.Prasada Rao,
Dept of Economics,
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*

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.

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

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.

###

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.

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' Associations***,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

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.

###

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.

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

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.

###

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.

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

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.

###

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.

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.

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.

###

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.

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 Centre***s. 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/

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.

###

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.

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

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.

###

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.

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.

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.

###

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	
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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 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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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: FOUR -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 4-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: FOUR-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 kinds of 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, Cultureduring 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 (2^{nd} Century BC to 8^{th} Century AD): Sangam Literature; Administration, Society, Economy and Culture under Satavahanas; Cultural contribution of Pallavas
Unit - IV	India from 3^{rd} century AD to 8^{th} 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 (9^{th} century AD to 13^{th} 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: FOUR-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 of Vijayanagar 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: FOUR-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:MODERN INDIAN 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, Dayananda Saraswathi, 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: FOUR-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 16^{th}& 19^{th} 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, ఆంధ్రలో సాాతంత్ర్యోద్ోమచరిధ్ర

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: FOUR-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
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.	
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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

Prof.G.Sambasiva Reddy,
Dept of History,
Yogi Vemana University,
Kadapa

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)

Unicode	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 CBCS, 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/ancient 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	
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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)

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8	

Prepared by: Prof. Murali Mohan, Acharya Nagarjuna University, Guntur
Dr. B. R. Prasad Reddy, Reader in History, Govt. Degree College, Dharmavaram
Dr. V. Raj Mahammadh, Asst. Prof. in History, Govt. Degree College, Kadiri

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: FOUR-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 4-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-Behavioral and System Approach.

UNIT-II :	STATE
	1. Definition of the State, Elements of the State, Theories of Origin of the State-(Divine Origin, Force, Evolutionary and Social Contract).
	2. Concepts of Modern State and Welfare State.

UNIT-III :	CONCEPTS OF POLITICAL SCIENCE
	1. Law, Liberty, Equality.
	2. Power, Authority and Legitimacy.

UNIT-IV :	THEORIES OF RIGHTS
	1. Meaning, Nature and Classification of Rights
	2. Theories of Rights.

UNIT-V :	POLITICAL IDEOLOGIES
	1. Liberalism, Individualism, Anarchism.
	2. Socialism, Marxism and Multiculturalism.

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.
	2. Pressure Groups (Interest Groups)- Meaning, Definition, Types, Functions and Significance of Public Opinion.

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**
	1. Constitutional Development in India during British Rule-A Historical Perspective with reference to Government of India Acts, 1909,1919 and 1935.
	2. 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.
	2. The 'Doctrine of Basic Structure of the Constitution' with reference to Judicial Interpretations and Socio-Political Realities.

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.
	2. Politics of Reservation, Criminalization of Politics and Internal threats to Security.

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. St.Augustine-Theory of Two Cities.
	2. 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.
	2. Antonio Gramsci-Hegemony and Civil Society.

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

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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.

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.

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.

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 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.

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.

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.,

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.

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-

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

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.

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).

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

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.

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.

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

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.

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.

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.

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

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.

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

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.

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.

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.

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.

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.

MODEL 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)

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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)

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Prepared by: Prof.B.V.Raghavulu, Dept. of Political Science & Public Administration, SK University, Anantapur

&

Dr.T.S.Shyam Prasad, Lecturer in Political Science, Government College (Autonomous), Anantapur.

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory Body of the Government of Andhra Pradesh)

REVISED UG SYLLABUS UNDER CBCS

(Implemented from the Academic Year - 2020-21)

Programme: FOUR YEAR B.A (Hons)

Domain Subject: SPECIAL ENGLISH

Skill Enhancement Courses (SEC) for Semester-V from 2022-23

Structure of SECs for Semester - V

(To Choose One Pair from the FOUR Alternative Pairs of SECs)

Univ. Code	Course No. 6 & 7	Name of the Course	Hours / Week	Credits	Marks	
					Internal Assmt*	Sem. End
	6A	English Language Teaching Skills	5	4	25	75
	7A	Skills and Procedures of Translation (English & Telugu)	5	4	25	75
OR						
	6B	Teaching English Online	5	4	25	75
	7B	English for Journalism & Advertising	5	4	25	75
OR						
	6C	Writing for Media	5	4	25	75
	7C	Creative Writing and Literary Appreciation	5	4	25	75

** Internal Assessment: 20 + Fieldwork/Project work Report: 05*

Note1: In Semester–V, for the domain subject, Special English, 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. The pairs shall be chosen as they are and individual courses shall not be chosen at random

Note-2: One of the main objectives of the 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 that are actually practised in the field.

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Programme: FOUR YEAR B.A (Hons)

Domain Subject**: SPECIAL ENGLISH**

Skill Enhancement Courses (SEC) for Semester-V from 2022-23

Pair-1: Course **6-A**

ENGLISH LANGUAGE TEACHING SKILLS

No. of Hours: 75 (05 per Week) Credits: 04 Max. Marks: 100

OUTCOMES:

At the end of the course the student will be able to**:**

i. Understand the central principles of Teaching English
ii. Acquire the skills of Teaching English
iii. Demonstrate different classroom management techniques
iv. Teach English in a systematic way
v. Make use of Technology for Teaching English

SYLLABUS

Unit-I

1. Concepts in Teaching English as a Second Language
2. Different Methods and Levels of Teaching English

Unit-II

1. Contextualization of Grammar Teaching
2. Teaching Writing Skills

Unit-III

1. Teaching English Literature (Prose, Poetry, Fiction and Drama)
2. Lesson Planning & Materials

Unit-IV

1. Classroom Management Techniques
2. Assessment & Evaluation

Unit-V

1. Teaching English for Employment
2. ICT-Based English Language Teaching

Resources for Further Reading:

1. Raymond Murphy. Essential English Grammar. Cambridge University Press, 2015.
2. Penny Ur. A Course in English Language Teaching. Cambridge University Press, 1999.
3. M.L.Tickoo. Teaching and Learning English: A Sourcebook for Teachers and Teacher-Trainers. Orient Blackswan Private Limited, 2013.
4. N.Krishna Swamy & Lalitha Krishna Swamy. Teaching English: Approaches, Methods and Techniques. Macmillan India Limited, 2005.

5. Oxford English Language Teaching: https://elt.oup.com/?cc=global&selLanguage=en
6. British Council's Teaching Resources: https://www.teachingenglish.org.uk/resources/primary
7. English Teaching Forum: https://americanenglish.state.gov/forum

Co-Curricular Activities (15 Hours including Unit tests etc):

A). Mandatory:

1. **For Teachers:** After completing practical training in the course, the teacher will assign teaching activities to each student. The students will experiment or demonstrate different teaching skills in a teaching environment for not less than10 hours under personal supervision of the teacher.
2. **For Students:** Students will conduct practicum in any teaching environment (School/ College/Peer Group/ JKCs/ Adults in a Village) for not less than10 hours in the given area. The learners will discuss the findings among themselves. Finally, every student will prepare a hand-written Fieldwork/Project work Report of the activity in 10 pages as guided by the teacher and submit to the teacher for evaluation.
3. Max. Marks for Fieldwork/Project work and Report: 05.
4. The Teacher will suggest a format for the Report on the Fieldwork/Project work
5. Max. Marks for Periodical Internal Assessment: 20

b) Suggested

1. The Learners will work along with or assist an expert in the field.
2. Assignments may be given to the learners to identify the use of English Language teaching skills in different institutions.
3. Seminars, Group Discussions, Quizzes, and Debates may be conducted.
4. Documentaries may be prepared on the teaching of English by different levels of teachers.
5. The learners may be encouraged to make presentations on the related topics.

V. Suggested Question Paper Pattern:

Max. Marks: 75 Max. Time: 3 Hrs

SECTION - A (Total: 6x5=30 Marks)

(Answer any SIX questions. Each answer carries 5 marks)

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

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SECTION - B (Total: 3x15 = 45 Marks)

(Answer any FOUR questions. Each answer carries 15 marks)

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

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ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

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REVISED UG SYLLABUS UNDER CBCS

(Implemented from the Academic Year - 2020-2021)

Programme: FOUR YEAR B.A (Hons)

Domain Subject**: Special English**

Skill Enhancement Courses (SEC) for Semester-V from 2022-23

Pair-1: Course **7-A**

SKILLS AND PROCEDURES OF TRANSLATION (ENGLISH & TELUGU)

No. of Hours: 75 (05 per Week) Credits: 04 Max. Marks: 100

OUTCOMES:

At the end of the course the student will be able to:

i. Understand the central issues of Translation
ii. Use the methods of Translation
iii. Translate from English to Telugu and Vice-versa
iv. Translate Different Genres
v. Make use of Technology for Translation

SYLLABUS

Unit-I

1. Types of Translation & Tools:
   (Interlingual, Intralingual and Intersemiotic Translation & Types of Dictionaries, Thesaurus, Encyclopaedia, Online Resources)
2. Central Issues in Translation: A Multi-Cultural Interaction
   (Language, Culture, Equivalence, Loss and Gain in Translation)

Unit-II

1. Pragmatic Translation (Technical, Media and Medical)
2. Literary Translation (Translation of Creative Writing)

Unit-III

1. Strategies & Procedures: (True Translation, Literal Translation, Free Translation, Transliteration, Trans creation)
2. Problems in translation from English to Telugu & Vice versa

Unit-IV

1. Translating Short Fiction, Prose and Poetry
2. Translating for the Print Media & Advertisements

Unit-V

1. Technical Translation
2. Translation and Technology

Resources for Further Reading:

1. Susan Bassnett. Translation Studies. Routlede: Taylor & Francis Group, New York, 2005. (1st and 3rd Chapters)
2. Peter Newmark. Approaches to Translation. Prentice Hall, New York,
3. Roman Jakobson. "On Linguistic Aspects of Translation", On Translation Ed.by Reuben Arthur Brower, Harvard University Press, 1959.
4. H.Lakshmi. Problems of Translation. Booklinks Corp. 1993
5. National Translation Mission, Mysore: https://www.ntm.org.in/languages/english/ongoinginitiatives_ntm.aspx

Co-Curricular Activities (15 Hours including Unit tests etc.):

A). Mandatory:

1. **For Teachers:** After completing practical training in the course, the teacher will assign activities to each student on *Literary Terms, Idioms and Phrases, Grammatical Terms, Translation for the Media and Advertisements*. Students will demonstrate different skills in Translation for not less than 10 hours under the supervision of the teacher.
2. **For Students:** Students will conduct practicum in translation on *Literary Terms, Idioms and Phrases, Grammatical Terms, Translation for the Media and Advertisements* for not less than 10 hours. The students will discuss the findings among themselves and each student will prepare a hand-written Fieldwork/Project work Report of the activity in 10 pages as guided by the teacher.
3. Max. Marks for Fieldwork/Project work and Report: 05.
4. The Teacher will suggest a format for the Report on the Field-work
5. Max. Marks for Periodical Internal Assessment: 20

b) Suggested

1. The Learners will work along with an expert or assist an expert in the field.
2. Assignments may be given to the learners to identify the use of translation skills for different purposes.
3. Seminars, Group Discussions, Quizzes, and Debates may be conducted on Classics in Translation.
4. Documentaries may be prepared on the online and offline tools of translation.
5. The learners may be encouraged to make presentations on the related topics.

V. Suggested Question Paper Pattern:

Max. Marks: 75 Max. Time: 3 Hrs

SECTION - A (Total: 6x5=30 Marks)

(Answer any SIX questions. Each answer carries 5 marks)

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

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SECTION - B (Total: 3x15 = 45 Marks)

(Answer any FOUR questions. Each answer carries 15 marks)

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

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ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

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REVISED UG SYLLABUS UNDER CBCS

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Programme: FOUR YEAR B.A (Hons)

Domain Subject**: SPECIAL ENGLISH**

Skill Enhancement Courses (SEC) for Semester-V from 2022-23

Pair-2: Course **6-B**

TEACHING ENGLISH ONLINE

No. of Hours: 75 (05 per Week) Credits: 04 Max. Marks: 100

OUTCOMES:

At the end of the course the student will be able to:

i. Understand online Teaching of English
ii. Acquire skills of teaching online
iii. Identify online resources for teaching
iv. Conduct classes online
v. Use Technology for evaluating students' performance

SYLLABUS

Unit-I

1. Contextualizing the Online Teaching of English
   (The learners, the context, the content)
2. Types of Online Teaching
   (Self-learning, Guided Learning, Blended Learning, Flipped Classroom etc.)

Unit-II

1. Course Planning
   (Course Modalities, Timelines and Chunking)
2. Lesson Planning
   (Course Content, Materials, Additional Inputs)

Unit-III

1. Types of Online Teaching Platforms
   (LMS, Moodle, Google Classroom, Zoom, Cisco-WebEx, Google Meet, etc.)
2. Online Classroom Management
   (Break-up Rooms, Chat Boxes, Polling/ Voting, Interaction)

Unit-IV

1. Online Educational Resources (Copyright, Creating Own Resources)
2. Collaboration

Unit-V

1. Mobile Learning
2. Online Evaluation

Resources for Further Reading:

1. Virendra Mishra et al. English Language Teaching Skills. Cambridge University Press, 2020
2. N.Krishna Swamy & Lalitha Krishna Swamy. Methods of Teaching English. Trinity Press, 2014.
3. Navita Arora. English Language Teaching. MacGraw Hill, 2012
4. N.Krishna Swamy & Lalitha Krishna Swamy. Teaching English: Approaches, Methods and Techniques. Macmillan India Limited, 2005.
5. Cambridge Assessment English: https://www.cambridgeenglish.org/blog/12-tips-for-teaching-an-online-english-class/
6. Online English Resources for Teachers: https://www.britishcouncil.org.br/en/programmes/english/resources-teachers

Co-Curricular Activities (15 Hours including Unit tests etc.):

A). Mandatory:

1. **For Teachers:** After completing practical training in the course, the teacher will assign teaching activities to each student on online Teaching of English. The students will demonstrate different skills in Teaching English online for not less than 10 hours in any teaching environment (School/ College/Peer Group/ JKCs/ Adults in a Village) under the supervision of the teacher.
2. **For Students:** Each student will conduct practicum in online teaching of English in a teaching environment (School/ College/Peer Group/ JKCs/ Adults in a Village) for not less than10 hours. The students will discuss the findings among themselves and each student will prepare a hand-written Report of the activity in 10 pages as guided by the teacher.
3. Max. Marks for Fieldwork/Project work and Report: 05.
4. The Teacher will suggest a format for the Report on the Fieldwork/Project work
5. Max. Marks for Periodical Internal Assessment: 20

b) Suggested

1. The Learners will work along with an expert or assist an expert in the field.
2. Assignments may be given to the learners to identify the use of online teaching skills for different purposes.
3. Seminars, Group Discussions, Quizzes and Debates may be conducted on online teaching of English.
4. Different resources of online teaching may be demonstrated by the learners.
5. The learners may be encouraged to make presentations on the related topics.

V. Suggested Question Paper Pattern:

Max. Marks: 75 Max. Time: 3 Hrs

SECTION - A (Total: 6x5=30 Marks)

(Answer any SIX questions. Each answer carries 5 marks)

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

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SECTION - B (Total: 3x15 = 45 Marks)

(Answer any FOUR questions. Each answer carries 15 marks)

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

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(Implemented from the Academic Year - 2020-2021)

Programme: FOURYEAR B.A (Hons)

Domain Subject: **SPECIAL ENGLISH**

Skill Enhancement Courses (SEC) for Semester-V from 2022-23

Pair-2: **Course 7-B**

ENGLISH FOR JOURNALISM AND ADVERTISING (PRINT MEDIA)

No. of Hours: 75 (05 per Week) Credits: 04 Max. Marks: 100

OUTCOMES:

At the end of the course the student will be able to:

vi. Understand the Principles of Journalism

vii. Acquire Language Skills for effective communication

viii. Identify online resources for personal improvement

ix. Demonstrate Speaking Skills for the media

x. Analyse events for authentic reporting

SYLLABUS

Unit-I

1. Principles of Journalism:
   (Gathering Information, Verifying Facts, Reporting the Events, Impacting People)
2. Use of English in News Papers (Simple, Formal, Concise and Impersonal)

Unit-II

1. Print Media : (Different Types of News Papers, Magazines and Periodicals)
2. English Language for Journalism: (Specific Use of Tenses, Vocabulary, Agreeing and Disagreeing, Reported Speech)

Unit-III

1. Journalism as a Social Memoir
2. Style Guide and Proofreading

Unit-IV

1. Writing for the Media
2. Advertising and Its Lexical Features

Unit-V

1. Speaking Skills for the Media
2. Journalism in the Digital Age

Resources for Further Reading:

1. Wynford Hicks. English for Journalists (Media Skills). 4th Edition, Routlede, 2013.
2. Crawford Gillan, Sir Harold Evans. Essential English for Journalists, Editors and Writers. Random House, 2010.

3. Sylee Gore. English for Marketing & Advertising. Oxford University Press, USA, 2008
4. Angela Goddard. The Language of Advertising: Written Texts. Routledge, 1998
5. Bill Kovach and Tom Rosenstiel. The Elements of Journalism. Crown Publishers, New York, 2007
6. **The Guardian-News Writing:** https://www.theguardian.com/books/2008/sep/25/writing.journalism.news
7. **Indian Institute of Mass Communication** http://iimc.nic.in/content/44_1_JournalismEnglish.aspx
8. **American Press Association** https://americanpressassociation.com/principles-of-journalism/
9. **Thought Co. Advertising Vocabulary for English Learners:** https://www.thoughtco.com/advertising-vocabulary-1210143

Co-Curricular Activities (15 Hours including Unit tests etc.):

A). Mandatory:

1. **For Teachers:** The teacher shall train students in practical skills in media and advertising for not less than 10 hoursand assign activities to students. The groups will identify different journalistic environments (News Paper Offices, Public Libraries, Journalist Offices and Advertising agencies) to demonstrate their knowledge.
2. **For Students:** Each Learner will conduct practicum in journalistic and advertising environment (News Paper Offices, Public Libraries, Journalist Offices and Advertising agencies) for not less than10 hours. The students will discuss the findings among themselves and each student will prepare a hand-written Fieldwork/Project work Report of the activity in 10 pages as guided by the teacher.
3. Max. Marks for Fieldwork/Project work and Report: 05.
4. The Teacher will suggest a format for the Report on the Fieldwork/Project work
5. Max. Marks for Periodical Internal Assessment: 20

b) Suggested

1. The Learners will work along with an expert or assist an expert in the field.
2. Assignments may be given to the learners to identify journalistic processes.
3. Seminars, Group Discussions, Quizzes, and Debates may be conducted on news processing.
4. Different types of newspapers may be discussed.
5. The learners may be encouraged to make presentations on the related topics.

V. Suggested Question Paper Pattern:

Max. Marks: 75 Max. Time: 3 Hrs

SECTION - A (Total: 6x5=30 Marks)

(Answer any SIX questions. Each answer carries 5 marks)

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

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SECTION - B (Total: 3x15 = 45 Marks)

(Answer any FOUR questions. Each answer carries 15 marks)

(At least one 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)

REVISED UG SYLLABUS UNDER CBCS

(Implemented from the Academic Year - 2020-2021)

Programme: FOUR YEAR B.A (Hons)

Domain Subject**: SPECIAL ENGLISH**

Skill Enhancement Courses (SEC) for Semester-V from 2022-23

Pair-3: Course **6-C**

WRITING FOR THE MEDIA

No. of Hours: 75 (05 per Week) Credits: 04 Max. Marks: 100

OUTCOMES:

At the end of the course the student will be able to:

- Write with confidence
- Use Correct Grammar, Punctuation and Appropriate Style
- Differentiate between various types of media writing
- Gather and synthesize information from authentic sources
- Use digital resources for media writing

SYLLABUS

Unit-I

1. Good Writing Skills
   (Vocabulary, Basic Grammar, Expansion and Optimization)
2. Resources for Writing (Dictionary, Thesaurus and Encyclopaedia)

Unit-II

1. Proofreading, Punctuation and Style
2. Types of Media Writing
   (Information, Description, Persuasion and Editorial Writing & Feature Writing)

Unit-III

1. Writing for Specialized Areas: Sports, Culture, Entertainment, Cuisine etc.
2. Collecting News and Identifying Sources

Unit-IV

1. Media Writing and Translation
2. Media Writing and Social Responsibility

Unit-V

1. The Role of Technology in Media Writing (Blogging, Podcasts, Social Media and Collaboration in Writing)
2. Digital Resources for Writing (Online Dictionaries, Inbuilt and Online Spell-Checkers, Grammar-Checkers and Google Resources)

Resources for Further Reading:

1. Usha Raman. Writing for the Media. Oxford University Press, New Delhi, 2010
2. Brian Carroll. Writing for Digital Media. Routledge, New York, 2010.
3. Liz Hamp-Lyons, Ben Heasley. Study Writing. Cambridge University Press, 2006
4. Writing in the Media Environment. https://www.jprof.com/lecture-notes/writing-in-the-media-environment/
5. Different Types of Media Writing. https://blog.copify.com/post/different-types-of-media-writing
6. Media Writing Skills and Chracteristics. https://ohiostate.pressbooks.pub/stratcommwriting/chapter/media-writing-skills/

Co-Curricular Activities (15 Hours including Unit tests etc.):

A). Mandatory:

1. **For Teachers:** The teacher will train students in practical skills in writing for the media for not less than 10 hours and assign activities. The teacher will guide the learners to identify different current subjects to write for the media to demonstrate their knowledge.
2. **For Students:** Learners will conduct practicum in writing for the media (News Papers, News Magazines, Journals and College Magazines, Script Writing for Radio and Short Films) for 10 hours. The learners will discuss the findings among themselves and prepare individual hand-written Fieldwork/Project work Report of the activity in at least 10 pages as guided by the teacher.
3. Max. Marks for Fieldwork/Project work and Report: 05.
4. The Teacher will suggest a format for the Report on the Field-work
5. Max. Marks for Periodical Internal Assessment: 20

b) Suggested

1. The Learners will work along with an expert or assist an expert in the field.
2. Assignments may be given to the learners to identify journalistic processes.
3. Seminars, Group Discussions, Quizzes and Debates may be conducted on news processing.
4. Different types of media writing may be discussed.
5. The learners may be encouraged to make presentations on the related topics.

V. Suggested Question Paper Pattern:

Max. Marks: 75 Max. Time: 3 Hrs

SECTION - A (Total: 6x5=30 Marks)

(Answer any SIX questions. Each answer carries 5 marks)

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

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SECTION - B (Total: 3x15 = 45 Marks)

(Answer any FOUR questions. Each answer carries 15 marks)

(At least one 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)

REVISED UG SYLLABUS UNDER CBCS

(Implemented from the Academic Year 2020-2021)

Programme: FOUR YEAR B.A (Hons)

Domain Subject**: SPECIAL ENGLISH**

Skill Enhancement Courses (SEC) for Semester-V from 2022-23

Pair-3: Course **7-C**

Creative Writing and Literary Appreciation

No. of Hours: 75 (05 per Week) Credits: 04 Max. Marks: 100

OUTCOMES:

At the end of the course the student will be able to:

vi. Understand and define the art of Creative Writing
vii. Identify different literary genres
viii. Review the published works of others
ix. Deliver presentations on the literary works
x. Demonstrate the creative writing skills

SYLLABUS

Unit-I

1. Understanding Creative Writing
2. Characteristics of Good Writing

Unit-II

1. Understanding Fiction : Novel and Short Story
   (**Plot, Character, Theme and Narrative Technique:** A Tale of Two Cities –by Charles Dickens;
   Visual Description, Point of View and Setting: 'The Black Cat' –by Edgar Allen Poe)

2. Understanding Prose
   (**Language and Style:** Francis Bacon's 'Of Studies';
   Persuasiveness, Readability and Argument: 'The Power of Prayer' –by APJ Abdul Kalam**)**

Unit-III

1. Understanding Poetry
   (**Figurative Language:** 'Endless Time' –by Rabindranath Tagore;
   Imagery and Metre: 'Elegy Written in a Country Churchyard' -by Thomas Gray;
   Tone: 'The Lovers of the Poor' -by Gwendolyn Brooks)
2. Mechanics of Poetry

Unit-IV

1. Writing a Memoir
2. Writing Reviews

Unit-V

1. Writing a Short Story
2. Writing Different Types of Essays

Resources for Further Reading:

1. Stephen King. On Writing: A Memoir of the Craft. Scribner, 2010.
2. Alice LaPlante. The Making of a Story: A Norton Guide to Writing Fiction and Non-Fiction.W.W.Norton, New York.2009
3. Tara Mokhtari. The Bloomsbury Introduction to Creative Writing. Bloomsbury Academic, London, 2015.
4. Philip Seargeant& Bill Greenwell. From Language to Creative Writing: An Introduction. Bloomsbury Academic, London, 2013.
5. Tips for Creative Writing: https://www.lexico.com/grammar/top-tips-for-creative-writing
6. Creative Writing: Simple Definition and Tips: https://grammar.yourdictionary.com/word-definitions/definition-of-creative-writing.html
7. Weekly Writing Prompts: https://blog.reedsy.com/creative-writing-prompts/
8. Decolonising Creative Writing: https://scroll.in/article/999215/decolonising-creative-writing-its-about-not-conforming-to-techniques-of-the-western-canon

Co-Curricular Activities (15 Hours):

A). Mandatory:

1. For Teachers: The teacher shall train students in practical skills in creative writing and literary appreciation for not less than 10 hours and assign activities to demonstrate their knowledge.

2. For Students: The learners will conduct practicum in creative writing and literary appreciation for not less than 10 hours. The Learners will discuss the findings among themselves and prepare individual hand-written Fieldwork/Project work Report of the activity in 10 pages as guided by the teacher.

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

4. The Teacher will suggest a format for the Fieldwork/Project work Report
5. Max. Marks for Periodical Internal Assessment: 20

b) Suggested

1. The Learners will work along with an expert or assist an expert in the field.
2. Assignments may be given to the learners to demonstrate the skills in literary appreciation.
3. Seminars, Group Discussions, Quizzes and Debates may be conducted on creative writing and literary appreciation.
4. Different types of genres may be discussed.
5. The learners may be encouraged to make presentations on the related topics.

V. Suggested Question Paper Pattern:

Max. Marks: 75 Max. Time: 3 Hrs

SECTION - A (Total: 6x5=30 Marks)

(Answer any SIX questions. Each answer carries 5 marks)

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

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SECTION - B (Total: 3x15 = 45 Marks)

(Answer any FOUR questions. Each answer carries 15 marks)

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

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-oOo-

Draft syllabus prepared by:

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HINDU COLLEGE : : GUNTUR



SYLLABUS

HAND BOOK

2020-21 onwards

HINDU COLLEGE : : GUNTUR



SKILL DEVELOPMENT COURSE SYLLABUS

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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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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(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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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.*

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.

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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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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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.*

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 rewsna 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 rewsna carries 10 marks
(At least 1 question should be given from each Unit)

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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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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)

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

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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 rewsna 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 rewsna 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,
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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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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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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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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.

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)

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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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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 rewsna 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 rewsna 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),
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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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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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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 rewsna 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 rewsna 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 University,
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Dr. J. Krishna Prasad Babu
Associate Professor,
Dept. of History
JawaharBharathi U.G&P.G College,
Kavali

Vetted by

Prof. G. Sambasiva Reddy,
Dept. of History,
Y. V. University,
Kadapa

(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.

*****

MODEL QUESTION PAPER FORMAT

Max Marks: 50 Time: 1 ½ hr (90 Min)

SECTION A (Total: 4x5=20 Marks)

(Answer any four questions. Each rewsna 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 rewsna 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 discuss the 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?

*****

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 rewsna carries 5 marks
(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 rewsna carries 10 marks
(At least 1 question should be given from each Unit)

1.	
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@@@@@

Subject Committee Members

Prof. S. Murali Mohan,
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Dr. J. Krishna Prasad Babu,
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Kadapa

HINDU COLLEGE : : GUNTUR



LIFE SKILLS SYLLABUS

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

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)

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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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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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Principal,
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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		**I**		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 rewsna 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 rewsna carries **10 marks**

(Total five questions. At least 1 question should be given from each Unit)

1.
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4.
5.

Subject Committee Members

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Dr D Jayarama Reddy

Dept of Commerce, Govt College (A), Anantapur

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Vetted by:

Prof. M Rajasekhar

Dept. of Commerce, S V University, Tirupathi

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)

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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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Note: Questions may be set in such a way to test the outcomes instead of recalling of information.

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.

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

Dr.A.S.Dayakar,
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Sri.R.John,
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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 rewsna carries **5 marks**
(At least 1 question should be given from each Unit)

1.	
2.	
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SECTION B (Total: 3x10 = 30 Marks)

(Answer any **three questions**. Each rewsna carries **10 marks**
(At least 1 question should be given from each Unit)

1.	
2.	
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5.	
6.	

@@@@@

Subject Experts:

Prof. S. Murali Mohan,
Dept. of History,
Acharya Nagarjuna University,
Guntur

Dr. J. Krishna Prasad Babu,
Associate Professor,
Dept. of History,
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Vetted by:

Prof. G. Sambasiva Reddy,
Dept. of History,
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Kadapa

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
I	**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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2.
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5.

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 rewsna carries **5 marks**
(At least 1 question should be given from each Unit)

1.	
2.	
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SECTION B (Total: 3x10 = 30 Marks)

(Answer any **three questions**. Each rewsna carries **10 marks**
(At least 1 question should be given from each Unit)

1.	
2.	
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6.	

@@@@@

SUBJECT COMMITTEE MEMBERS

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Vetted by:

Prof. S. Samiullah,
Dept. of Psychology,
S. V. University,
Tirupati

HINDU COLLEGE : : GUNTUR



COMMUNITY PROJECT

SYLLABUS

Guidelines for the Community Service Project

AP STATE COUNCIL OF HIGHER EDUCATION

(A Statutory body of the Government of Andhra Pradesh)

CONTENTS

1. Introduction

2. Objectives

3. Implementation of Community Service Project

4. Procedure

5. Expected outcomes

6. Time frame for the community service project

7. Assessment methodology for community service project

8. Model of the project report

9. Suggestive list of programmes under community service project

10. Complimenting the community service project the students may be involved to take up some awareness campaigns on social issues/special groups.

COMMUNITY SERVICE PROJECT

……Experiential learning through community engagement

1. INTRODUCTION

- Community Service Project is an experiential learning strategy that integrates meaningful community service with instruction, participation, learning and community development
- Community Service Project involves students in community development and service activities and applies the experience to personal and academic development.
- Community Service Project is meant to link the community with the college for mutual benefit. The community will be benefited with the focused contribution of the college students for the village/ local development. The college finds an opportunity to develop social sensibility and responsibility among students and also emerge as a socially responsible institution.

2. OBJECTIVES

Community Service Project should be an integral part of the curriculum, as a part of the 2 months of Summer Internships / Apprenticeships / On the Job Training, whenever there is an exigency when students cannot pursue their summer internships. The specific objectives are;

- To sensitize the students to the living conditions of the people who are around them,
- To help students to realize the stark realities of the society.
- To bring about an attitudinal change in the students and help them to develop societal consciousness, sensibility, responsibility and accountability
- To make students aware of their inner strength and help them to find new /out of box solutions to the social problems.
- To make students socially responsible citizens who are sensitive to the needs of the disadvantaged sections.
- To help students to initiate developmental activities in the community in coordination with public and government authorities.
- To develop a holistic life perspective among the students by making them study culture, traditions, habits, lifestyles, resource utilization, wastages and its management, social problems, public administration system and the roles and responsibilities of different persons across different social systems.

3. IMPLEMENTATION OF COMMUNITY SERVICE PROJECT

- Every student should put in a minimum of 180 hours for the Community Service Project during the summer vacation.
- Each class/section should be assigned with a mentor.
- The mentor should be a faculty member. Incentive could be given to the faculty mentors in terms of Academic Performance Indicators (API) scores. Or could even be made a compulsory in the service conditions laid down at the time of appointment.
- 4 Credits to be allocated for Community Service Project within the Choice Based Credit System (CBCS).
- The 180 hours of Community Service Project could be done in different areas.
- Specific Departments could concentrate on their major areas of concern. For example, Dept. of Computer Science can take up activities related to Computer Literacy to different sections of people like - youth, women, house-wives, etc… Dept. of Zoology or other life sciences departments could concentrate on health awareness, blood groupings, awareness on blood donation or organ donation, etc. Dept. of Mathematics and Statistics could dwell upon empowering the youth with analytical skills, Dept. of Commerce could create awareness on GST or Income Tax Returns or other taxes or consumerism.
- Sky will be the limit for organizing different programmes, provided the faculties are sufficiently motivated.
- A log book has to be maintained by each of the student, where the activities undertaken/involved to be recorded.
- The log book has to be countersigned by the concerned mentor/faculty incharge.
- Evaluation to be done based on the active participation of the student and grade could be awarded by the mentor/faculty member.
- The final evaluation to be reflected in the grade memo of the student.
- The Community Service Project should be different from the regular programmes of NSS/NCC/Green Corps/Red Ribbon Club, etc.
- Minor project report should be submitted by each student. An internal Viva shall also be conducted by a committee constituted by the principal of the college.

- Award of marks shall be made as per the guidelines of Internship/apprentice/ on the job training

4. PROCEDURE

- A group of students or even a single student could be assigned for a particular habitation or village or municipal ward, as far as possible, in the near vicinity of their place of stay, so as to enable them to commute from their residence and return back by evening or so.
- The Community Service Project is a twofold one –
    - First, the student/s could conduct a survey of the habitation, if necessary, in terms of their own domain or subject area. For ex., a student of Arts will focus on socio-economic conditions, social survey and about the Government's social security schemes. A student of Sciences could take up a survey on the health and hygiene conditions of that habitation, similarly, with other subject areas too. Or it can even be a general survey, incorporating all the different areas. A common survey format could be designed. This should not be viewed as a duplication of work by the Village or Ward volunteers; rather, it could be another primary source of data.
    - Secondly, the student/s could take up a project work related to their domain or subject area.
- The different areas, could be like –
    - Agriculture
    - Health
    - Marketing and Cooperation
    - Animal Husbandry
    - Horticulture
    - Fisheries
    - Sericulture
    - Revenue and Survey
    - Natural Disaster Management
    - Irrigation
    - Law & Order
    - Excise and Prohibition
    - Mines and Geology
    - Energy

A specific example,

- A student of B.Sc (BZC) will first conduct a survey of his/her habitation which could be related to a specific area or in a comprehensive way of socio-economic conditions, covering all the areas listed above.
  or
- Could conduct an awareness programme on Health and Hygiene or in Organic Farming or in Fisheries or in advocating prohibition of liquor or about renewable energy, or any other activity in an area as per his/her aptitude and the problems identified in the socioeconomic survey conducted.
- A project work shall be done on a particular topic related to his/her domain subject area.

5. EXPECTED OUTCOMES

BENEFITS OF COMMUNITY SERVICE PROJECT TO STUDENTS

Learning Outcomes

- Positive impact on students' academic learning
- Improves students' ability to apply what they have learned in "the real world"
- Positive impact on academic outcomes such as demonstrated complexity of understanding, problem analysis, problem-solving, critical thinking, and cognitive development
- Improved ability to understand complexity and ambiguity

Personal Outcomes

- Greater sense of personal efficacy, personal identity, spiritual growth, and moral development
- Greater interpersonal development, particularly the ability to work well with others, and build leadership and communication skills

Social Outcomes

- Reduced stereotypes and greater inter-cultural understanding
- Improved social responsibility and citizenship skills
- Greater involvement in community service after graduation

Career Development

- Connections with professionals and community members for learning and career opportunities
- Greater academic learning, leadership skills, and personal efficacy can lead to greater opportunity

Relationship with the Institution

- Stronger relationships with faculty
- Greater satisfaction with college
- Improved graduation rates

BENEFITS OF COMMUNITY SERVICE PROJECT TO FACULTY MEMBERS

- Satisfaction with the quality of student learning
- New avenues for research and publication via new relationships between faculty and community
- Providing networking opportunities with engaged faculty in other disciplines or institutions
- A stronger commitment to one's research

BENEFITS OF COMMUNITY SERVICE PROJECT TO COLLEGES AND UNIVERSITIES

- Improved institutional commitment
- Improved student retention
- Enhanced community relations

BENEFITS OF COMMUNITY SERVICE PROJECT TO COMMUNITY

- Satisfaction with student participation
- Valuable human resources needed to achieve community goals
- New energy, enthusiasm and perspectives applied to community work
- Enhanced community-university relations.

ROLE OF STUDENTS:

- Students may not have the expertise to conduct all the programmes on their own. The students then can play a facilitator role and conduct the programmes involving Governmental agencies, Non-Governmental agencies or faculties of their college, etc.
- For conducting special camps like Health related, they will be coordinating with the Governmental agencies.
- As and when required the College faculty themselves act as Resource Persons.
- Students can work in close association with Non-Governmental Organizations like Lions Club, Rotary Club, etc or with any NGO actively working in that habitation.
- And also with the Governmental Departments. If the programme is rolled out, the District Administration could be roped in for the successful deployment of the programme.
- An in-house training and induction programme could be arranged for the faculty and participating students, to expose them to the methodology of Service Learning.

6. TIME FRAME FOR THE COMMUNITY SERVICE PROJECT

Duration: 8 weeks

Schedule:

Socio-Economic Survey of the Village/Habitation (Two weeks): A group of students under the guidance of faculty mentors conduct a Socioeconomic Survey of the Village/habitation. They will interact with people to acquire basic knowledge on the project chosen for study and conduct the survey using a structured questionnaire.

Community awareness campaign (one week): The students group takes up community awareness campaigns based on the above survey conducted by identifying the problems or vulnerable issues. They may also conduct house to house campaign on socially relevant theme. Ex: Government welfare programs, health care, consumer protection, food adulteration, digital transactions, information sources, etc.

Main Project (4 weeks): A group of students choose a topic related to their subject area and conduct a Project which includes, Data collection, interviews, internship in any select unit or department.

Report preparation (one week): The student should submit a project report duly signed by the mentor.

7. ASSESSMENT METHODOLOGY FOR COMMUNITY SERVICE PROJECT

Learning outcomes:

- To facilitate an understanding of the issues that confronts the vulnerable / marginalized sections of the society.
- To initiate team processes with the student groups for societal change.
- To provide students an opportunity to familiarize themselves with urban / rural community they live in.
- To enable students to engage in the development of the community.
- To plan activities based on the focused groups.\
- To know the ways of transforming the society through systematic programme implementation.

The following is the evaluation methodology for awarding marks/grades.

There will be only internal evaluation for this internship. Each faculty member is to be assigned with 10 t0 15 students depending upon availability of the

faculty members. The faculty member will act as a faculty-mentor for the group and is in-charge for the learning activities of the students and also for the comprehensive and continuous assessment of the students.

The assessment is to be conducted for 100 marks. The number of credits assigned is 4. Later as per the present practice the marks are converted into grades and grade points to include finally in the SGPA and CGPA.

The weightings shall be:

Project Log	20%
Project Implementation	30%
Project report	25%,
Presentation	25%

Each student is required to maintain an individual logbook, where he/she is supposed to record day to day activities. The project log is assessed on an individual basis, thus allowing for individual members within groups to be assessed this way. The assessment will take into consideration the individual student's involvement in the assigned work.

While grading the student's performance, using the student's project log, the following should be taken into account -

a. The individual student's effort and commitment.
b. The originality and quality of the work produced by the individual student.
c. The student's integration and co-operation with the work assigned.
d. The completeness of the logbook.

The assessment for the ***Community Service Project implementation*** shall include the following components and based on the entries of Project Log and Project Report:

a. Orientation to the community development
b. Conducting a baseline assessment of development needs
c. Number and Quality of Awareness Programmes organised on beneficiary programmes and improvement in quality of life, environment and social consciousness, motivation and leadership, personality development, etc.
d. Number and Quality of Intervention Programmes (Prevention or promotion programs that aim to promote behavioural change in defined community contexts to address social problems) organised.
e. Follow-up Programmes suggested (Referral Services, Bringing Community Participation)

f. Developing short and mid-term action plans in consultation with local leadership and local government officers.

The **Project Report** shall be prepared as per the guidelines given in the Model Project Report.

The **Project Presentation** is to be made by the student after he/she reports back to the College. The components for assessment are –

a. assessing the involvement in the project
b. presentation skills
c. final outcome of the project as evinced by the student.

Example:

Name of the Student:	X. YY ZZZ	
Class & Year of Study	II B.A. 2021 - 2022	
Registered Number	000000	
Assessment Component	**Max Marks**	**Marks Secured**
1. Project Log	20	15
2. Project Implementation	30	20
3. Project Report	25	20
4. Presentation	25	20
TOTAL OUT OF 100	**100**	**75**

Letter grade	**Grade Point**	**Credits**	**Credit Point**
O (outstanding)	10	2	20
A+ (Excellent)	9	2	18
A (Very Good)	8	2	16
B+ (Good)	7	2	14
B (Above average)	6	2	12
C (Average)	5	2	10
D (Pass)	4	2	8
F (Fail)	0	2	0
Ab (Absent)	0	2	0

In the above example, 75 marks are converted to letter grade / grade point.

Letter grade	**Grade Point**	**Credits**	**Credit Point**
B+ (Good)	7	2	14

8. MODEL OF THE PROJECT REPORT

PART – A

1. Introduction:
    A. About the Village / Habitation.
2. Socio-Economic Survey of the Village/Habitation.
    A. Data collection using prescribed formats.
3. Problems identified and Analyses of the problems.
4. Short-term and long term action plan for possible solutions for the problems identified and that could be recommended to the concerned authorities for implementation.
5. Community awareness programmes conducted w.r.t the problems and their outcomes.

PART - B

1. A mini-project work in the related subject w.r.t the habitation/village.

(For ex., a student of Botany may do a project on Organic Farming or Horticulture or usage of biofertilisers or biopesticides or effect of the inorganic pesticides, etc. A student of Zoology may do a project on Aquaculture practices or animal husbandry or poultry or health and hygiene or Blood group analysis or survey on the Hypertension or survey on the prevalence of diabetes, etc.

PART - C

1. Recommendations and conclusions.
2. References

9. SUGGESTIVE LIST OF PROGRAMMES UNDER COMMUNITY SERVICE PROJECT

The following the recommended list of projects for BA, B.Com, and B.Sc programmes. The lists are not exhaustive and open for additions, deletions and modifications. Colleges are expected to focus on specific local issues for this kind of projects. The students are expected to carry out these projects with involvement, commitment, responsibility and accountability. The mentors of a group of students should take the responsibility of motivating, facilitating, and guiding the students. They have to interact with local leadership and people and appraise the objectives and benefits of this kind of projects. The project reports shall be placed in the college website for reference. Systematic, Factual, methodical and honest reporting shall be ensured.

For Arts Students

1. Village demography
2. Healthcare programmes and their implementation
3. School education
4. Youth engagement
5. Women empowerment
6. Women education
7. Domestic violence
8. Culture, traditions, values and ethics
9. Employment of different sections
10. Status of socially deprived sections
11. Implementation of state development programmes
12. Implementation and impact of welfare schemes
13. Public distribution system
14. Social inclusiveness
15. Village governance
16. Health care system and its effectiveness
17. Information sources and their effectiveness
18. Entertainment media and habits
19. Social problems
20. Family and marriage systems across different social groups
21. Religion profile and their role in social development
22. Communal harmony
23. Innovative methods and practices
24. Village industry
25. Safety and security
26. Migration for employment
27. Infrastructure development
28. Facilities for quality life across different social groups
29. Leadership in family, community and social groups
30. Implementation of central schemes
31. Village development plans

32. Child labour
33. Sex education
34. Atrocities against women
35. Awareness of central government schemes and the level of participation
36. Community engagement programmes and their impact
37. Career orientation of youth
38. Skill development programmes and their impact
39. Alcohol and smoking habits and their impact on families and society
40. Crime rate, law and order and safety needs
41. Quality of Elementary education and accessibility
42. Factors considered for electing public representatives
43. Environment protection
44. Inter religious harmony
45. Treatment of aged persons
46. Sanitation systems
47. Tribal studies
48. Telugu literature and mondalics
49. Awareness of epics among youth and children
50. Anthropological survey
51. Music and dance
52. Performing arts
53. Social evils

For Commerce Students

1. Entreprenuership
2. Agricultural products and marketing
3. Poultry business
4. Dairy business
5. Aquaculture
6. Wage system and Labour Welfare
7. Village industry products and marketing
8. Income and wealth distribution among different sections of the society
9. Entertainment services
10. Communication services
11. Banking services and habits
12. Insurance services and habits
13. Public distribution system
14. Vegetable marketing
15. Savings and Investments
16. Online purchases
17. Digital transactions
18. Use of electrical home appliances
19. Use of electronic home appliances
20. Personal transport
21. Consumer movement
22. Unfair trade practices

23. Food habits
24. Income distribution
25. Wealth distribution
26. Expenditure pattern on different product categories
27. Buying motives
28. Consumer behavior
29. Impact of celebrity advertising
30. Impact of TV on product choices
31. Usage of cell phones
32. Self employed professionals
33. Construction
34. Leisure time management
35. Tourism
36. Leadership
37. Human resource development
38. Local administration
39. Office management in local governing bodies
40. Exports
41. Handicrafts
42. Handlooms
43. Public transport
44. Private transport
45. Cooperative societies
46. Shifts in occupations
47. Debt burden of different sections of the society
48. Time management
49. Dispute resolution systems
50. Commercial crops

For Science Students

1. Water facilities and drinking water availability
2. Health and hygiene
3. Stress levels and coping mechanisms
4. Health intervention programmes
5. Horticulture
6. Herbal plants
7. Botanical survey
8. Zoological survey
9. Marine products
10. Aqua culture
11. Inland fisheries
12. Animals and species
13. Nutrition
14. Traditional health care methods
15. Food habits

16. Air pollution
17. Water pollution
18. Plantation
19. Soil protection
20. Renewable energy
21. Plant diseases
22. Yoga awareness and practice
23. Health care awareness programmes and their impact
24. Use of chemicals on fruits and vegetables
25. Organic farming
26. Crop rotation
27. Floriculture
28. Access to safe drinking water
29. Geographical survey
30. Geological survey
31. Sericulture
32. Study of species
33. Food adulteration
34. Incidence of Diabetes and other chronic diseases
35. Human genetics
36. Blood groups and blood picture

10. COMPLIMENTING THE COMMUNITY SERVICE PROJECT THE STUDENTS MAY BE INVOLVED TO TAKE UP SOME AWARENESS CAMPAIGNS ON SOCIAL ISSUES/SPECIAL GROUPS.

The suggested list of programmes are -

Programmes for School Children

1. Reading Skill Programme (Reading Competition)
2. Preparation of Study Materials for the next class.
3. Personality / Leadership Development
4. Career Guidance for X class students
5. Screening Documentary and other educational films
6. Awareness Programme on Good Touch and Bad Touch (Sexual abuse)
7. Awareness Programme on Socially relevant themes.

Programmes for Women Empowerment

1. Government Guidelines and Policy Guidelines
2. Womens' Rights
3. Domestic Violence
4. Prevention and Control of Cancer
5. Promotion of Social Entrepreneurship

General Camps

1. General Medical camps
2. Eye Camps
3. Dental Camps
4. Importance of protected drinking water
5. ODF awareness camp
6. Swatch Bharath
7. AIDS awareness camp
8. Anti Plastic Awareness
9. Programmes on Environment
10. Health and Hygiene
11. Hand wash programmes
12. Commemoration and Celebration of important days

Programmes for Youth Empowerment

1. Leadership
2. Anti-alcoholism and Drug addiction
3. Anti-tobacco
4. Awareness on Competitive Examinations
5. Personality Development

Common Programmes

1. Awareness on RTI
2. Health intervention programmes
3. Yoga
4. Tree plantation
5. Programmes in consonance with the Govt. Departments like –
    i. Agriculture
    ii. Health
    iii. Marketing and Cooperation
    iv. Animal Husbandry
    v. Horticulture
    vi. Fisheries
    vii. Sericulture
    viii. Revenue and Survey
    ix. Natural Disaster Management
    x. Irrigation
    xi. Law & Order
    xii. Excise and Prohibition
    xiii. Mines and Geology
    xiv. Energy

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

Assessment methodology for Internships / On the Job Training / Apprenticeship under the revised CBCS (2020 – 21 onwards)

As per the revised CBCS based curriculum which is implemented from the academic year 2020-21, three internships are mandatory for all students irrespective of the type of College (Govt / Private Aided / Autonomous / Constituent / Private Un-aided) and the programme of study (BA/B.Com/B.Sc/BBA/Honours, etc.).The following is the evaluation methodology for awarding marks/grades.

First internship (April-May after 1st year examinations): Community Service Project

To inculcate 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 Project (the detailed guidelines are circulated separately).

Learning outcomes:

- To facilitate an understanding of the issues that confronts the vulnerable / marginalized sections of the society.
- To initiate team processes with the student groups for societal change.
- To provide students an opportunity to familiarize themselves with urban / rural community they live in.
- To enable students to engage in the development of the community.
- To plan activities based on the focused groups.\
- To know the ways of transforming the society through systematic programme implementation.

Assessment Model for the First Internship (April-May after 1styear examinations):

There will be only internal evaluation for this internship. Each faculty member is to be assigned with 10 t0 15 students depending upon availability of the faculty members. The faculty member will act as a faculty-mentor for the group and is in-charge for the learning activities of the students and also for the comprehensive and continuous assessment of the students.

The assessment is to be conducted for 100 marks. The number of credits assigned is 4. Later as per the present practice the marks are converted into grades and grade points to include finally in the SGPA and CGPA.

The weightings shall be:

Project Log	20%
Project Implementation	30%
Project report	25%,
Presentation	25%

Each student is required to maintain an individual logbook, where he/she is supposed to record day to day activities. The project log is assessed on anindividual basis, thus allowing for individual members within groups to be assessed this way.The assessment will take into consideration the individual student's involvement in the assigned work.

While grading the student's performance, using the student's project log, the following should be taken into account -

a. The individual student's effort and commitment.
b. The originality and quality of the work produced by the individual student.
c. The student's integration and co-operation with the work assigned.
d. The completeness of the logbook.

The assessment for the ***Community Service Project implementation*** shall include the following components and based on the entries of Project Log and Project Report:

a. Orientation to the community development
b. Conducting a baseline assessment of development needs
c. Number and Quality of Awareness Programmes organised on beneficiary programmes and improvement in quality of life, environment and social consciousness, motivation and leadership, personality development,etc.
d. Number Quality and Duration of Intervention/service Programmes (Prevention or promotion programs that aim to promote behavioural change in defined community contexts to address social problems) organised.
e.Followup Programmes suggested (Referral Services, Bringing Community Participation)
f. Developing short and mid-term action plans in consultation with local leadership and local government officers.

The **Project Report** should contain

a) Introduction, scope, objectives, and methodology
b) Project specifications (area / background of the work assigned).
c) Problems identified.
d) Analyses of the problems
e) Community awareness programmes conducted w.r.t the problems and their outcomes.
f) Intervention/service programmes taken up
g) Short-term and long term action plan for implementation
h) Recommendations and conclusions.
i) References

The **Project Presentation** is to be made by the student after he/she reports back to the College. The components for assessment are –
a. assessing the involvement in the project
b. presentation skills
c. final outcome of the project as evinced by the student.

Example:

Name of the Student:	X. YY ZZZ	
Class & Year of Study	II B.A. 2021 - 2022	
Registered Number	000000	
Assessment Component	**Max Marks**	**Marks Secured**
1. Project Log	20	15
2. Project Implementation	30	20
3. Project Report	25	20
4. Presentation	25	20
TOTAL OUT OF 100	**100**	**75**

Letter grade	**Grade Point**	**Credits**	**Credit Point**
O (outstanding)	10	2	20
A+ (Excellent)	9	2	18
A (Very Good)	8	2	16
B+ (Good)	7	2	14
B (Above average)	6	2	12
C (Average)	5	2	10
D (Pass)	4	2	8
F (Fail)	0		
Ab (Absent)	0		

In the above example, 75 marks are converted to letter grade / grade point.

Letter grade	**Grade Point**	**Credits**	**Credit Point**
B+ (Good)	7	2	14

Second Internship (April-May after 2nd year examinations): Apprenticeship / Internship / On the job training / In-house Project / Off-site Project

To make the students employable, an Apprenticeship / Internship / On the job training / In-house Project / Off-site Project shall be undertaken by the students in the intervening summer vacation between the 2nd and 3rd years.

Learning outcomes

- Explore career alternatives prior to graduation.
- Integrate theory and practice.

- Assess interests and abilities in their field of study.
- Learn to appreciate work and its function towards future .
- Develop work habits and attitudes necessary for job success.
- Develop communication, interpersonal and other critical skills in the future job.
- Build a record of work experience.
- Acquire employment contacts leading directly to a full-time job following graduation from college.
- Acquire additional skills required for world of work.

Assessment Model for the Second Internship (April-May after 2nd year examinations):

There will be only internal evaluation for this internship. Each faculty member is to be assigned with 10 t0 15 students depending upon availability of the faculty members. The faculty member will act as a faculty-mentor for the group and is in-charge for the learning activities of the students and also for the comprehensive and continuous assessment of the students.

The assessment is to be conducted for 100 marks and the credits assigned are 4. Later as per the present practice the marks are converted into grades and grade points to include finally in the SGPA and CGPA.

The weightings shall be:

Project Log	20%
Project Implementation	30%
Project report	25%,
Presentation	25%

Each student is required to maintain an individual logbook, where he/she is supposed to record day to day activities. The project log is assessed on anindividual basis, thus allowing for individual members within groups to be assessed this way.The assessment will take into consideration the individual student's involvement in the assigned work.

While grading the student's performance, using the student's project log, the following should be taken into account -

a. The individual student's effort and commitment.
b. The originality and quality of the work produced by the individual student.
c. The student's integration and co-operation with the work assigned.
d. The completeness of the logbook.

The assessment for Project Implementation during ***second internship / Project Work / On the Job Training / Apprenticeship*** shall include the following components and based on the entries of Project Log and Project Report:

a. Involvement in the work assigned
b. Regularity in the work assigned
c. New knowledge acquired
d. New skill acquired

The Project Report should contain

a. Introduction.
b. Project specifications (area / background of the work assigned).
c. Problems taken up.
d. Analysis of the problem.
e. Recommendations and conclusions.

The Project Presentation is to be made by the student after he/she reports back to the College. The components for assessment are –

a. assessing the involvement in the project
b. presentation skills
c. final outcome of the project as evinced by the student.

Example:

Name of the Student:	X. YY ZZZ	
Class & Year of Study	II B.A. 2021 - 2022	
Registered Number	000000	
Assessment Component	**Max Marks**	**Marks Secured**
1. Project Log	20	10
2. Project Implementation	30	15
3. Project Report	25	20
4. Presentation	25	20
TOTAL OUT OF 100	**100**	**65**

Letter grade	**Grade Point**	**Credits**	**Credit Point**
O (outstanding)	10	2	20
A+ (Excellent)	9	2	18
A (Very Good)	8	2	16
B+ (Good)	7	2	14
B (Above average)	6	2	12
C (Average)	5	2	10
D (Pass)	4	2	8
F (Fail)	0		
Ab (Absent)	0		

This may vary from University to University

In the above example, 75 marks are converted to letter grade / grade point.

Letter grade	Grade Point	Credits	Credit Point
B (Above average)	6	2	12

Third internship (5th/6thSemester period):

During the entire 5th /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.

Learning outcomes

- Explore career alternatives prior to graduation.
- Integrate theory and practice.
- Assess interests and abilities in their field of study.
- Learn to appreciate work and its function towards future .
- Develop work habits and attitudes necessary for job success.
- Develop communication, interpersonal and other critical skills in the future job.
- Build a record of work experience.
- Acquire employment contacts leading directly to a full-time job following graduation from college.
- Acquire additional skills required for world of work.

Assessment model for the semester long apprenticeship / on the job training / internships during the VI Semester:

The assessment for the V / VI Semester long apprenticeship is for 200 marks and credits assigned are 12.

A monthly report is to be submitted to the teacher guide online within 15 days after the completion of the every moth uptofour months. The last two months of internship period shall be used for preparation of final project report simultaneously undergoing on the job training / internship / apprenticeship.

The assessment for this internship / on the job training will be both internal and external assessment. The internal assessment will be for 25% of marks which will be continuous and the assessment by the industry / enterprise / organisation where the student does his/her internship will beindicated in grades. A template to that extent is appended as Annexure – 1. This assessment is to be conducted by a responsible person (General Manager / HR Manager / Head of the Division) in consultation with the supervisor under whom the internship was done.

The components of internal assessment during*this* ***third internship / Project Work / On the Job Training / Apprenticeship*** shall include the following components and based on the entries of Project Log and Project Report:

a. Involvement in the work assigned
b. Regularity in the work assigned
c. New knowledge acquired
d. New skill acquired

The Project Report should contain

a. Introduction.
b. Project specifications (area / background of the work assigned).
c. Problems taken up.
d. Analysis of the problem.
e. Recommendations and conclusions.

The Project Presentation is to be made by the student after he/she reports back to the College. The components for assessment are –

a. assessing the involvement in the project
b. presentation skills
c. final outcome of the project as evinced by the student.

There shall be a final evaluation committee comprising of Principal, Teacher Guide, Internal Expert and External Expert nominated by the affiliating University. The final evaluation committee shall consider the following for evaluation –

A. Monthly Reports submitted by the student

B. Final Project Report

C. Grading given by the Company / Business unit / Enterprise where the student has undergone the training. The grades shall be converted into marks on the scale followed by the University.

To evaluate and award marks, the Committee conducts viva voce examination at the college.

Example:

Name of the Student:	X. YY ZZZ	
Class & Year of Study	III B.A. 2022 - 2023	
Registered Number	000000	
Internal Assessment Component	**Max. Marks**	**Marks Awarded**
1. Project Log	10	10
2. Project Implementation	20	15
3. Project Report	10	10
4. Presentation	10	5
TOTAL	**50**	**40**
External Assessment Component	**Max. Marks**	**Marks Awarded**

Performance Assessment by the Evaluation Committee, converting the grades awarded by the industry, enterprise, etc.	**100**	**80**
External Viva Voce	**50**	**30**
GRAND TOTAL	**200**	**150**

Letter grade	**Grade Point**	**Credits**	**Credit Point**
O (outstanding)	10	2	20
A+ (Excellent)	9	2	18
A (Very Good)	8	2	16
B+ (Good)	7	2	14
B (Above average)	6	2	12
C (Average)	5	2	10
D (Pass)	4	2	8
F (Fail)	0		
Ab (Absent)	0		

In the above example, 75 %marks are converted to letter grade / grade point.

B+ (Good)	7	2	14

Thus the Comprehensive Continuous Assessment for the projects/internships/on the job training shall focus on enhancing the student's learning by ensuring that the student invests considerable time in studying, preparing and building on academic skills, moulding them into competent and skill perspective workforce. The assessment should also cater to the improvement of education and institutional assessment system that portrays the student performance.

Student *internship / Project Work / On the Job Training / ApprenticeshipPerformance Evaluation*

Term of Internship: From dd/mm/yyyy To dd/mm/yyyy Date of Evaluation:

Student Name: & Registration No:

Organization Name& Address:

Name of the Supervisor:

Supervisor email/phone:

Faculty Internship Coordinator

Please attach: • **Internship Job Description**
• **Supervisor Comments** (i.e. strengths, areas for improvement, etc)

Please rate the intern's performance in the following areas:

Rating Scale: **Letter grade of CGPA calculation to be provided**

1)	**Oral communication**	**1**	**2**	**3**	**4**	**5**
2)	**Written communication**	**1**	**2**	**3**	**4**	**5**
3)	**Initiative**	**1**	**2**	**3**	**4**	**5**
4)	**Interaction with staff**	**1**	**2**	**3**	**4**	**5**
5)	**Attitude**	**1**	**2**	**3**	**4**	**5**
6)	**Dependability**	**1**	**2**	**3**	**4**	**5**
7)	**Ability to learn**	**1**	**2**	**3**	**4**	**5**
8)	**Planning and organization**	**1**	**2**	**3**	**4**	**5**
9)	**Professionalism**	**1**	**2**	**3**	**4**	**5**
10)	**Creativity**	**1**	**2**	**3**	**4**	**5**
11)	**Quality of work**	**1**	**2**	**3**	**4**	**5**
12)	**Productivity**	**1**	**2**	**3**	**4**	**5**
13)	**Progress of learning**	**1**	**2**	**3**	**4**	**5**
14)	**Adaptability to organization's culture/policies**	**1**	**2**	**3**	**4**	**5**
15)	**OVERALL PERFORMANCE**	**1**	**2**	**3**	**4**	**5**

Signature of the Supervisor **Signature of the HR Manger**