REGULATIONS

NEHRU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

REGULATIONS FOR UNDERGRADUATE DEGREE COURSES

Choice Based Credit System blended with Outcome Based Education

Regulations with effect from the Academic Year 2023-2024

Definition

a) Programme – A course of study leading to the award of a degree in a discipline.
(E.g.: B. Sc. / B. Com.)

b) Branch – Discipline of study (e.g. B.Sc. Computer Science)

c) Curriculum – The various courses (subjects) a student must study in a particular branch.

d) Course – The Theory & Practical subject offered under each curriculum.

e) Credit – A unit of measurement based on the duration of the contact hours, content and quality of the subject matter.

1. UG Curriculum

The UG Curriculum follows CBCS pattern and the medium of instruction is English.

2. Eligibility for Admission to the Course

Candidates for admission to the first year of the UG degree programmes are required to **have passed the higher secondary examination** (Academic or Vocational) conducted by the Govt. of Tamil Nadu in the relevant subjects or other examinations accepted as equivalent thereto by the Parent University, subject to such other conditions as may be prescribed thereof.

3. Duration of the Programme

The UG programme will comprise six semesters with two semesters per academic year, extending over a total duration of three years. Examination shall be conducted at the end of every semester for the respective courses. Each semester has 90 instructional days consisting of 5 teaching hours per working day. Thus, each semester has 450 teaching hours and the whole programme has 2700 teaching hours.

4. Choice Based Credit System (CBCS)

All Undergraduate Programmes offered by the University shall be under Choice Based Credit System (CBCS). Choice based credit system is introduced with the aim of offering flexibility in the choice of courses to the students.

Objectives of the Choice Based Credit System

- To facilitate the students to have greater flexibility in their choice of courses.
- To widen the spectrum of knowledge of students by means of Core, Allied, Project / Electives, Value Education, Environmental Studies and Skill Based Subjects.
- To revamp the curriculum which enables to impart entrepreneurial skills and placement potentials qualities.
- To incorporate need based knowledge in tune with the location and neighborhood of the Institution.
- To allocate credit points to each paper of the study based on the weightage of the contact hours, content and quality.
- To extend opportunities to fast learners in order to earn additional credit from advanced as well as additional courses.
- To maintain the total credit points of each programme on par with international standards.

5. Outcome Based Education (OBE)

OBE is an **educational** theory that bases each part of an **educational** system around goals (**outcomes**). By the end of the **educational** experience, each student should have achieved the goal.

Objectives of Outcome based curriculum

- The programme outcomes and Programme specific outcomes are clearly identified and unambiguously specified regarding the content, context and competence.
- The expected outcome should be defined by setting bench marks for each level of the programme. Benchmark should tackle and define specifically, the goals of the curriculum and verify ways to access whether the students have reached these goals at the level of study;
- OBE is driven by assessments that focus on well defined learning outcomes and not by other factors such as what is taught, the duration taken by the student to achieve the outcomes or which path the students take to achieve their targets. In OBE, assessment techniques must be with clear description of expected performance.

Definitions

Outcome: An outcome of an educational Programme is what the student should be able to do at the end of a Programme / Course / Instructional Unit.

Levels of Outcomes

- **Programme Outcomes:** POs are statements that describe what the students graduating from any of the educational Programmes should be able to do.
- **Programme Specific Outcomes:** PSOs are statements that describe what the graduates of a specific educational Programme should be able to do.
- **Course Outcomes:** COs are statements that describe what students should be able to do at the end of a course

Learning Outcomes: It describes levels of achievement that can be attained across the domains of learning. Here **K1** representing Remember; K2 – Understanding; **K3** – Apply; **K4** – Analyze; **K5** – Evaluate, **K6** – Create are used to measure the levels of achievement in learning.

6. Course of Study

The Course of Study for the UG degree courses of all branches shall consist of the following:

6.1. Part I : Language : Tamil or any one of the modern / Classical languages i.e. Malayalam, French and Hindi.

It is absolutely obligatory for all the UG students to study a language under part I. A student can select and study any one of the languages offered under part I. The syllabus drafted would enable the students to communicate with the ease and effectiveness in that language. It shall be offered during the Semesters I to IV with one examination at the end of each semester.

6.2. Part II : Language : English

The study of English has been made mandatory for all UG students under part II. English being the window to the outer world in the context of the globalization scenario, the contents of the syllabus is tailored in a fashion suitable for imparting the classical and the modern facets of the language and literature, besides conferring a mastery of fluency and command over the language, providing a clout to compete for employment opportunities. The subject shall be offered during the Semesters I to IV with one examination at the end of each semester.

6.3. Part III : Core Subjects, Allied Subjects and Project or Elective Courses:

1) Core Subjects : Each programme has a group of Core courses arranged semester wise. The syllabi of the core courses will enlighten the students in the acquisition of the basic concepts of their respective disciplines, besides getting focused on to the recent trends. The core courses will span over six semesters and examination shall be conducted in the core subjects at the end of every semester.

2) Allied Subjects : In all disciplines, the UG students must study Allied courses along with the core courses, which would supplement, suit and support the major course of study. The Allied Subjects is to be studied during the first four semesters of the UG programmes and examination shall be conducted at the end of every semester.

3) Project , Internships and Electives with three Courses : In all disciplines, the UG student shall undergo a Project and Internships (if any) and he / she must study three Elective Courses.

Three Elective courses are to be offered one in the V semester and two in the VI Semester. Elective subjects are to be selected from the list of electives prescribed by the concerned Board of Studies during the fifth and Sixth Semester along with the Core Subjects.

A student shall take up a project work in addition to his elective subjects. The report of the study should be submitted at the end of course duly certified by the supervisor and forwarded by the Head of the Department / Principal of the College. The Head of the Department of the programme concerned shall assign a project supervisor, who in turn shall assign the topic and monitor the project work of the student.

A student shall complete Internship (if any) as per the recommendations of BoS concerned.

6.4. Part IV

1. a) Those who have not studied Tamil up to XII std and taken a Non-Tamil language under Part-I shall take Tamil Comprising of two Courses. The course content of which shall be equivalent to that prescribed for the 6^{th} Standard by the Board of Secondary Education and they shall be offered in the third and fourth semesters.

b) Those who have studied Tamil up to XII std and taken a Non-Tamil language under Part-I shall take Advanced Tamil comprising of two Courses in the third and fourth semesters.

(OR)

c) Others who do not come under the above a + b categories can choose the following Non-major electives (NME) comprising of two courses with 2 credits each (4 credits) in the **third and fourth semesters**.

1) Consumer Affairs / Gender Sensitization / Women's Rights (**III semester**.)
2) General Awareness (**IV semester**.)

Note: The assessment for the category in Part IV – 1 b and 1 c subjects shall be through End Semester examination (ESE) for the total marks prescribed. There shall be no Continuous Internal Assessment (CIA).

2. **Skill Based Subjects :** For UG degree, four skill based subjects are to be offered one each in III, IV, V and VI Semesters based on the skill based courses recommended in Naan Muthalvan scheme of Govt. of Tamilnadu. The examination shall be conducted in the skill based subjects at the end of the semesters where they are offered.

3. **Ability Enhancement Compulsory Course – Human Rights and Constitution of India:** It is a course to impart the knowledge about the basic Human rights, Classification of human rights, Human Rights Commission and Constitution of India. The total mark is 50 for 2 credits. One Internal Examination shall be conducted for 25 marks in the II semester during CIA III and there is no ESE. The learning outcomes are further measured by various assessment criteria for 25 marks by the course teacher concerned.

4. **Ability Enhancement Compulsory Course – Environmental Studies :** It is a course on Environmental Science which underlines the importance of environment apart from sensitizing students to the dimensions of Environmental problems. The total mark is 50 for 2 credits. One Internal Examination shall be conducted for 25 marks in I semester during CIA III and there is no ESE. The learning outcomes are further measured by various assessment criteria for 25 marks by the course teacher concerned.

5. **Human Values and Yoga Practice:** It is a course to inculcate human values among students to develop physical, mental, social and spiritual health which will enhance personality of the students and also improve the institutional climate in the campus. Human Values and Yoga Practice is offered during Semesters I and II with one hour of Yoga and one hour of Human values to be handled alternatively in a week. This course carries a total of 50 marks comprising 25 marks of Internal Practical Assessment for Yoga and 25 marks of written Examination for Human values during CIA III of Semester II.

6. **Skill Based Open Elective Courses** (**Extra Departmental Courses):** Any student studying any programme can do course except the course offered by his / her Department. All the UG programmes shall offer two skill based courses as **Extra department Courses,** during semester III with 2 credits each. The students can choose one among the courses offered by other departments. The examination will be conducted at the end of the semester. There shall be no continuous Internal Assessment (CIA).

7. **Value Based Open Elective Courses (Intra School Courses) :** During Semester IV, list of Open Elective Courses are offered to Students. These Courses are value based and help to inculcate the values and positive attitude among the Students. Each School will offer a list of courses and the Students shall choose any one open Elective Course they prefer and appear for the Examination to earn 2 mandatory credits. The examination will be conducted at the end of the Semester. There shall be no continuous Internal Assessment (CIA). However the NCC Cadets will appear for theory paper in NCC to earn these credits.

6.5. Part V : Extension Activities : Every student shall participate compulsorily for period of not less than two years (4 semesters) in any one of the programmes. **(NSS / Sports and Games / YRC / RRC)**

Each student must choose any one of the courses offered during the first four semesters. The object of the slot is to build- up the ethics, awareness and involvement in social service, acquisition of knowledge and training in discipline leading to national integration and patriotism, and feeling fit and fine through participation in games and athletics.

The student's performance shall be examined by the staff in-charge of extension activities along with the Head of the respective departments and a senior member of the Department on the following parameters.

- 20% of marks for Regularity of attendance
- 60% of marks for Active Participation in classes / camps / games / special camps / programmes in the College / District / State / University activities.
- 10% of marks for Exemplary Awards / Certificates / Prizes.
- 10% of marks for other Social components such as Blood Donations, Fine Arts, etc.

The grades will be awarded at the end of the Fourth Semester. The mark sheet shall carry the gradation relevant to the marks awarded to the candidates. The marks shall be sent to the Controller of Examinations before the commencement of the final semester examinations.

Table 1 : Grades for Extension Activity

Range of Marks	Grade Point	Letter Grade	Description
90 – 100	9.0 – 10.0	O	OUTSTANDING
80 – 89	8.0 – 8.9	D+	EXCELLENT
75 – 79	7.5 – 7.9	D	DISTINCTION
70 – 74	7.0 – 7.4	A+	VERY GOOD
60 – 69	6.0 – 6.9	A	GOOD
50 – 59	5.0 – 5.9	B	AVERAGE
40-49	4.0-4.9	C	SATISFACTORY
00-39	0.0	U	RE-APPEAR
ABSENT	0.0	AAA	ABSENT

This grading shall be incorporated in the mark sheet to be issued at the end of the semester. (Handicapped students who are unable to participate in any of the above activities shall be required to take a test in the theoretical aspects of any one of the above fields and be graded and certified accordingly)

7. Additional Credit Course

Students are given the opportunity to undertake optional papers, additional to their compulsory papers, in order to gain additional credit that would boost their grades. These are not mandatory. Students can earn to a maximum of 10 credits.

Table 2: Regulations for Additional Credits

S. No.	Subject	Credit / course	Total credits
1	Presentation / Publication of Research papers in International Conferences / Journals.	1	1
2	Completion of Diploma / Certificate Courses	1	1
3	Self Study Papers	1	2
4	MOOC Courses prescribed by the Departments	1	2
5	Achievements - Sports / Social Activities / Co curricular / Extracurricular Activities at University / District / State / National / International levels	1	1
6	Swachh Bharath Summer Internship Programme	2	2
7	Visits Abroad for Participation in International Academic events	1	1
		Total	**10**

Rules: The Students can earn additional credits only if they complete the above during the course period (II to V Sem.) and based on the following criteria. Proof of Completion must be submitted to the Office of Controller of Examinations to award additional credits.

1. Students can earn an additional credit if they present / publish research papers in International conferences / reputed Journals
2. Students can complete Diploma / Certificate Courses for a minimum of 30 hrs (II to V Sem. only) from reputed centres and the same certificate shall be produced to earn a credit. They shall be guided by the Department if needed.
3. Students can earn one credit, if they complete One Self Study Paper prescribed by the Department. The Departments shall offer two Self Study Papers.
4. Students can earn one Credit, if they complete any one MOOC courses prescribed by the Department. Students shall earn a maximum of 2 Additional Credits by completing 2 online courses.
5. Award Winners in Sports / Social Activities / Co curricular / Extra Curricular Activities at University / District / State / National / International levels can earn one Extra Credit by producing the Certificate.
6. As per the direction of Ministry of Human Resource Development, Swachh Bharath Summer Internship Programmme is introduced to the students as an optional paper. Students interested to join the internship programme are required to register and report the activities conducted during the internship period on the website https://sbsi.mygov.in. They shall gain 2 credits if they produce Swachh Bharath Internship Certificate provided by MHRD on completion of their internship.
7. **Extra Credit for NCC Cadets** : NCC Cadets shall gain Extra credits as mandated by UGC and Bharathiar University apart from 2 credits to be added for Part V-Extension Activity during Semester VI. The regulations for the Extra credits shall be communicated to the Cadets through the NCC Officer of the College.

Regulations for Awarding credits to NCC Cadets

Semester	Credits Allocated		Remarks
	Camp	Theory	
III	2		Credits if 1st camp merged with 3rd Semester
IV		2	Under Value based Open Elective course (Mandatory credit)
V	2		Credits if 2nd camp merged with 5th Semester
Total	**6 credits**		

8. Value Added Course

Each Department shall conduct a Value Added Course to their students during III and IV Semesters for 50 to 60 hours. The MoU with the Industry shall be signed and the Classes shall be conducted without affecting the regular class hours. The Examination and the Valuation shall be conducted by the Industry. The HoD of concerned department shall forward the marks to the Examination section during the end of IV semester and the Grade shall be awarded by the CoE. This is based on the Naan Muthalvan scheme of Govt. of Tamilnadu.

9. Scheme of Examination

Table 3: Summary: CBCS for Undergraduate programmes with language for Four Semesters

Components of Study	No. of Subjects	Credit per Subject #	Total Credits	Marks	Total Marks
Part-I: Tamil / Other Languages	2 + 2 = 4	3	12	75	300
Part-II : English	2 + 2 = 4	3	12	75	300
Part-III					
Core subjects	14 -18	2/ 3 / 4	64-66	50 / 75 / 100	2300
Allied subjects	4 – 6	2/ 3 / 4	14 -16	50 / 75 / 100	
Electives	3	4	12	100	
Part-IV 1. (a) Those who have not studied Tamil up to XII std. and taken a non-Tamil language under part-I shall take basic Tamil comprising of two courses(level will be at 6th std.) (b) Those who have studied Tamil up to XII std and taken a non –Tamil language under part-I shall take Advance Tamil comprising of two courses. I others who do not come under a + b can choose non-major elective comprising of two courses.(NME)	2	2	4	50	100
2. Skill based subjects	4	3	12	75	300
3. Human Rights and Constitution of India	1	2	2	50	50
4. Environmental Studies	1	2	2	50	50
5. Human Values and Yoga Practice	1	2	2	50	50

6. Value Added Course	1	-	-	-	Grade
7. EDC (Extra Departmental Course)	1	2	2	50	50
8.Open Elective Courses	1	2	2	50	50
Part V: Extension activities	1	2	2	50	50
		Total	**144**		**3600**
Additional Credits	II – V Semesters			10 credits	

- No CIA marks for Additional Credit
- No CIA Tests or ESE for Extension Activities.
- For Value added course, Examination shall be conducted by the Industry for 100 marks for a duration of 3 hours.

10. Requirement to appear for the Examinations

Attendance Requirements for the Students appearing for ESE

- The guidelines of attendance requirement issued by Bharathiar University are adopted by the College. Attendance shall be considered semester- wise (not annually).
- A candidate shall be permitted to appear for the Semester Examinations in any semester, if he / she secures not less than 75% of attendance in the total number of working days during the semester and if his / her progress has been satisfactory, and his / her conduct has been satisfactory.
- Those who have obtained below 75% and above 65% of attendance shall pay condonation fee and shall write the examination in the same semester with due permission from the Principal.
- Those who have below 65% and above 50% of attendance are not eligible to write the examination in current semester subjects but are permitted to continue their studies in the next semester provided that this is the first time that the candidate earned attendance between 50% and 65%. Else the candidates have to discontinue the course and re-join in the same semester subjects in the next year with proper approval of the Principal. However, the candidates are eligible to write arrear subjects if any.
- Those who have below 50% of attendance have to redo the semester.

11. Restrictions to appear for the examinations

a) Any candidate having arrear paper(s) shall have the option to appear in any arrear paper along with the regular semester papers.

b) Candidates who fail in any of the course of Part I, II, III, IV & V of UG degree examinations shall complete the course concerned **within 5 years** from the date of admission to the said programme, and if they fail to do so, they shall take the examination in the texts / revised syllabus prescribed for the immediate next batch of candidates. If there is no change in the texts / syllabus they shall appear for the examination in that course with the syllabus in vogue until there is a change in the texts or syllabus. In the event of removal of that course consequent to change of regulation and / or curriculum after 5 year period, the candidates shall have to take up an equivalent course in the revised syllabus as suggested by the Chairman of the concerned board of studies and fulfill the requirements as per the regulations for the award of the degree.

12. Medium of Instruction and Examinations

The Medium of instruction and Examinations for the courses of Part I, II & IV shall be in the language concerned. For part III courses, the medium of instruction and the medium of Examination are English.

13. Distribution of Marks

The following are the distribution of marks for Examination & Evaluation pattern:

Table 4 : Distribution of Marks between End Semester Exam (Theory) and Internal Assessment is 75 : 25

Total Marks	External		Internal	Overall Passing Minimum for Total Marks (Internal + External)
	Max. Marks	Passing Minimum for External alone	Max. Marks	
100	75	30	25	40
75	55	22	20	30
50	40	16	10	20

Table 5 : The following are the Distribution of marks for the Continuous Internal Assessment in the theory papers of UG programmes

S. No.	For Theory - UG courses	Distribution of Marks		
01.	CIA I	5	4	2
02.	CIA II (Online Test)	5	4	2
03.	CIA III	6	5	4
04.	OBE Evaluation – Tool 01	3	2	1
05.	OBE Evaluation – Tool 02	3	2	1
06.	OBE Evaluation – Tool 03	3	3	-
	TOTAL MARKS	**25**	**20**	**10**

14. Continuous Internal Assessment (CIA)

Three CIA's shall be conducted at regular Intervals. CIA I shall be a 2 hours written test for a maximum of 50 marks and CIA II shall be conducted as Computer Based test (MCQ's) for 50 marks. CIA III shall be conducted as Model Examination for ESE.

15. OBE Evaluation - Assignment / Seminar / Role play, etc.

Three OBE Assessment parameters are decided for each course to evaluate the achievement of course outcomes which shall be assessed by the concerned course teacher. The marks allotted to this component will be awarded based on the performance of the candidate. The Rubrics for awarding the marks shall be maintained by the Course Teacher concerned.

Table 6 : Distribution of Marks between End Semester Exam (Practical) and Internal Assessment is 60:40.

Total Marks	External		Internal	Overall Passing Minimum for total marks (Internal + External)
	Max. Marks	Passing Minimum for External alone	Max. Marks	
100	60	24	40	40
75	45	18	30	30
50	30	12	20	20

Table 7 : Distribution of marks for the Continuous Internal Assessment in UG practical courses

S. No.	For - UG practical Courses	Distribution of Marks		
01.	Laboratory Performance - Assessment Tool 01*	5	4	3
02.	Laboratory Performance - Assessment Tool 02*	5	4	3
03.	Laboratory Performance - Assessment Tool 03*	5	4	3
04.	Test 1 : During Mid semester	10	7	4
05.	Test 2 : As model test at the end of the semester	10	7	4
06.	Observation Note Book	5	4	3
Total Marks		**40**	**30**	**20**

*** For measuring the Course Outcomes**

16. Observation Notebook & Regularity

The marks allotted for observation notebook & regularity are awarded based on the performance of students in writing procedure, results of the practical done during every practical class, regularity in attending practical class, which will be accounted based on the attendance maintained separately for practical class, and punctuality in the submission of observation notebook.

Table 8 : Distribution of marks for the External Assessment in UG Practical courses

S. No.	For - UG practical courses	Distribution of Marks		
1.	Experiment – I	20	15	10
2.	Experiment – II	20	15	10
3.	Record	10	10	5
4.	Viva Voce	10	5	5
	TOTAL MARKS	**60**	**45**	**30**

Table 9 : Distribution of marks for Project and Viva Voce examinations / Industrial Training of UG programmes

Total Marks	External		Internal	Overall Passing Minimum for Total Marks (Internal + External)
	Max. Marks	Passing Minimum for External alone	Max. Marks	
100	60	24	40	40
75	45	18	30	30

Table 10 : Distribution of marks for the Continuous Internal Assessment in UG Project / Industrial Training Courses.

S. No.	For - UG Project courses / Industrial Training	Distribution of Marks	
1.	Review – I	10	7
2.	Review – II	10	7
3.	Review – III	10	7
4.	Document, Preparation and Implementation	10	9
	TOTAL MARKS	**40**	**30**

Table 11 : Distribution of marks for the External Examination in UG Project / Industrial Training courses

S. No.	For - UG Project / Industrial Training courses	Distribution of Marks	
1.	Record Work and Presentation	40	30
2.	Viva Voce	20	15
	TOTAL MARKS	**60**	**45**

Table 12 : The courses which have only Continuous Internal Assessment and no End Semester Examinations (ESE)

S. No.	Subject	Total Marks
1.	Environmental Studies	50
2.	Human Rights and Constitution of India	50
3.	Basic Tamil I	50
4.	Basic Tamil II	50
5.	Human Values and Yoga Practice	50
	TOTAL	**250**

For the above mentioned subjects, the examinations shall be only Continuous Internal Assessment (CIA) as prescribed in the syllabus. The marks shall be furnished to the CoE.

Table 13 : The courses which have only End Semester Examinations (ESE) and no Continuous Internal Assessment

S. No.	Subject	Total Marks
1.	Non – Major Electives / Advanced Tamil I	50
2.	General Awareness / Advanced Tamil II	50
3.	Skill Based Open Elective Courses	50
4.	Value Based Open Elective Courses	50
	TOTAL	**200**

17. Passing Minimum

A candidate who secures **not less than 40%** in the End Semester Examination and 40% marks in the External Examination and Continuous Internal Assessment put together in any theory course of Part I, II, III & IV shall be declared to have passed the examination in the subject (Theory and Practical). Thus the minimum pass mark for theory subject is 30 out of 75 in ESE and also 40 marks out of 100 (CIA+ESE).

A candidate who passes the examination in all the courses of Part I, II, III, and IV & V shall be declared to have passed, the whole examination. Thus to obtain UG degree a student should pass in all the courses prescribed in the concerned programme and also he / she should earn 144 credits.

18. Marks & Grade

Once the marks of the CIA and End Semester Examinations for each of the course are available, they shall be added. The mark thus obtained shall then be converted to the relevant letter grade as per the details given below to indicate the performance of the candidate.

Table 14 : Conversion of Marks to Grade Points & Letter Grade(Performance in a course / paper)

Range of Marks	Grade Point	Letter Grade	Description
90-100	9.0-10.0	O	Outstanding
80-89	8.0-8.9	D+	Excellent
75-79	7.5-7.9	D	Distinction

70-74	7.0-7.4	A+	Very Good
60-69	6.0-6.9	A	Good
50-59	5.0-5.9	B	Average
40-49	4.0-4.9	C	Satisfactory
00-39	0.0	U	Re-Appear
ABSENT	0.0	AAA	Absent

19. Grade Point Average (GPA)

Grade point average (GPA) is calculated for each part taking into account all the courses studied under each part. Calculation of grade point average semester-wise and part-wise is as follows:

$$\text{GPA} = \frac{\text{Sum of the multiplication of grade points by the credits of the courses}}{\text{Sum of the credits of the courses in a semester}}$$

$$\textbf{GPA} = \frac{\sum_i (C_i * G_i)}{\sum_i C_i}$$

Where C_i = Credit earned for course i in any semester.

G_i = Grade points obtained for course i in any semester.

20. Cumulative Grade Point Average (CGPA)

For the entire program CGPA is calculated in the following manner:

$$\textbf{CGPA} = \frac{\sum_n \sum_i C_{ni} * G_{ni}}{\sum_n \sum_i C_{ni}}$$

$$\text{CGPA} = \frac{\text{Sum of the multiplication of grade points by the credits of the entire programme under each part}}{\text{Sum of the Credits of the Courses of the entire programme under each part}}$$

21. Classification of CGPA

A candidate who has passed all the examinations under different parts (Part-I to Part V) is eligible for the following part wise computed final grades based on the range of CGPA.

Table 15 : Classification of performance of Students based on the Cumulative Grade Points Average

CGPA	Grade	Classification of Final Result
9.5-10.0	O+	First Class - Exemplary
9.0 and above but below 9.5	O	
8.5 and above but below 9.0	D++	First Class with Distinction
8.0 and above but below 8.5	D+	
7.5 and above but below 8.0	D	
7.0 and above but below 7.5	A++	First Class
6.5and above but below 7.0	A+	
6.0and above but below 6.5	A	
5.5 and above but below 6.0	B+	Second Class
5.0 and above but below 5.5	B	
4.5 and above but below 5.0	C+	Third Class
4.0 and above but below 4.5	C	
0.0 and above but below 4.0	U	Re-appear

A candidate who passes all the examinations in Part I to Part V securing following CGPA and Grades shall be declared as follows **for Part I or Part II or Part III**:

a) A candidate who has passed all the Part-III subjects examination in the first appearance within the prescribed duration of the UG programmes and secured a CGPA of 9 to 10 and equivalent grades "O" or "O+" in part III comprising Core, Electives and Allied subjects shall be placed in the category of "**First Class – Exemplary**".

b) A candidate who has passed all the Part-III subjects examination in the first appearance within the prescribed duration of the UG programmes and secured a CGPA of 7.5 to 9 and equivalent grades "D" or "D+" or "D++" in part III comprising Core, Electives and Allied subjects shall be placed in the category of "**First Class with Distinction**".

c) A candidate who has passed all Part-III subjects examination of the UG programmes and secured a CGPA of 6 to 7.5 and equivalent grades "A" or "A+" or "A++" shall be declared to have passed that part in "**First Class**".

d) A candidate who has passed all Part-I or Part-II subjects examination of the UG programmes and secured a CGPA of 6 and above and equivalent grades "A" or "A+" or "A++" shall be declared to have passed that parts in "**First Class**".

e) A candidate who has passed all the Part-I or Part-II or Part-III subjects examination of the UG programmes and secured a CGPA of 5.0 to 6 and equivalent grades "B" or "B+" shall be declared to have passed that parts in "**Second Class**".

f) A candidate who has passed all the Part-I or Part-II or Part-III subjects examination of the UG programmes and secured a CGPA of 4.0 to 5 and equivalent grades "C" or "C+" shall be declared to have passed that parts in "**Third Class**".

g) There shall be no classifications of final results for Part IV and Part V. However, those parts shall be awarded with final grades in the End semester statements of marks and in the Consolidated statement of marks.

22. Improvement of Marks in the subjects already passed

Candidates desirous of improving the marks awarded in a passed subject in their first attempt shall reappear in the subsequent semester only. The improved marks shall be considered for classification but not for ranking. When there is no improvement, there shall not be any change in the original marks already awarded.

23. Conferment of the Degree

No candidate shall be eligible for conferment of the Degree unless he / she

i. Has undergone the prescribed course of study for a period of not less than six semesters in an institution approved by / affiliated to the University or has been exempted from in the manner prescribed and has passed the examinations as have been prescribed therefore.

ii. Has completed all the components prescribed under Parts I to Part V in the CBCS pattern to earn 144 credits.

iii. Has successfully completed the prescribed Field Work/ Institutional Training (if any) as evidenced by certificate issued by the concerned authorities.

24. Ranking

A candidate who qualifies for the UG degree course passing all the examinations in the first attempt, within the minimum period prescribed for the course of study from the date of admission to the course and secures I or II class shall be eligible for ranking and such ranking shall be confined to 10 % of the total number of candidates qualified in that particular branch of study or maximum of Three Ranks whichever is lower. However the Programmes will be considered for ranking only when there are minimum of 10 students completing that Programme. The improved marks shall not be taken into consideration for ranking.

25. Question Paper Pattern

The question paper pattern for CBCS pattern syllabi for the candidates admitted from the Academic year 2023-24 are as follows:

A. Question Paper Pattern for Part I / Part II / Core / Allied / Elective / Skill Based Subjects

Time : 3hrs **Marks : 75**

Knowledge Level		Section	Marks	Description
K1, K2, K3	1– 10	A(Answer all the questions)	10 x 1 = 10	MCQ
K2, K3	11 – 15	B (Either or pattern)	5 x 5 = 25	Short Answers
K3, K4	16 – 21	C (Answer 3 out of 6)	3 x 10 = 30	Descriptive/ Detailed
K3, K4	22	D (Compulsory Question)	1 x 10 = 10	Application Based/ HOTS

B. Question Paper Pattern for Part I / Part II / Core / Allied / Elective / Skill Based Subjects

Time : 3hrs **Marks : 55**

Knowledge Level		Section	Marks	Description
K1, K2, K3	1– 10	A(Answer all the questions)	10 x 1 = 10	MCQ
K2, K3	11 – 15	B (Either or pattern)	5 x 4 = 20	Short Answers
K3 , K4	16 – 21	C (Answer 3 out of 6)	3 x 6= 18	Descriptive/ Detailed
K3, K4	22	D (Compulsory Question)	1 x 7 = 7	Application Based/ HOTS

C. Question Paper Pattern –Advanced Tamil , Open Elective Courses and Self Study Papers

Time: 3 Hours **Max Marks: 50**

Knowledge Level		Section	Marks	Description
K2, K3	1 – 10	A (Answer all the questions)	10 x 2 = 20	Short Answers / Define
K3 , K4	11 – 15	B (Either or pattern)	5 x 6 = 30	Descriptive/ Detailed

For self study papers, Open Book Examination will be followed.

D. Question Paper Pattern for Part IV subjects

For Part IV papers like Environmental Studies, Human Rights and Constitution of India, Human Values & Yoga Practice, Examination time shall be **2 hours with maximum of 25 marks**. The pattern shall be 5 out of 10 Questions each carrying 5 marks.

NOTE: The questions should be numbered continuously running through the Sections A, B and C.

Questions should be evenly distributed among the unit in the syllabus in all the sections of the question paper. While framing questions with internal choice, the questions must be identified as (a) or (b).(e.g. 11. a or b). Further, the internal choice must be from the same unit.

ESE for General Awareness shall be conducted online with 100 multiple choice questions (with four options) to be evaluated online. (100 x 0.5 = 50 marks)

For other courses in Part IV of UG programmes namely, **Consumer Affairs, Gender Sensitization, and Women's Rights** the question paper pattern shall be 5 out of 10.

The Controller of the Examinations shall arrange for the setting of question papers on the basis the syllabus and the pattern of question paper duly certified by the Chairpersons of the respective Board of Studies.

26. Syllabus

The syllabus for various courses shall be clearly demarcated into five viable units in each course.

27. Revision of Regulations and Curriculum

The above Regulation and Scheme of Examinations shall be in vogue without any change for a minimum period of three years from the date of approval. The College may revise / amend / change the Regulations and Scheme of Examinations, if found necessary.

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NEHRU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

REGULATIONS FOR POSTGRADUATE DEGREE COURSES

Choice Based Credit System blended with Outcome based Education

Regulations with effect from the Academic Year 2022-2023

Definition

a) Programme – A course of study leading to the award of a degree in a discipline. (E.g.: M. Sc. / M. Com.)

b) Branch – Discipline of study (e.g. M.Sc. Microbiology)

c) Curriculum – The various courses (subjects) a student must study in a particular branch.

d) Course – The theory & practical subject offered under each curriculum.

e) Credit – A unit of measurement based on the duration of the contact hours, content and quality of the subject matter.

1. PG Curriculum

The PG Curriculum follows CBCS pattern and the medium of instruction is English.

2. Eligibility for Admission to the Course

A candidate who has passed the Degree Examination as main subject of study of this University or an examination of some other University accepted by the Syndicate as equivalent thereto shall be eligible for admission to the Master Degree of this College.

3. Duration of the Programme

This Course of Study shall be based on Semester System. This Course shall consist of four Semesters covering a total of two Academic years. For this purpose, each academic year shall be divided into two Semesters; the first and third Semesters; July to November and the second and the fourth Semesters; December to April. The Practical Examinations shall be conducted at the end of odd / even Semester. Each semester have 90 working days consists of 5 teaching hours per working day. Thus, each semester has 450 teaching hours and the whole programme has **1800 teaching hours**.

4. Choice Based Credit System (CBCS)

All Postgraduate Programmes offered by the University shall be under Choice Based Credit System (CBCS). Choice based credit system is introduced with the aim of offering flexibility in the choice of courses to the students.

Objectives of the Choice Based Credit System :

- To facilitate the students to have greater flexibility in their choice of courses.
- To revamp the curriculum, to impart entrepreneurial skills and placement potentials qualities.
- To incorporate need based knowledge in tune with the location and neighborhood of the institution.
- To allocate credit points to each paper of the study based on the weightage of the contact hours, content and quality.
- To extend opportunities to fast learners in order to earn Extra credit from advanced as well as additional courses.
- To maintain the total credit points of each programme on par with international standards.

5. Outcome Based Education (OBE)

OBE is an **educational** theory that bases each part of an **educational** system around goals (**outcomes**). By the end of the **educational** experience, each student should have achieved the goal.

Objectives of Outcome based curriculum :

- The programme outcomes and Programme specific outcomes are clearly identified and unambiguously specified regarding the content, context and competence.
- The expected outcome should be defined by setting bench marks for each level of the programme. Benchmark should tackle and define specifically, the goals of the curriculum and verify ways to access whether the students have reached these goals at the level of study;
- OBE is driven by assessments that focus on well defined learning outcomes and not by other factors such as what is taught, the duration taken by the student to achieve the outcomes or which path the students take to achieve their targets. In OBE, assessment techniques must be with clear description of expected performance.

Definitions

Outcome : An outcome of an educational Programme is what the student should be able to do at the end of a Programme/ course/ instructional unit.

Levels of Outcomes

- Programme Outcomes: POs are statements that describe what the students graduating from any of the educational Programmes should be able to do.
- Programme Specific Outcomes: PSOs are statements that describe what the graduates of a specific educational Programme should be able to do.
- Course Outcomes: COs are statements that describe what students should be able to do at the end of a course

Learning Outcomes : It describes levels of achievement that can be attained across the domains of learning. Here **K1** representing Remember; **K2** -Understanding; **K3** - Apply; **K4** - Analyze; **K5**- Evaluate, **K6** – Create are used to measure the levels of achievement in learning.

6. CBCS Curriculum

6.1. Part A : Core Components:

Core Courses : Each programme has a group of core courses. The syllabus of the core courses will facilitate the students in the acquisition of the basic concepts of their respective disciplines, besides getting exposure to the recent developments. This exposure will suitably guide the students towards their vertical mobility in their higher studies. Core courses will last till the fourth semester. **It is mandatory for all PG students to complete an online course under SWAYAM / NPTEL platform between 2nd and 3rd semester.**

6.2. Part B: Optional Courses - Advanced Learner's Courses : (ALC)

Students are offered the opportunity to undertake optional papers, additional to their compulsory papers, in order to gain additional credit that would boost their grades. These are not mandatory. The course will be a self study nature and the concerned departments will offer guidance. Other Advanced Learner's Courses shall be decided during the conduct of Board of Studies. The Examination will be of Open Book Examination model.

7. Requirement to appear for the examinations

Attendance Requirements for the Students appearing for ESE

- The guidelines of attendance requirement issued by Bharathiar University are adopted by the College. Attendance shall be considered semester- wise (not annually).
- A candidate shall be permitted to appear for the Semester Examinations in any semester, if he / she secures not less than 75% of attendance in the total number of working days during the semester and if his / her progress has been satisfactory, and his / her conduct has been satisfactory.

- Those who have obtained below 75% and above 65% of attendance shall pay condonation fee and shall write the examination in the same semester with due permission from the Principal.
- Those who have below 65% and above 50% of attendance are not eligible to write the examination in current semester subjects but are permitted to continue their studies in the next semester provided that this is the first time that the candidate earned attendance between 50% and 65%. Else the candidates have to discontinue the course and re-join in the same semester subjects in the next year with proper approval of the Principal. However, the candidates are eligible to write arrear subjects if any.
- Those who have below 50% of attendance have to redo the semester.

8. Restrictions to appear for the examinations

a) Any candidate having arrear paper(s) shall have the option to appear in any arrear paper along with the regular semester papers.

b) Candidates who fail in any of the course of PG degree examinations shall complete the course concerned **within 5 years** from the date of admission to the said programme, and if they fail to do so, they shall take the examination in the texts / revised syllabus prescribed for the immediate next batch of candidates. If there is no change in the texts / syllabus they shall appear for the examination in that course with the syllabus in vogue until there is a change in the texts or syllabus. In the event of removal of that course consequent to change of regulation and / or curriculum after 5 year period, the candidates shall have to take up an equivalent course in the revised syllabus as suggested by the Chairman of the concerned board of studies and fulfill the requirements as per the regulation curriculum for the award of the degree.

9. Medium of Instruction and examinations

The medium of Instruction and the medium of Examination is English.

10. Distribution

The following are the distribution of marks for examination & evaluation pattern. Distribution of Marks between End Semester Exam (Theory) and Internal Assessment is 75:25. The following table gives the distribution.

PG - PROGRAMMES (CBCS)

Table 16: Total credit points and tenure of study for M.A., M.Com, M. Sc. and MSW

Part	Courses	Semesters	Credit Points	Marks / Grade
III	Components Core / Electives / Internship / Project / Online course	I to IV	94	2350

11. Additional Credits

Students are given the opportunity to undertake optional papers, additional to their compulsory papers, in order to gain additional credit that would boost their grades. These are not mandatory. Students can earn to a maximum of 15 credits.

S. No.	Subject	Credit / Course	Total Credits
1.	Presentation of Research papers in International Conferences	1	1
2.	Publication of Research Papers in reputed Journals	1	1
3.	Advanced Learners Course	2	4
4.	MOOC Courses / Swayam prescribed by the Departments	2	4
5.	Visits Abroad for Participation in International Academics events	1	1
6.	Representation - Sports / Social Activities / Co curricular / Extracurricular Activities at University / District / State / National / International levels	1	2
7.	Swachh Bharath Summer Internship Programme	2	2
		Total	**15**

12. Continuous Internal Assessment (CIA)

Three CIA's shall be conducted at regular Intervals. CIA I and II shall be a 2 hours written test for a maximum of 50 marks each and CIA III shall be conducted as Model Examination for ESE.

13. OBE Evaluation - Assignment / Seminar / Role play, etc.

Three OBE Assessment parameters are decided for each course to evaluate the achievement of course outcomes which shall be assessed by the concerned course teacher. The marks allotted to this component will be awarded based on the performance of the candidate. The Rubrics for awarding the marks shall be maintained by the Course Teacher concerned.

14. Distribution of Marks

Table 17 : Distribution of marks for External and Internal for theory papers of PG courses

Total Marks	External		Internal	Overall Passing Minimum for Total Marks (Internal + External)
	Max. Marks	Passing Minimum for External alone	Max. Marks	
100	75	38	25	50
75	55	28	20	38
50	40	20	10	25

Table 18 : Distribution of Internal marks for theory papers of PG courses

S. No.	For Theory - PG courses	Distribution of Marks		
01.	CIA I	5	4	2
02.	CIA II	5	4	2
03.	CIA III	6	5	4
04.	OBE Evaluation – Tool 01	3	2	1
05.	OBE Evaluation – Tool 02	3	2	1
06.	OBE Evaluation – Tool 03	3	3	-
	TOTAL MARKS	**25**	**20**	**10**

Table 19 : Distribution of marks for External and Internal for Practical papers of PG Courses

Total Marks	External		Internal	Overall Passing Minimum for total marks (Internal + External)
	Max. Marks	Passing Minimum for External alone	Max. Marks	
100	60	30	40	50
75	45	23	30	38
50	30	15	20	25

Table 20 : Distribution of Internal marks for PG practical papers

S. No.	For PG Practical Courses	Distribution of Marks		
01.	Laboratory Performance - Assessment Tool 01*	5	4	3
02.	Laboratory Performance - Assessment Tool 02*	5	4	3
03.	Laboratory Performance - Assessment Tool 03*	5	4	3
04.	Test 1 : During Mid semester	10	7	4
05.	Test 2 : As model test at the end of the semester	10	7	4
06.	Observation Note Book	5	4	3
Total Marks		**40**	**30**	**20**

Table 21 : Distribution of External marks for PG practical papers

S. No.	For - UG practical courses	Distribution of Marks		
1.	Experiment-I	20	15	10
2.	Experiment-II	20	15	10
3.	Record	10	10	5
4.	Viva Voce	10	5	5
	TOTAL MARKS	**60**	**45**	**30**

Table 22 : Distribution of marks for Project and Viva Voce examinations and Continuous Internal Assessments and passing minimum marks for the Project / Industrial Training courses of PG programmes

Total Marks	External		Internal	Overall Passing Minimum for Total Marks (Internal + External)
	Max. Marks	Passing Minimum for External alone	Max. Marks	
250	150	75	100	125
200	120	60	80	100
150	90	45	60	75
100	60	30	40	50

Table 23 : Distribution of marks for the Continuous Internal assessment in PG Project / Industrial Training Courses

S. No.	For - PG Project courses	Distribution of Marks			
1.	Review-I	20	15	10	10
2.	Review-II	20	15	10	10
3.	Review-III	20	15	10	10
4.	Document, Preparation and Implementation	25	20	15	10
5.	Research Paper Publication in Journals**	15	15	15	-
	TOTAL MARKS	**100**	**80**	**60**	**40**

**Wherever it is not possible, an equivalent Assessment tool shall be prescribed by the Board Chairperson.

Table 24 : Distribution of marks for the External Examination in PG Project / Industrial Training courses

S. No.	For - PG Project courses	Distribution of Marks			
1.	Record Work and Presentation	100	80	60	40
2.	Viva Voce	50	40	30	20
	TOTAL MARKS	**150**	**120**	**90**	**60**

15. Passing Minimum:

A candidate who secures **not less than 50%** in the End Semester Examination and 50% marks in the External examination and Continuous Internal Assessment put together in any courses shall be declared to have passed the examination in the subject (Theory and Practical). Thus the minimum pass mark is 38 out of 75 in ESE and 50 marks out of 100 (CIA+ESE).

A candidate who passes the examination in all the courses shall be declared to have passed, the whole examination. Thus to obtain PG degree, a student should pass in all the courses prescribed in the concerned programme and also he / she should earn 94 credits.

16. Grade:

Table 25 : Classification of Grade for PG Students based on the Percentage of marks

Range of Marks	Grade Point	Letter Grade	Description
90 – 100	9.0 – 10.0	O	OUTSTANDING
80 – 89	8.0 – 8.9	D+	EXCELLENT
75 – 79	7.5 – 7.9	D	DISTINCTION
70 – 74	7.0 – 7.4	A+	VERY GOOD
60 – 69	6.0 – 6.9	A	GOOD
50 – 59	5.0 – 5.9	B	AVERAGE
00 – 49	0.0	C	RE-APPEAR
ABSENT	0.0	AA	ABSENT

17. Grade Point Average (GPA)

Grade point average (GPA) is calculated for each part taking into account all the courses studied. Calculation of grade point average semester-wise and part-wise is as follows:

$$\text{GPA} = \frac{\text{Sum of the multiplication of grade points by the credits of the courses}}{\text{Sum of the credits of the courses in a semester}}$$

$$\textbf{GPA} = \frac{\sum_i (C_i * G_i)}{\sum_i C_i}$$

Where C_i = Credit earned for course i in any semester.

G_i = Grade points obtained for course i in any semester.

18. Cumulative Grade Point Average (CGPA)

For the entire program CGPA is calculated in the following manner.

$$\textbf{CGPA} = \frac{\sum_n \sum_i C_{ni} * G_{ni}}{\sum_n \sum_i C_{ni}}$$

$$\text{CGPA} = \frac{\text{Sum of the multiplication of grade points by the credits of the entire programme under each part}}{\text{Sum of the Credits of the Courses of the entire programme under each part}}$$

19. Classification of CGPA

A candidate who has passed all the examinations under different parts is eligible for the following part wise computed final grades based on the range of CGPA.

Table 26 : Classification of performance of PG Students based on the Cumulative Grade Points Average

CGPA	Grade	Classification of Final Result
9.5 – 10.0	O+	First Class – Exemplary *
9.0 and above but below 9.5	O	
8.5 and above but below 9.0	D++	First Class with Distinction*
8.0 and above but below 8.5	D+	
7.5 and above but below 8.0	D	
7.0 and above but below 7.5	A++	First Class
6.5 and above but below 7.0	A+	
6.0 and above but below 6.5	A	
5.5 and above but below 6.0	B+	Second Class
5.0 and above but below 5.5	B	

a) A candidate who has passed all the subjects examinations in the first appearance within the prescribed duration of the PG programmes and secured a CGPA of 9 to 10 and equivalent grades “O” or “O+” in Core and Electives subjects shall be placed in the category of “First Class – Exemplary”.

b) A candidate who has passed all the subjects examinations in the first appearance within the prescribed duration of the PG programmes and secured a CGPA of 7.5 to 9 and equivalent grades “D” or “D+” or “D++” in Core and Electives subjects shall be placed in the category of “First Class with Distinction”.

c) A candidate who has passed all the subjects examinations of the PG programmes and secured a CGPA of 6 to 7.5 and equivalent grades “A” or “A+” or “A++” shall be declared to have passed in “First Class”.

d) A candidate who has passed all the subjects examination of the PG programmes and secured a CGPA of 5.0 to 6 and equivalent grades “B” or “B+” shall be declared to have passed in “Second Class”.

20. Ranking

A candidate who qualifies for the PG Degree programme passing all the Examinations in the first attempt, within the minimum period prescribed for the programme from the date of admission to the programme and secures First or Second Class shall be eligible for ranking and such ranking will be confined to 10% of the total number of candidates qualified in that particular subject to a maximum of 10 ranks. However the Programmes will be considered for ranking only when there are minimum of 10 students completing that Programme. The improved marks will not be taken into consideration for ranking.

21. Improvement of Marks in the subjects already passed

Candidates desirous of improving the marks awarded in a passed subject in their first attempt shall reappear in the subsequent semester only. The improved marks shall be considered for classification but not for ranking. When there is no improvement, there shall not be any change in the original marks already awarded.

22. Conferment of the Degree

No candidate shall be eligible for conferment of the Degree unless he / she has undergone the prescribed programme of Study for a period of not less than four Semesters in the Institution or has been exempted there from in the manner prescribed and has passed the Examinations as have been prescribed.

23. Question Paper Pattern

A: Question Paper Pattern

Time: 3 Hours **Max Marks: 75**

Knowledge Level	Q. No.	Section	Marks	Description
K1, K2, K3	1 – 10	A(Answer all the questions)	10 x 1 = 10	MCQ
K2, K3	11 – 15	B (Either or pattern)	5 x 5 = 25	Short Answers
K3, K4	16 – 21	C (Answer 3 out of 6)	3 x 10 = 30	Descriptive/ Detailed
K4, K5	22	D (Compulsory Question)	1 x 10= 10	Application Based/ HOTS

B. Question Paper Pattern

Time: 3 Hours **Max Marks: 55**

Knowledge Level	Q. No.	Section	Marks	Description
K1, K2, K3	1 – 10	A(Answer all the questions)	10 x 1 = 10	MCQ
K2, K3	11 – 15	B (Either or pattern)	5 x 4 = 20	Short Answers
K3, K4	16 – 21	C (Answer 3 out of 6)	3 x 6 = 18	Descriptive/ Detailed
K4, K5	22	D (Compulsory Question)	1 x 7 = 7	Application Based/ HOTS

C. Question Paper Pattern –Advanced Learners Course

Time: 3 Hours **Max Marks: 50**

Knowledge Level	Q. No.	Section	Marks	Description
K2, K3	1 – 5	A (Answer all the Questions)	5 × 4 = 20	Short Answers
K3 , K4	6 – 10	B (Either or pattern)	5 × 6 = 30	Descriptive/ Detailed

NOTE: The questions should be numbered continuously running through the Sections A, B and C.

Questions should be evenly distributed among the unit in the syllabus in all the sections of the question paper. While framing questions with internal choice the questions must be identified as (a) or (b). (e.g. 11. a or b). Further, the internal choice must be from the same unit.

The Controller of the Examinations shall arrange for the setting of question papers on the basis the syllabus and the pattern of question paper duly certified by the Chairpersons of the respective Board of Studies.

24. Revision of Regulations and Curriculum

The above Regulation and Scheme of Examinations will be in vogue without any change for a minimum period of three years from the date of approval of the Regulations. The Board may revise / amend / change the Regulations and Scheme of Examinations, if found necessary.

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CURRICULUM

NEHRU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

(Affiliated to Bharathiar University Accredited with "A+" Grade by NAAC,
ISO 9001:2015 (QMS) Certified, Recognized by UGC with 2(f) &12(B),
Under Star College Scheme by DBT, Govt. of India)
Nehru Gardens, Thirumalayampalayam, Coimbatore - 641 105, Tamil Nadu, Indi
E-mail: nascoffice@nehrucolleges.com. Web Site: www.nehrucolleges.net.

PROGRAMME OUTCOMES

PO1	Critical Thinking	Develop a systematic, critical approach to problem solving at all levels and apply the domain specific knowledge to form conclusions based on quantitative information to meet the specified needs with appropriate consideration for the public health and safety, and the culture, societal, and environmental considerations.
PO2	Usage of Technology	Equip the students to meet the industrial needs by utilizing tools and technologies for Peer Communication, Data Interpretation and Problem Solving aspects.
PO3	Effective Communication	Develop language competence and be proficient in oral and written communication with a focus on LSRW
PO4	Environment and Sustainability	Understand the consequential responsibilities to analyze and realize the interactions between social and environmental sustainability procedures and create processes.
PO5	Individual and team Work	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings and manifest the best outcomes.
PO6	Ethics and Values	Acquire life skills to become a better human being and apply ethical principles and commit to professional ethics and responsibilities.
PO7	Social Interactions	Participate actively in initiatives that encourage equity and growth for all and to act with an informed awareness of local, regional, national and global needs.
PO8	Life Long Learning	Engage in lifelong learning and work on career enhancement and adapt to changing personal, professional and societal needs.

NEHRU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

(Affiliated to Bharathiar University Accredited with "A+" Grade by NAAC,
ISO 9001:2015 (QMS) Certified, Recognized by UGC with 2(f) &12(B),
Under Star College Scheme by DBT, Govt. of India)
Nehru Gardens, Thirumalayampalayam, Coimbatore - 641 105, Tamil Nadu, India.
E-mail: nascoffice@nehrucolleges.com. Web Site: www.nehrucolleges.net.

Scheme of Examination

Programme Name: Bachelor of Computer Applications

Programme Code: UCA

(Applicable to the students admitted during the year 2023-2024 onwards)

Semester	Part	Course Code	Name of the Course	Instruction hours / week	Examination Marks				Credits
					Duration Hours	CIA	ESE	Total	
I	I	23U1TAM101/ 23U1HIN101/ 23U1MAL101/ 23U1FRN101	Elanthamizh Rachnathmak Hindi Kadhayum Samskaaravum Le Francais Fondamental -I	4	3	20	55	75	3
	II	23U2ENG101	Professional English - I	4	3	20	55	75	3
	III	23U3CKC101	Core Paper I: Python Programming	5	3	25	75	100	4
		23U3CKC102	Core Paper II: Digital Fundamentals and Computer Architecture	5	3	25	75	100	4
		23U3CAP101	Core Paper III: Practical in Python Programming	4	3	40	60	100	4
		23U3MIA101	Allied Paper I: Mathematics for Computer Science	5	3	25	75	100	4
	IV	21U4ENV101	*@Ability Enhancement Compulsory Course - Environmental Studies	2	3	50	-	50	2
		22U4HVY201	@Value Education: Human Values and Yoga Practice	1	-	-	-	-	-
				30				**600**	**24**
II	I	23U1TAM202/ 23U1HIN202/ 23U1MAL202/ 23U1FRN202	Pynthamizh Sanchar Hindi Novalum Bhashaapadanavum Le Francais Fondamental -II	4	3	20	55	75	3
	II	23U2ENG202	Professional English - II	4	3	20	55	75	3
	III	23U3CAC202	Core Paper IV: C Programming	5	3	25	75	100	4
		23U3CKC204	Core Paper V: Data Structures	5	3	25	75	100	4
		23U3CAP203	Core Paper VI: Practical in C Programming	4	3	40	60	100	4
		23U3MIA202	Allied Paper II:	5	3	25	75	100	4

			Discrete Mathematics						
	IV	21U4HRC202	*@ Ability Enhancement Compulsory Course - Human Rights and Constitution of India	2	3	50	-	50	2
		22U4HVY201	@ Value Education: Human Values and Yoga Practice	1	2	50	-	50	2
				30				**650**	**26**
III	I	23U1TAM303/ 23U1HIN303/ 23U1MAL303/ 23U1FRN303	Arunthamizh Sahityak Hindi Kavithayum Smaranayum Le Francais General - III	4	3	20	55	75	3
	II	23U2ENG303	Communicative English - I	4	3	20	55	75	3
	III	23U3CKC305	Core Paper VII: Operating Systems	4	3	20	55	75	3
		23U3CKC306	Core Paper VIII: Java Programming	4	3	20	55	75	3
		23U3CAP304	Core Paper IX: Practical in Java Programming	3	3	30	45	75	3
		23U3MIA303	Allied Paper III: Operations Research	4	3	25	75	100	4
		23U4CAZ301	Skill Based Paper I:Practical in LINUX	3	3	30	45	75	3
		22U4NM3BT1 / 22U4NM3AT1/ 22U4NM3CAF/ 22U4NM3GST/ 22U4NM3WRT	# @Basic Tamil – I / ##Advanced Tamil – I / * NME: Consumer Affairs / Gender Sensitization / Women's Rights	2	2	50		50	2
		SBOEC	Skill Based Open Elective Courses - Extra Departmental Course	2	3	-	50	50	2
		23U4CDVALC	Skill Enhancement Add on Course - Institute Industry Linkage	-	-	-	-	-	-
				30				**650**	**26**
IV	I	23U1TAM404/ 23U1HIN404/ 23U1MAL404/ 23U1FRN404	Muthamizh Prayogik Hindi Drisyakalaa Saahithyam Le Francais General - IV	4	3	20	55	75	3
	II	23U2ENG404	Communicative English - II	4	3	20	55	75	3
	III	23U3CKC407	Core Paper X: RDBMS and MySQL	4	3	20	55	75	3
		23U3CJC405	Core Paper XI: Computer Networks	4	3	20	55	75	3
		23U3CAP405	Core Paper XII: Practical in SQL and PL/SQL	3	3	30	45	75	3
		23U3BAA404	Allied Paper IV: Financial Accounting	4	3	20	55	75	3
		23U3CAV406	In-plant Training	-	-	50	-	50	2

	IV	23U4CAZ402	Skill Based Paper II: Practical in Multimedia Systems	3	3	30	45	75	3
		22U4NM4BT2 / 22U4NM4AT2/ 21U4NM4GEN	# @Basic Tamil – II / ##Advanced Tamil - II / General Awareness	2	2	50		50	2
		VBOEC	Value Based Open Elective Courses – Intra School Course	2	3	-	50	50	2
		23U4CDVALC	Skill Enhancement Add on Course - Institute Industry Linkage	-	-	-	-	-	Grade
				30				**675**	**27**
V	III	23U3CAC507	Core Paper XIII: Software Engineering	5	3	25	75	100	4
		23U3CAC508	Core Paper XIV: .Net Programming	5	3	20	55	75	3
		23U3CAC509	Core Paper XV: PHP Programming	5	3	20	55	75	3
		23U3CAP510	Core Paper XVI: Practical in .Net Programming	5	3	30	45	75	3
		23U3CKE501/ 23U3CKE502 23U3CKE503/ 23U3CKE504	Discipline Specific Elective Paper I	6	3	25	75	100	4
	IV	23U4CAZ503	Skill Based Paper III: Practical in Internet of Things	4	3	30	45	75	3
				30				**500**	**20**
VI	III	23U3CJC607	Core Paper XVII: Data Mining	6	3	25	75	100	4
		23U3CAV611	Project and Viva-Voce	6	-	40	60	100	4
		23U3CKE605/ 23U3CKE606/ 23U3CKE607/ 23U3CKE608	Discipline Specific Elective Paper - II	6	3	25	75	100	4
		23U3CAE609/ 23U3CAE610/ 23U3CAE611/ 23U3CAE612	Discipline Specific Elective Paper - III	6	3	25	75	100	4
	IV	23U4CAZ604	Skill Based Paper IV: Practical in R Programming	6	3	30	45	75	3
	V	23U5EXT601	Extension Activities	-	-	50	-	50	2
				30				**525**	**21**
			Total					**3600**	**144**
			Additional Credit Optional (II-VI)						**10$**

 # Basic Tamil -Students who have not studied Tamil up to 12th standard.

##**Advance Tamil** – Students who have studied Tamil language up to 12th standard and chosen other languages under part I of the UG programme but would like to advance their Tamil language skills.

*** NME** – Student shall choose any one course out of three courses.

@ No End Semester Examinations. Only Continuous Internal Assessment (CIA)

$ - Not included in Total marks and CGPA Calculation

** Examination and Evaluation for value added course shall be conducted by the Industry and the marks shall be submitted to the Controller of Examination for the award of the degree.

ELECTIVE PAPERS:

Elective Papers	Course Code		Course Code	Name of the Course
Elective Paper - I	23U3CKE501	A	23U3CKE501	Blockchain Technology
	23U3CKE502	B	23U3CKE502	Next Generation Networks
	23U3CKE503	C	23U3CKE503	Internet of Things
	23U3CKE504	D	23U3CKE504	Big Data Analytics
Elective Paper - II	23U3CKE605	A	23U3CKE605	Software Quality Assurance
	23U3CKE606	B	23U3CKE606	Information Security
	23U3CKE607	C	23U3CKE607	Cloud Computing
	23U3CKE608	D	23U3CKE608	Cyber Security
Elective Paper - III	23U3CAE609	A	23U3CAE609	Artificial Intelligence
	23U3CAE610	B	23U3CAE610	Agile Project Management
	23U3CAE611	C	23U3CAE611	Bioinformatics
	23U3CAE612	D	23U3CAE612	Mobile Application Development

EXTRA DEPARTMENTAL COURSE

S. No.	Semester	Course Code	Course Title
1	III	23U4CA3ED1	Multimedia Tools - Practical
2		23U4CA3ED2	Web Development using HTML - Practical

- Students need to opt a Course other than the Course offered by their Department.

Intra School Course offered by the Department to other Department Students (within the School)

S. No.	Course Code	Name of the Course
1	22U4VBOE01	Design Ecosystem
2	22U4VBOE02	Design Thinking
3	22U4VBOE03	Disaster Management
4	22U4VBOE04	Environmental Pollution and Waste Management (EMS)
5	22U4VBOE05	History of Ancient India
6	22U4VBOE06	Indian Knowledge System
7	22U4VBOE07	Principles of Intellectual Property Rights
8	22U4VBOE08	Science, Society and Culture
9	22U4VBOE09	Community Engagement
10	22U4VBOE10	Emotional Intelligence
11	22U4VBOE11	Fundamentals of Tourism
12	22U4VBOE12	Health Education
13	22U4VBOE13	Media and Politics
14	22U4VBOE14	Positive Psychology and Work Life
15	22U4VBOE15	Professional Ethics
16	22U4VBOE16	The Science of Happiness
17	NCC	

- Students shall opt any course within their Schools.
- NCC – Students who qualify NCC B Certificate Examination need not appear for these open Electives. The Credits shall be transferred.

Self-Study Paper offered by Computer Applications Department

S. No.	Semester	Course code	Course Title
1	Semester II to V	23UCASS01	Problem Solving and Programming
2		23UCASS02	Web Design Using HTML

SYLLABUS

Course Code	Title		
23U1TAM101	Part - I : Elanthamizh (இளந்தமிழ்)		
Semester: I	Credits: 3	CIA: 20 Marks	ESE: 55 Marks
Course Objective	மொழி இலக்கியத்தின் வாயிலாக அறம் சார் பண்பு மற்றும் ஆளுமைமிக்க மாணவர்களை உருவாக்குதல்.		
Course Category	Skill Development (மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)		
Development Needs	Regional (உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்)		
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல் மற்றும் உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	சங்க இலக்கியங்கள் வாயிலாக சமூகச் சீர்திருத்தச் சிந்தனைகள் பெறப்படும்.	விரிவுரை/ காணொளிப்பட விளக்கம்	ஒப்படைவு
CO 2	அற இலக்கியங்களின் வழி தமிழர்களின் வாழ்வியல் பண்புகளைக் கற்று அறிதல்.	விரிவுரை	குழுத்திட்டம்
CO 3	பெண்ணியக் கவிஞர்களின் படைப்புத்திறனை மாணவர்களுக்கு உணர்த்துதல்	விரிவுரை/ காணொளிப்பட விளக்கம்	கருத்தரங்கு
CO 4	சிறுகதைகளின் வழி சமூக கருத்துகளை மாணவர்களுக்கு அறிவுறுத்தல்	விரிவுரை / குழு விவாதம்	ஒப்படைவு
CO 5	தமிழ் இலக்கிய வரலாற்றுத் திறனை வளர்த்தல்	விரிவுரை/ குழு விவாதம்	கருத்தரங்கு

Offered by தமிழ்த்துறை

Course Content : Elanthamizh (இளந்தமிழ்) — **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	சங்க இலக்கியம்	1. ஐங்குறுநூறு 2. பதிற்றுப்பத்து 3. பத்துப்பாட்டு - முல்லைப்பாட்டு 4. சிறுபாணாற்றுப்படை	கிள்ளைப்பத்து (281-290) பாடல்கள் இரண்டாம் பத்து (11-15 ஐந்து பாடல்கள்) முல்லைப்பாட்டு முழுவதும் (1-103 வரிகள்) சேரநாட்டின் வளமை
		Instructional Hours	**12 Hours**
Suggested Learning Methods: நாடக முறையில் கலந்துரையாடல்			
II	அற இலக்கியம் நீதிநூல்கள்	1. அறன் வலியுறுத்தல் 2. புகழ் 3. வாய்மை 4. நாலடியார்-பொருட்பால் 5. நான்மணிக்கடிகை	31 - 40 குறட்பாக்கள் 231 - 240 குறட்பாக்கள் 291 - 300 குறட்பாக்கள் 11 ஆவது அதிகாரம் (கூடா நட்பு 1-10) முதல் ஐந்து பாடல்கள்
		Instructional Hours	**12 Hours**
Suggested Learning Methods : கலந்துரையாடல்			
III	பெண்ணியக் கவிதைகள்	1. ஆண்டாள் பிரியதர்ஷினி 2. கவிஞர் இளம்பிறை 3. சுகிர்தராணி 4. அ. வெண்ணிலா	பூச்சி வாழ்க்கை- சுயம் பேசும் கிளி தொட்டிச்செடி அம்மா நீரில் அலையும் முகம்
		Instructional Hours	**12 Hours**
Suggested Learning Methods : புதுக்கவிதை எழுதும் திறன் பெற்றமை			

IV	சிறுகதைகள்	1. குட்டி ரேவதி 2. ஜெயமோகன் 3. ச.தமிழ்ச்செல்வன் 4. வண்ணநிலவன் 5. உமாமகேஸ்வரி	நிறைய அறைகள் உள்ள வீடு யானை டாக்டர் வெயிலோடு போய் எஸ்தர் மரப்பாச்சி
		Instructional Hours	**12 Hours**
Suggested Learning Methods : சிறுகதை படைக்கும் திறன் பெற்றமை			
V	தமிழ் இலக்கிய வரலாறு	1. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும் 2. சிறுகதையின் தோற்றமும் வளர்ச்சியும் 3. படிமம், குறியீடு பற்றிய – விளக்கம்	தமிழ் இலக்கிய வரலாறு
		Instructional Hours	**12 Hours**
Suggested Learning Methods : குழு விவாதம்			
		Total Hours	**60 Hours**

Text Books	இளங்கலை முதலாம் ஆண்டுத்தமிழ் மாணவர்களுக்குரிய பாடநூல்"**இளந்தமிழ்"** தொகுப்பு: தமிழ்த்துறை ,நேரு கலை மற்றும் அறிவியல் கல்லூரி, கோயம்புத்தூர்.
Reference Books	சங்க இலக்கியம் - உரையாசிரியர் ஒளவை. துரைசாமிப்பிள்ளை, பதிப்பாசிரியர்கள் இரா.இளங்குமரனார், முனைவர்.பி.தமிழ்மகன், தமிழ்மண் அறக்கட்டளை, சென்னை.17. நிறைய அறைகள் உள்ள வீடு - குட்டிரேவதி எழுத்து பிரசுரம், 11மாடல் நகர், 10-ஆவது வீதி, சென்னை.
Web. URLs	https://youtu.be/2SMM5LvZYo0

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Seminar	Assignment	Group Project	Total
4	4	5	2	2	3	20

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	H	-	H	H	M	H	-	-	-	L	L
CO2	-	-	M	-	H	L	H	H	-	-	-	L	L
CO3	-	-	L	-	M	M	H	H	-	-	-	L	L
CO4	-	-	H	-	H	M	M	L	-	-	-	L	L
CO5	-	-	H	-	H	L	H	H	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S. Satheesh kumar	Dr. A. Sridevi

Course Code			
23U1HIN101	Part - 1 - Rachnathmak Hindi (रचनात्मक हिंदी)		
Semester: I	Credits: 3	CIA: 20 Marks	ESE: 55 Marks

(Common to all UG Programmes)

Course Objective	हिंदी भाषा का अच्छा ज्ञान प्राप्त करने के लिए।
Course Category	**Skill Development**
Development Needs	**Regional**
Course Description	**Improves Accuracy & Quality, Improves Communication Skillls**

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	नाटक से रचनात्मकता का विकास होता है। यह हमारे आसपास की दुनिया को समझने में भी मदद करता है।	Lecture / Video Methods	Assignment
CO 2	कहानियां छात्रों की कल्पना और जिज्ञासा को जगाने में मदद करती हैं।	Case Studies	Group Project
CO 3	व्याकरण हिंदी भाषा को सही ढंग से बोलने, लिखने और समझने में मदद करता है। विज्ञापन लेखन और कहानी लेखन छात्रों को उनके रचनात्मक लेखन और कल्पना शक्ति को विकसित करने में मदद करेगा।	Lectures / Video Lessons	Seminar
CO 4	अनुवाद सभी लोगों के बीच प्रभावी संचार को सक्षम बनाता है।	Lecture / Video Methods	Assignment
CO 5	गद्यांश लेखन लिखित पाठ के सार को समझने और संदर्भ के आधार पर आपके निष्कर्षों का अनुमान लगाने में आपकी बुद्धिमत्ता का आकलन करता है।	Lecture / Dumb Charades	Seminar

Offered by | **Hindi**

Course Content | **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	नाटक लड़ाई - 1979 - सर्वेश्वर दयाल सक्सेना	**1**	**All**
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			
II	कहानी - 1. मजबूरी' - मन्नू भंडारी 2. ठाकुर का कुआँ - मुंशी प्रेमचंद 3. चीफ की दावत - भीष्म साहनी 4. भोलाराम का जीव -हरिशंकर परसाई	1	1 to 4
		Instructional Hours	**12**
Suggested Learning Methods : Auditory			
III	1. अनुप्रयुक्त व्याकरण - संज्ञा, सर्वनाम, क्रिया और विशेषण की पहचान करना। 2. विज्ञापन लेखन 3. दिए गए संकेतों से कहानी लेखन।	1	1,2,3

		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive writing			
IV	**अनुवाद : अंग्रेज़ी से हिंदी (अनुवाद अभ्यास - 3) 1 - 10 अनुच्छेद**	3	1,2
		Instructional Hours	12
Suggested Learning Methods : Auditory, Visual			
V	पारिभाषिक शब्दावली , गद्यांश लेखन	5	1,2
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive writing			
		Total Hours	**60**

Text Books	1. नाटक लड़ाई - 1979 - सर्वेश्वर दयाल सक्सेना 2. 2. कहानी संग्रह 3. अनुवाद अभ्यास - 3 दक्षिण भारत हिंदी प्रचार सभा , चेन्नई -17 4. Bharatdarshan.co.nz 5. भाषाशास्त्र का पारिभाषिक शब्द कोश - राजेंद्र द्विवेदी 6. श्री रामदेव , व्याकरण प्रदीप, लोक भारती प्रकाशन, इलाहाबाद
Reference Books	संदर्भ ग्रंथ 1. हिंदी नाटक और रंगमंच - डॉ राम कुमार वर्मा 2. हिन्दी अलोचना की परीभाषिक शब्दावली - पेपरबैंक 3. आधुनिक हिंदी व्याकरण और रचना - डॉ. वासुदेव नंदन प्रसाद
Web. URLs	

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Group project	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	H	M	M	L	-	-	-	-	-	L	L
CO2	-	-	H	L	L	H	-	-	-	-	-	L	L
CO3	-	-	-	L	M	H	-	-	-	-	-	L	L
CO4	-	-	M	M	H	L	-	-	-	-	-	L	L
CO5	-	-	L	M	H	L	-	-	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S. Swarnalatha	Dr. S. Swarnalatha

Course Code			
23U1MAL101	**Part - I : Kadhayum Samskaaravum (കഥയും സംസ്കാരവും)**		
Semester: I	**Credits: 3**	**CIA: 20 Marks**	**ESE: 55 Marks**

(Common to all UG Programmes)

Course Objective	ആധുനികകാലത്തെ മലയാളകഥകളെ കുറിച്ചും സംസ്കാരത്തെ കുറിച്ചും അവബോധം ഉണ്ടാക്കുന്നു
Course Category	Skill Development
Development Needs	Regional
Course Description	Improve accuracy & quality, improve communication

Course Outcomes		**Teaching Methods**	**Assessment Methods**
CO 1	കഥയുടെ സംവേദനം ആസ്വാദകന്റെ അഭിരുചിയെ പൂർത്തിയാക്കുന്നു	Lecture / Video Methods	Assignment
CO 2	പ്രകൃതിയുമായി ബന്ധപ്പെടുന്ന കഥാപരിസരം	Case studies	Group Project
CO 3	ഭക്ഷണവും അതിന്റെ സംസ്കാരവും കൂട്ടായ്മ ഉണ്ടാക്കുന്നു	Lectures / Video Lessons	Seminar
CO 4	ഭക്ഷണത്തിന്റെ മൂല്യം അർത്ഥവത്താക്കുന്നു	Lecture / Video Methods	Assignment
CO 5	ആശയ വിപുലനം	Lecture / Dumb Charades	Seminar

Offered by | **Malayalam**

Course Content | **Instructional Hours / Week : 4**

Unit	**Description**	**Text Book**	**Chapters**
I	ചെറുകഥകൾ - സമകാലിക കഥകൾ 1. പരുന്ത് - ഇ.സന്തോഷ്കുമാർ 2. പാലാഴിമഥനം - കെ.രേഖ 3. കുളവാഴ - വി .എം .ദേവദാസ് 4. മരണമുണ്ടാക്കിക്കളിക്കാം - പി .വി ഷാജികുമാർ 5. കക്കുകളി - ഫ്രാൻസിസ് നൊറോണ	1	1 to 5
	Instructional Hours		**12**
Suggested Learning Methods : Visual Learning			
II	നവോത്ഥാനകഥകൾ 1. വെള്ളപ്പൊക്കത്തിൽ - തകഴി 2. ബസു യാത്ര - കേശവദേവ് 3. മരപ്പാവകൾ - കാരൂർ 4. മാണിക്കൻ - ലളിതാംബിക അന്തർജനം 5. ജന്മദിനം - ബഷീർ	1	6 to 10
	Instructional Hours		**12**
Suggested Learning Methods : Auditory			
III	സംസ്കാര പഠനം - കേരളത്തിലെ രുചിഭേദങ്ങൾ 1. കാസർകോടും കന്നയാളവും ദൈവവിപ്ലവത്തിന്റെ കണ്ണൂരും	1	1,2,3

	2. സാമൂതിരി ,മുട്ടമാല ,എരന്ത് ,ബ്രാഹ്മണാൾ -(കോഴിക്കോട്) 3. മലപ്പുറം കേരളത്തിൻറെ അറേബ്യ		
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive writing			
IV	സംസ്കാര പഠനം - കേരളത്തിലെ രുചിഭേദങ്ങൾ 1. ചേട്ടായിയെ ഇത് ശൂരാട്ടാ - തൃശ്ശൂർ 2. കരിമ്പനകളുടെ നാട്ടിൽ - പാലക്കാട്	1	4,5
		Instructional Hours	**12**
Suggested Learning Methods : Auditory, Visual			
V	നവമാധ്യമങ്ങൾ - വിവർത്തനം	1	1,2,3
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive writing			
		Total Hours	**60**

Text Books	1. ചെറുകഥകൾ - (10 ചെറുകഥകൾ) 2. സംസ്കാര പഠനം - നാടൻ കേരള എക്സ്പ്രസ്സ് ഡോ.സി. ഗണേഷ്, ഗ്രീൻ ബുക്ക്സ് തൃശ്ശൂർ 3. നവമാധ്യമങ്ങൾ - ടി.കെ .സന്തോഷ്കുമാർ ഡി.സി.ബുക്ക്സ് കോട്ടയം
Reference Books	1. എം. അച്യുതൻ - ചെറുകഥ ഇന്നലെ ഇന്ന് - ഡി.സി.ബുക്സ് കോട്ടയം 2. ചെറുകഥയുടെ ഛന്ദസ്- വി. രാജകൃഷ്ണൻ മാതൃഭൂമി ബുക്സ് കോഴിക്കോട് 3. പുതിയ കഥ പുതിയ വായന - എഡി : ഡോ.ഷീബാ ദിവാകരൻ പുസ്തകലോകം പ്രസദ്ധീകരണം കോഴിക്കോട് 4. കേരള സംസ്കാരം - എ .ശ്രീധര മേനോൻ നാഷണൽ ബുക്ക്സ് കോട്ടയം 5. ന്യൂസ് റൂമിന്റെ അകവും പുറവും - ബി.ആർ .പി.ഭാസ്കർ ഗ്രീൻ ബുക്ക്സ് തൃശ്ശൂർ
Web. URLs	**http://www.keralaculture.org>literature**

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Group project	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO 5
CO1	H	H	H	M	H	H	H	H	-	-	-	L	L
CO2	H	H	H	L	H	M	H	H	-	-	-	L	L
CO3	H	M	H	M	M	H	H	M	-	-	-	L	L
CO4	H	H	L	M	L	H	H	H	-	-	-	L	L
CO5	H	L	L	L	H	H	H	L	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Ms. N. RAJANI	Dr. SMITHA C. R.

Course Code	Title		
23U1FRN101	Part - I : Le Français Fondamental - I		
Semester : I	Credits : 3	CIA : 20 Marks	ESE : 55 Marks
(Common to all UG Programmes)			
Course Objective	Acquisition of standard French through fundamental French grammar.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	This course has basic knowledge of the French grammar and aims to build a solid foundation in the acquisition of standard French through fundamental French grammar		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Learn basic French grammar along with French civilisation	Lecture	Assignment
CO 2	Knows the gender of nouns	Word game/ Lecture	Seminar
CO 3	Learn Negation, articles, and understand the usage of prepositions.	Lectures / Video Lessons	Quiz
CO 4	Learn Futur proche, Pronominal verb,	Tutorial / Case Studies	Assignment
CO 5	Know to self-introduce and translate simple sentences	Lecture /	Group project

Offered by French

Course Content — **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	Mes cinq sens en action	1	0
		Instructional Hours	12
Suggested Learning Methods: Worksheets , Reading practice			
II	S'ouvrir aux autres	1	1
		Instructional Hours	12
Suggested Learning Methods: Kahoot App, Worksheets			
III	Partager son lieu de vie	1	2
		Instructional Hours	12
Suggested Learning Methods : Audio & Visual, Speaking practice			
IV	Vivre au quotidien	1	3
		Instructional Hours	12
Suggested Learning Methods : Comprehensive Writing			

V	S'ouvrir à la culture	1	4
		Instructional Hours	**12**
Suggested Learning Methods: Translating simple sentences, comprehending the passage.			
		Total Hours	**60**
Text Books	Saison 1 Méthode de Français – Marie-Noëlle Cocton, Anouchka De Oliveira, Dorothée Dupleix (Unit 0 to 4)		
Reference books	A1 Echo Méthode de Français		
Web. URLs	Lingua.com, TV 5 app,		

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	H	M	H	H	-	-	-	-	-	L	L
CO2	-	-	H	L	H	M	-	-	-	-	-	L	L
CO3	-	-	-	M	M	H	-	-	-	-	-	L	L
CO4	-	-	L	M	L	H	-	-	-	-	-	L	L
CO5	-	-	L	-	H	-	-	-	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by
D Balaji	D Balaji

Course Code	Title		
23U2ENG101	Part – II : Professional English – I		
Semester : I	Credits : 3	CIA : 20 Marks	ESE : 55 Marks
(Common to all UG Programmes)			
Course Objective	To help students to imbibe, develop, practice and use the LSRW skills and fine tune their productive skills.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	SD: Helps to develop LSRW skill		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Recognize listening, and reading proficiency through the prose discourses.	Lecture/Tutorial	Assignment
CO 2	Use and interpret imaginative, and creative skills through the poetic genre.	Lecture/Tutorial	Assignment
CO 3	Enhance the students to use English effectively through short story.	Lecture/Tutorial	Speaking
CO 4	Execute and exercise grammatical skills in academics and career.	Lecture/Tutorial	Reading
CO 5	Evaluate the LSRW skills through literature.	Lecture/Tutorial	Writing

Offered by | **Department of English**

Course Content | **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	**Prose** Leigh Hunt – Getting Up On Cold Morning Rajagopalachari – Tree Speaks A.G. Gardiner – On the Rule of the Road **Listening Activity** – Comprehension practice from Prose.	1	1-3
	Instructional Hours		**12**
Suggested Learning Methods : Flipped Learning			
II	**Poetry** John Milton – On His Blindness Maya Angelou -Phenomenal Women A. K. Ramanujan – A River **Speaking Activity** – Group Discussion Forum	1	4-6
	Instructional Hours		**12**
Suggested Learning Methods : Flipped Learning			

III	**Short Stories** O. Henry – The Last Leaf R. K. Narayan – The Missing Mail Oscar Wilde - The Happy Prince **Reading Activity** – Pronunciation practice and enhancement from Short-stories	1	7-9
		Instructional Hours	**12**
Suggested Learning Methods : Tutorial			
IV	**Grammar** Parts of Speech Tenses Kinds of Sentences **Writing Activity** – Paragraph Writing using grammar Components	1	10-13
		Instructional Hours	**12**
Suggested Learning Methods : Tutorial			
V	**Writing Skills** Letter Writing (Formal & Informal) Notice, Writing Circular Memo, Advertisement Minutes of the Meeting	1	14-17
		Instructional Hours	**12**
Suggested Learning Methods : ABL			
		Total Hours	**60**

Text Books	Compiled by the Department of English, NASC.
Reference Books	CLIL (Content & Language Integrated Learning) – Module by TANSCHE NOTE: (Text: Prescribed chapters or pages will be given to the students by the department and the college)
Web. URLs	https://www.youtube.com/watch?v=QrUPneyZNf0

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Speaking	Reading	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	L	H	L	M	M	H	M	H	H	M	H	M
CO2	M	L	H	L	H	M	H	M	H	H	M	H	M
CO3	M	L	H	L	H	H	H	H	H	H	M	H	M
CO4	M	L	H	L	H	L	H	H	H	H	M	H	H
CO5	H	M	H	L	H	H	H	H	H	H	H	H	M

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
D Pradeek	Dr R Malathi

Course Code	Title		
23U3CKC101	Core Paper I: Python Programming		
Semester: I	Credits: 4	CIA: 25 Marks	ESE: 75 Marks
(Common to B. Sc. IT / AIML / BCA / DCFS / CS (DS))			
Course Objective	To develop algorithmic solutions to simple computational problems using Python		
Course Category	Employability		
Development Needs	Global		
Course Description	This course will provide a pragmatic and hands-on introduction to the Python programming. It helps to familiarize with different data types, operators, string methods and file operations.		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the basics of Python and write simple python program.	Lecture	Assignment
CO 2	Develop Python programs with Control Statement and List method.	Demonstration	Seminar
CO 3	Apply Tuples, Functions and Set Iterators to develop simple applications	Demonstration	Quiz
CO 4	Apply Python Strings, Multithreading and Exceptions for problem solving.	Flipped Classroom	Program Execution
CO 5	Manipulate Files and perform Event Handling.	Lecture	Program Execution

Offered by	Information Technology
Course Content	Instructional Hours / Week : 5

Unit	Description	Text Book	Chapters
I	**Fundamentals of Python Programming:** Introduction – Features – Applications – Installation-Sample Program-Python Virtual Machine-Memory management in Python-Comparison between C, Java and Python- Keywords, Identifiers, Statements, Indentation. Syntax and Styles: Data Types – Literals – Variables-Operators and Expressions-Evaluation of Expression-Sample Programs.	1	1,2
		Instructional Hours	15
Suggested Learning Methods: Video lectures about the basics of Python Programming			
II	**Control Flow:** If – While – For – Break – Continue-Pass-Entry Controlled Loop - Exit Controlled Loop – Counter Controlled Loop - Condition Controlled Loop - Nested Loop - Sample Programs. Arrays-Sequences - Python Lists: Read a List type from a Keyboard-Accessing Elements of a List- Modifying Elements of a List – Basic Operations - Built-in Functions – Python List Methods.	1,2	3,4,5,9
		Instructional Hours	15
Suggested Learning Methods: Practice using Flow Charts			
III	Tuples - Need of a Tuple -Sequence of Unpacking – Methods –Sample programs. Dictionaries: Making a Dictionary-Basic Operations-Dictionary Operations – Sets- Iterators and Generators – Sample Programs. Functions: Defining Functions-Calling Functions-Passing Arguments-Keyword Arguments - Default Arguments-Required	1	6,7,8

	Arguments-Variable Length Arguments-Return Statements-Nesting of Passing Arguments-Anonymous Functions-Recursive Functions- Scope of Local and Global Variables.		
		Instructional Hours	15
Suggested Learning Methods: Develop small programmes using tuples			
IV	**Strings in Python:** Reading – Accessing – Modifying – Finding - Iterating through a String - Build-in String Functions. Errors and Exceptions – Multithreading	2	8
		Instructional Hours	
Suggested Learning Methods: Develop small applications			
V	**Files and Directory Access:** Files and Streams - Opening a File - Reading/Writing Operations in a File - Other operations in a File - Iterating through a File - Splitting Words - Serialization and Deserialization. Events: Event Objects - Binding callbacks to events - Event names - Keyboard events - Mouse Events - Sample Programs	1	13,17
		Instructional Hours	15
Suggested Learning Methods: Laboratory practice			
		Total Hours	**75Hrs**

Text Books	1. Ch.Satyanaryana, M.Radhika Mani, B.N. Jagadesh, Python Programming, University Press Pvt. Ltd.2018. 2. Dr.S.A.Kulkarni, Problem Solving and Python Programming, 2nd Edition, Yesdee Publishing,2018
Reference Books	1. Allen B. Downey, Think Python: How to Think Like a Computer Scientist, 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers,2016 2. Guido van Rossum and Fred L. Drake Jr, An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd.,2011.
Web. URLs	https://www.w3schools.com/python/

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	L	M	M	-	-	M	H	H	M	M
CO2	M	M	M	M	H	M	-	-	H	H	H	M	H
CO3	H	L	M	H	M	M	-	-	M	H	H	M	M
CO4	M	H	L	M	L	L	-	-	H	M	H	H	M
CO5	M	M	H	H	M	H	-	-	H	H	M	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. D. Suryaprabha	Dr. J. Maria Shyla

Course Code	Title		
23U3CKC102	Core Paper II: Digital Fundamentals and Computer Architecture		
Semester: I	Credits: 4	CIA: 25 Marks	ESE:75 Marks
(Common to B. Sc. CS / IT / BCA)			
Course Objective	To enable the students to know about the Operations in digital computer, Boolean algebra, CPU Architecture, memory design and its functionality		
Course Category	Skill Development		
Development Needs	Global		
Course Description	Understand Number Conversion, the concept of I/O organization and logic circuits. Analyze memory organization and multiprocessor in digital computers.		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Perform number conversion and identify the logic gates.	Lecture, Problem Based Teaching and Tutorial	Quiz
CO 2	Design basic combinational logical circuit.	Lecture Demonstration	Quiz
CO 3	Understand the concept of I/O organization	Video Lessons	Assignment
CO 4	Apply priority to interrupts and use it for data transfer.	Lecture,Tutorial	Assignment
CO 5	Analyse memory organization and multiprocessor in digital computers.	Lecture,Tutorial	Seminar

Offered by Computer Science

Course Content — **Instructional Hours / Week: 5**

Unit	Description	Text Book	Chapters
I	**Digital Logic – Digital Operations - Digital Computers.** **Number System and Binary Codes:** Decimal, Binary, Octal, Hexadecimal Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess3, Gray Code. Arithmetic Circuits: Half adder, Full adder, Parallel binary adder, BCD adder, Serial Adder, Half subtractor, Full subtractor, Parallel binary subtractor- Digital Logic: The Basic Gates –NOR, NAND, XOR Gates.	1,2	1,3,4
		Instructional Hours	**15**
Suggested Learning Methods: Number System Problem Solving			
II	**Combinational Logic Circuits:** Boolean algebra-Karnaugh map – Canonical form 1 – Construction and properties –Implicants – Don‘t care combinations - Product of sum, Sum of products, simplifications. Sequential circuits: Flip-Flops: RS, D, JK, and T - Multiplexers – Demultiplexers – Decoder -Encoder – shift registers-Counters	1,2	2,5,6
		Instructional Hours	**15**
Suggested Learning Methods: Video Presentation			
III	**Input – Output Organization:** Input – output interface – I/O Bus and Interface – I/O Bus Versus Memory Bus – Isolated Versus Memory – Mapped I/O – Example of I/O Interface. Asynchronous data transfer: Strobe Control and Handshaking- Modes of Transfer	3	11
		Instructional Hours	**15**
Suggested Learning Methods: Report Preparation			

IV	**Priority Interrupt:** Daisy- Chaining Priority, Parallel Priority Interrupt. Direct Memory Access: DMA Controller, DMA Transfer. Input – Output Processor: CPU-IOP Communication-Serial Communication-Character Oriented Protocol, Data Transparency, Bit Oriented Protocol.	3	11
		Instructional Hours	**15**
	Suggested Learning Methods: Report Preparation		
V	**Memory Organization**: Memory Hierarchy – Main Memory-Associative memory: Hardware Organization, Match Logic, Read Operation, Write Operation. Cache Memory: Associative, Direct, Set-associative Mapping – Writing into Cache Initialization. **Multiprocessor: Interconnection** Structure, Interprocessor Arbitration, Interprocessor Communication and Synchronization.	3	12
		Instructional Hours	**15**
	Suggested Learning Methods - Video Presentation		
		Total Hours	**75**

Text Books	1. V.K. Puri&Henry**Digital Electronics Circuits and Systems**, TMH, 1997. 2. M. Morris Mano, **Computer System Architecture**, PHI publications,2000.
Reference Books	1. M. Carter, Computer **Architecture**, Schaum'S Outline Series, TMH, 1996.
Web. URLs	https://www.educba.com/digital-computer-fundamentals/

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	**25**

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H		M	M		M	H	H	H	H	M	M
CO2	H	H		M	M		M	H	H	H	H	M	M
CO3	H	H		M	M		M	H	H	H	H	H	H
CO4	H	H		M	M		M	H	H	H	H	H	H
CO5	H	H		M	M		M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. D. Vimalkumar	Dr. N. Kavitha

Course Code	Title		
23U3CAP101	Core Paper III: Practical in Python Programming		
Semester: I	Credits: 4	CIA: 40 Marks	ESE: 60 Marks

Course Objective	To introduce the concepts of python programming constructs.
Course Category	Skill Development /Employability/Entrepreneurship
Development Needs	Global
Course Description	To development skill set in python programming and applies the concepts to develop applications in order to meet the Local and Global needs.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Develop simple Python programs.	Program Demonstration, Projects	Program Creativity
CO 2	Understand and apply the concept of control statements.	Program Demonstration	Debugging
CO 3	Apply the concept of looping constructs and functions for solving basic programs.	Laboratory Practice,	Application of Logic
CO 4	Develop programs for sorting of Strings, Lists, Tuples and File handler.	Constructivist learning, Code review	Program Development
CO 5	Create programs using Linear and Binary Search Techniques	Demonstration, Projects	Program Development

Offered by	**Computer Applications**

Course Content **Instructional Hours / Week: 4**

Unit	List of Practical
1	Write a python program that displays the following information: Yourname, FullAddress Mobile, number, College name, Course subjects.
2	Write a python program to find the largest three integer using if-else and conditional operator.
3	Write a python program that asks the user to enter a series of positive numbers (The user should enter a negative number to signal the end of the series) and the program should display the numbers inorder and their sum.
4	Write a python program to find the product of two matrices.
5	Write recursive functions for GCD of two integers.
6	Write recursive functions for the factorial of positive integer.
7	Write recursive functions for Fibonacci Sequence upto given number n.
8	Write recursive functions to display prime number from 2 to n.
9	Write a python program that writes a series of random numbers to a file from 1 to n and display.
10	Write a python program to sort a given sequence: String, List and Tuple.
11	Write a python program to make a simple calculator.
12	Write a python program for Linear Search and Binary Search.
13	Write python program in which a function (with single string parameter)is defined and calling that function prints the string parameters given to function.

14	Write python program in which a class is define, then create object of that class and call simple print function define in class.
Total Hours	**60**
Suggested Learning Methods: Solving Case studies, Program development, Code Review and Peer Coding	

Tools for Assessment (40 Marks)

Application of Logic	e-Program Creativity	e- Program Debugging	Test 1	Test 2	Observation Note Book	Total
5	5	5	10	10	5	**40**

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	-	M	H	-	M	H	H	H	H	M	M
CO2	H	H	-	M	H	-	M	H	H	H	H	M	M
CO3	H	H	-	M	H	-	M	H	H	H	H	H	H
CO4	H	H	-	M	H	-	M	H	H	H	H	H	H
CO5	H	H	-	M	H	-	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Mrs. Raynukaazhakarsamy	Dr. K. Selvavinayaki

Course Code	Title		
23U3MIA101	Allied Paper I : Mathematics for Computer Science		
Semester: I	Credits: 4	CIA: 25 Marks	ESE: 75 Marks
(Common to B. Sc. DCFS / CS / IT / BCA)			
Course Objective	To enable the students to learn concepts of Statistical and Numerical Methods used in Computer applications.		
Course Category	Skill Development		
Development Needs	Regional		
Course Description	This course covers a mix of applied linear algebra, Statistics and Numerical Analysis; it covers a central point of contact between Mathematics and Computer science.		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Know the concepts of Matrices and solve the problem using Eigen values.	Lectures / Video Lectures	Problem solving Skill
CO 2	Solve Simultaneous Linear algebraic equations.	Lectures / Tutorial	Assignment
CO 3	Relate various formulae in Numerical Differentiation and Integration	Lectures / Video Lectures	Seminar
CO 4	Evaluate the Measures of central tendency and dispersion.	Lectures / Peer Teaching	Problem solving Skill
CO 5	Analyse Correlation and Regression	Lecture / Tutorial	Quiz

Offered by | **Mathematics**

Course Content | **Instructional Hours / Week :5**

Unit	Description	Text Book	Chapters
I	**Matrices:** Introduction – Types of Matrices –Matrix Operations - Determination – Inverse of a matrix – Rank of a Matrix. Eigen value Problems.	1,3	4
		Instructional Hours	**15**
Suggested Learning Methods: Problem Solving Practice			
II	**System of Simultaneous Linear Algebraic Equations:** Gauss Elimination, Gauss Jordon, Gauss Jacobi Method, Gauss Seidal method (up to 3x 3 matrices).	2	4
		Instructional Hours	**15**
Suggested Learning Methods: Class Test			
III	**Numerical Differentiations:** Newton's forward Difference - Backward Difference – Stirling's formula. **Numerical Integration:** Trapezoidal Rule - Simpson's $1/3^{rd}$rule& Simpson's $3/8^{th}$ rule.	2	9
		Instructional Hours	**15**
Suggested Learning Methods: Problem Solving Practice			

IV	**Measures of Central Tendency:** Mean Median and Mode – Empirical Relationship between mean, median and mode. **Measures of Dispersion:** Range, Quartile deviation and Standard deviation.	3	7,8
		Instructional Hours	**15**
Suggested Learning Methods : Quiz			
V	**Correlation:** Introduction, Scatter Diagram - Karl Pearson's Correlation and Spearman's Rank Correlation. **Regression:** Regression equation of variables – Linear Regression.	3	10,11
		Instructional Hours	**15**
Suggested Learning Methods: Problem Solving Practice			
		Total Hours	**75**

Text Books	1. P. Kandasamy, K.Thilgavathy, K. Gunavathy, **Engineering Mathematics**, **Volume I**, S.Chand Company, 2006. 2. P.Kandasamy, K.Thilagavathy and K.Gunavathy, **Numerical Methods**, S.Chand& Company LTD, Revised 2005. 3. S. P. Gupta, **Statistical Methods**,Sultan Chand & Sons, Fourth edition, Reprint 2017.
Reference Books	1. E. Balagurusamy, **Numerical Methods**, Tata McGraw Hill publishing company LTD, Reprint, 2008. 2. P.A.Navanitham, **Business Mathematics and Statistics**, **(Part II),** Jai Publishers, Trichy – 21.
Web. URLs	1. https://youtu.be/MG7t6SWBnwA 2. https://www.youtube.com/watch?v=1MiT06JFNo4

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Problem Solving Skills	Assignment	Seminar	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	L	M	M	M	M	L	H	H	H	H	H
CO2	H	H	L	M	M	M	M	L	M	M	H	M	M
CO3	H	M	L	M	M	M	M	L	M	L	H	H	M
CO4	H	M	L	M	M	M	M	L	H	M	H	M	H
CO5	H	M	L	M	M	M	M	L	H	M	H	H	M

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Ms. S. Ruth Kethsial	Dr. T. Chandrapushpam

Course Code	Title	
21U4ENV101	Ability Enhancement Compulsory Course - Environmental Studies	
Semester : I	Credits : 2	CIA : 50 Marks

(Common to all UG Programmes)

Course Objective:

This course enables the students to recognize the interconnectedness of multiple factors in environmental challenges and communicate clearly and competently matters of environment concern.

Course Outcomes:

On completion of course the students will be able to

CO 1	Understand key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.
CO 2	Understand concepts and methods from ecological and physical sciences and their application in environmental problem solving.
CO 3	Solve the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
CO 4	Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.
CO 5	Apply systems concepts and methodologies to analyse and understand interactions between social and environmental processes.

Course Content **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapter
I	**Natural Resources:** Forest resources, Water resources, Mineral resources, Food resources, Energy resources and Land resources.	1	2
	Instructional Hours		**6**
II	**Ecosystems:** Concept of an ecosystem, Structure and function; Introduction, types, characteristic features, structure and function of ecosystem - Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries). **Activity: Prepare an album on types of Ecosystem.**	1	3
	Instructional Hours		**6**
III	**Environmental Pollution:** Definition Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution and Noise pollution, Solid waste management. **Activity: Discuss the solutions for water pollution**	1	5
	Instructional Hours		**6**
IV	**Social Issues and the Environment:** Water conservation, rain water harvesting, watershed management, Environmental ethics - Issue summits' and possible solutions and Public awareness. **Activity: Identify and analyse a Social Issue and an Environment issue in your locality.**	1	6
	Instructional Hours		**6**

V	**Disaster Management:** Floods, Earthquakes, Cyclones, Landslides: From management to mitigation of disasters: The main elements of a mitigation and measures of strategy: Floods, Earthquakes, Cyclones and Landslides	2	16
		Instructional Hours	**6**
Field Work: Visit to local area to document Environmental assets (River / Forest / Grass land / Mountain), Visit to local polluted site (Urban / Rural /industrial / Agricultural), Study of common plants, insects, birds, Study of simple ecosystem: Pond, River, Hill slopes.			
		Total Hours	**30**

Text Book(s):

1. Shashi Chawla. A Text Book of Environmental Studies, Tata McGraw-Hill, 2012.
2. From UGC website: https://www.ugc.ac.in/oldpdf/modelcurriculum/env.pdf

Reference Book(s):

1. Agarwal, K.C. 2001 Environmental Biology, Nidi Public Ltd., Bikaner.
2. Jadhav, H & Bhosale, V.M. 1995 Environmental Protection and Laws Himalaya Pub. House, Delhi 284 p.
3. Mckinney, M.L. & Schoch R.M. 1996. Environmental Science systems & Solutions
4. Odum, E.P. 1971 Fundamentals of Ecology. W.B. Saunders Co. USA. 574 p
5. Rao MN & Datta, A.K. 1987 Waste Water treatment, Oxford & IBH Publication Co. Pvt. Ltd., 345 p.

Tools for Assessment (50 Marks)

Ecosystem Album Preparation	Field visit and report submission	Group discussions about issues related to their locality / about Disaster Management	CIA	Total
10	10	5	25	50

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	-	L	H	H	H	H	L	M	L	M	M	L
CO2	L	-	L	H	H	H	H	L	M	L	M	L	M
CO3	L	-	L	H	H	H	H	L	M	L	L	L	M
CO4	L	-	L	H	H	H	H	L	L	L	L	L	L
CO5	L	-	L	H	H	H	H	L	L	L	M	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. M. Thangavel	Dr. M. Thangavel

Course Code	Title		
23U1TAM202	Part - I : Pynthamizh (பைந்தமிழ்)		
Semester: II	Credits: 3	CIA: 20 Marks	ESE: 55 Marks
Course Objective	மொழி இலக்கியத்தின் வாயிலாக அறம் சார் பண்பு மற்றும் ஆளுமை மிக்க மாணவர்களை உருவாக்குதல்.		
Course Category	Skill Development (மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)		
Development Needs	Global /Regional(உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்)		
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல் மற்றும் உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	பக்தி இலக்கியங்கள் வழி வாழ்வியல் நெறிகளை மாணவர்களுக்கு எடுத்துரைத்தல்	விரிவுரை/காணொளிப்பட விளக்கம்	ஒப்படைவு
CO 2	சிற்றிலக்கியங்களின் மூலம் தமிழர்களின் வாழ்க்கை கூறுகளை எடுத்துரைத்தல்	விரிவுரை	குழுத்திட்டம்
CO 3	தமிழ் நாவல்களின் வழி சமுதாயச் சிந்தனைகளைக் கூறுதல்	விரிவுரை/காணொளிப்பட விளக்கம்	கருத்தரங்கு
CO 4	இலக்கண அறிவை வளர்த்தல்	விரிவுரை	ஒப்படைவு
CO 5	தமிழ் இலக்கிய வரலாற்றுத்திறனை மேம்பாடு அடையச் செய்தல்	விரிவுரை/ குழு விவாதம்	கருத்தரங்கு

Offered by தமிழ்த்துறை

Course Content: Pynthamizh (பைந்தமிழ்) — **Instructional Hours / Week : 4**

Unit	Description		Text Book & Chapters
I	பக்தி இலக்கியங்கள்	1. திருமந்திரம் - மூன்றாம் தந்திரம் (அதிகாரம் 2) 2. நாலாயிரத் திவ்வியப்பிரபந்தம்- பெரியாழ்வார் 3. மாணிக்கவாசகர்-எட்டாம் திருமுறை 4. திருநாவுக்கரசர்- திருவரங்கமாலை	அட்டமாசித்திகள் திருப்பல்லாண்டு அச்சோப்பதிகம் நான்காம் திருமுறை - தேவாரம்
		Instructional Hours	**12 Hours**
Suggested Learning Methods: ஆன்மிக சிந்தனைத்திறன் பெற்றமை			
II	சிற்றிலக்கியங்கள்	1. கலம்பகம் - நந்திக்கலம்பகம் 2. பள்ளு – முக்கூடற்பள்ளு 3. குறவஞ்சி – திருக்குற்றாலக்குறவஞ்சி 4. பிள்ளைத்தமிழ் - மீனாட்சியம்மை பிள்ளைத்தமிழ் 5. பட்டினத்தார் பாடல்கள்	91 -100 பாடல்கள் 350 - 360 செய்யுள்கள் 1-10 செய்யுள்கள் 1 -10 செய்யுள்கள் 358 - 367 பாடல்கள்
		Instructional Hours	**12 Hours**
Suggested Learning Methods : கலந்துரையாடல்			
III	நாவல்	1. இமையம் (வெ.அண்ணாமலை)	செல்லாத பணம்
		Instructional Hours	**12 Hours**
Suggested Learning Methods : நாவல் எழுதும் திறன் பெற்றமை			

IV	இலக்கணம்	1. வல்லினம் மிகும் இடங்கள் 2. வல்லினம் மிகா இடங்கள் 3. யாப்பின் உறுப்புகள் (எழுத்து முதல் தொடை வரை) 4. பாவின் வகைகள்	தமிழ் இலக்கணம்
		Instructional Hours	**12 Hours**
Suggested Learning Methods : பிழையின்றி தமிழ் எழுதுதல்			
V	தமிழ் இலக்கிய வரலாறு	1. சிற்றிலக்கியத்தின் தோற்றமும் வளர்ச்சியும் 2. புதினத்தின் தோற்றமும் வளர்ச்சியும் 3. பக்தி இலக்கியத்தின் தோற்றமும் வளர்ச்சியும் 4. விண்ணப்பங்கள், மடல்கள் எழுதச்செய்தல்	தமிழ் இலக்கிய வரலாறு
		Instructional Hours	**12 Hours**
Suggested Learning Methods : குழு விவாதம்			
		Total Hours	**60 Hours**

Text Books	1. இளங்கலை முதலாம் ஆண்டுத்தமிழ் மாணவர்களுக்குரிய பாடநூல் "பைந்தமிழ்" தொகுப்பு: தமிழ்த்துறை, நேரு கலை மற்றும் அறிவியல் கல்லூரி, கோயம்புத்தூர்.
Reference Books	1. திருமந்திரம் - மாணிக்கவாசகர் அருளிய திருவாசகம் - சித்தாந்த பண்டிதர் திரு.ப.இராமநாத பிள்ளை விளக்க உரையுடன் கழக வெளியீடு, திருநெல்வேலி, 2. தமிழண்ணல - புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, மீனாட்சிப் புத்தக நிலையம் மதுரை.
Web. URLs	https://youtu.be/cL89sSZq_FI

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Seminar	Assignment	Group Project	Total
4	4	5	2	2	3	20

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	**L**	H	L	H	H	M	H	-	-	-	L	L
CO2	H	**L**	M	L	H	L	H	H	-	-	-	L	L
CO3	H	**L**	L	L	M	M	H	H	-	-	-	L	L
CO4	H	**L**	H	L	H	M	M	L	-	-	-	L	L
CO5	H	**L**	H	L	H	L	H	H	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S. Satheesh kumar	Dr. A.Sridevi

Course Code	Title		
23U1HIN202	Part - 1 Sanchar Hindi (संचार हिन्दी)		
Semester: II	Credits: 3	CIA: 20 Marks	ESE: 55 Marks
(Common to all UG Programmes)			
Course Objective	पाठ्यक्रम संवादी हिंदी में पारंगत होने में मदद करता हैI		
Course Category	Skill Development		
Development Needs	National		
Course Description	Improves Reading and Translation Skills.		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	कविता की मूल शब्दावली और व्यावहारिक तत्वों को समझें। मुक्त छंद और कविता के पारंपरिक रूपों में अंतर्निहित सामान्य तकनीकों को समझें।	Lecture / Video Methods	Assignment
CO 2	छात्र विभिन्न प्रकार की संवादात्मक स्थितियों में हिंदी में प्रदर्शित करने, चित्रित करने, नाटक करने और व्याख्या करने के लिए अर्जित कौशल को लागू करने में सक्षम होंगे	Case Studies	Group Project
CO 3	छात्र औपचारिक और अनौपचारिक पत्र लिखने में सक्षम होंगे।	Lectures / Video Lessons	Seminar
CO 4	अनुवाद सभी लोगों के बीच प्रभावी संचार को सक्षम बनाता है।	Lecture / Video Methods	Assignment
CO 5	छात्र हिंदी भाषा के वक्ता के साथ किसी भी सामान्य विषय पर विभिन्न स्तरों पर बातचीत करने में सक्षम होंगे I	Lecture / Dumb Charades	Seminar

Offered by	Hindi

Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	आधुनिक हिंदी काव्य : रश्मिरथी , रामधारी सिंह 'दिनकर'	1	All
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
II	**एकांकी संग्रह** : 1. **शिवाजी का सच्चा स्वरूप** - सेठ गोविंददास 2. औरंगजेब की आखिरी रात - रामकुमार वर्मा 3. रीढ़ की हड्डी - जगदीशचंद्र माथुर 4. सिपाही की माँ - मोहन राकेश	1	1 to 4
		Instructional Hours	**12**
Suggested Learning Methods : Auditory			**02 Hrs**
III	पत्र लेखन : (छुटटी पत्र , संपादक को पत्र , पुस्तकों के लिए आदेश पत्र , नौकरी के लिए आवेदन पत्र , निजी पत्र)	1	1,2,3
		Instructional Hours	**12**

Suggested Learning Methods : Comprehensive writing			**02 Hrs**
IV	**अनुवाद : हिंदी से अंग्रेजी (अनुवाद अभ्यास** - 3) 1 - 10 passages	3	1,2
		Instructional Hours	**12**
Suggested Learning Methods : Auditory, Visual			**02 Hrs**
V	बोलचाल की हिन्दी : 1. शिक्षक - विद्यार्थी 2. ग्राहक-दुकानदार 3. डॉक्टर - रोगी, 4. साक्षात्कार 5. दो यात्री 6. माँ - बेटा	5	1,2
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive writing			**02 Hrs**
		Total Hours	**60**

Reference Books	1. रश्मिरथी / रामधारी सिंह "दिनकर" - कविता कोश 2. सरस एकांकी नाटक : डॉ. रामकुमार वर्मा 3. अनुवाद अभ्यास - 3 दक्षिण भारत हिंदी प्रचार सभा , चेन्नई -1
Reference Books	1. श्रेष्ठ हिन्दी एकांकी -डॉ विजयपाल सिंह 2. बोलचाल : पं० अयोध्या सिंह उपाध्याय 3. हिंदी व्याकरण निबंध और पत्र लेखन -डॉ. एन. एल. माथुर
Web. URLs	**www.webdunia.com**

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assign ment	Seminar	Group project	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	H	H	M	L	M	L	M	-	-	-	L	L
CO2	M	L	H	L	H	H	H	L	-	-	-	L	L
CO3	H	L	L	L	M	H	M	H	-	-	-	L	L
CO4	H	M	M	M	L	L	L	H	-	-	-	L	L
CO5	M	H	L	M	M	M	M	M	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S.Swarnalatha	**Dr.S.Swarnalatha**

Course Code			
23U1MAL202	**Part – I: Novalum Bhashaapadanavum** (നോവലും ഭാഷാപഠനവും)		
Semester: II	**Credits: 3**	**CIA: 20 Marks**	**ESE: 55 Marks**

(Common to all UG Programmes)

Course Objective	വിദ്യാർത്ഥികളിൽ മലയാള ഭാഷയുടെ വികാസവും മലയാള സാഹിത്യത്തിൽ നോവലുകൾക്കുള്ള സ്ഥാനവും വായനാശീലവും വർദ്ധിപ്പിക്കുന്നു
Course Category	Skill Development
Development Needs	Regional
Course Description	Proper guidance, opportunities and encouragement that help them to achieve their ambitions

Course Outcomes		**Teaching Methods**	**Assessment Methods**
CO 1	സമൂഹത്തിലെ ഒരു വിഭാഗത്തിന്റെ ജീവിതം	Lecture / Video Methods	Assignment
CO 2	പ്രകൃതിയുടെയും മറ്റു ജീവജാലങ്ങളുടെയും മാറ്റങ്ങൾ	Case studies	Group Project
CO 3	പ്രകൃതി നാശത്തിനെതിരായി ഒന്നിച്ചു പ്രവർത്തിക്കുന്നു	Lectures / Video Lessons	Seminar
CO 4	സമൂഹത്തിലെ ഭാഷാസങ്കല്പം തിരിച്ചറിയുന്നു	Lecture / Video Methods	Assignment
CO 5	നല്ല ഭാഷ എങ്ങനെ സൃഷ്ടിക്കാമെന്ന് മനസ്സിലാക്കുന്നു	Lecture / Dumb Charades	Seminar

Offered by	**Malayalam**

Course Content	**Instructional Hours / Week : 4**

Unit	**Description**	**Text Book**	**Chapters**
I	നോവൽ - എൻമകജെ	1	1 to 16
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
II	നോവൽ - എൻമകജെ	1	17 to 34
		Instructional Hours	**12**
Suggested Learning Methods : Auditory Method			**02 Hrs**
III	നോവൽ - എൻമകജെ	1	35 to 51
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive Writing			**02 Hrs**
IV	ഭാഷാപഠനം - തെളിമലയാളം	1	1,2,3
		Instructional Hours	**12**
Suggested Learning Methods : Auditory &Visual Method			**02 Hrs**

V	ഭാഷാപഠനം - തെളിമലയാളം	1	4,5
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive Writing			**02 Hrs**
		Total Hours	**60 Hrs**

Text Books	1. അംബികാസുതൻ മാങ്ങാട്, എൻമകജെ - ഡി.സി.ബുക്സ് കോട്ടയം 2. എം.എൻ.കാരശ്ശേരി, തെളിമലയാളം - ഡി.സി.ബുക്സ് കോട്ടയം
Reference Books	1. പ്രൊഫ.എൻ.കൃഷ്ണപ്പിള്ള, കൈരളിയുടെ കഥ - ഡി.സി.ബുക്സ് കോട്ടയം 2. ഡോ. പന്മന രാമചന്ദ്രൻ നായർ, സമ്പൂർണ്ണമലയാള സാഹിത്യ ചരിത്രം - ഡി.സി.ബുക്സ് കോട്ടയം 3. ഡോ.കെ.എം. ജോർജ്ജ്, ആധുനിക മലയാള സാഹിത്യ ചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ - ഡി.സി.ബുക്സ് കോട്ടയം 4. എരുമേലി, മലയാള സാഹിത്യം കാലഘട്ടത്തിലൂടെ - ഡി.സി.ബുക്സ് കോട്ടയം
Web. URLs	**http://www.keralaculture.org>literature** **http://www.manoramaonline.com**

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Group project	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	L	H	H	H	H	H	H	-	-	-	L	L
CO2	H	L	H	M	H	M	H	H	-	-	-	L	L
CO3	M	L	M	M	M	H	H	M	-	-	-	L	L
CO4	H	L	L	H	L	H	H	H	-	-	-	L	L
CO5	M	L	L	M	L	H	H	H	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Ms. N. RAJANI	Dr. SMITHA C. R.

Course Code	Title		
23U1FRN202	Part – I : Le Français Fondamental – II		
Semester : II	Credits : 3	CIA : 20 Marks	ESE : 55 Marks
(Common to all UG Programmes)			
Course Objective	This course is comprised of deep study of grammar categories and aims to apply the grammatical structures correctly.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	This course aims to develop communicative competence of the students in French, to create cultural awareness, to promote autonomy in learning French.		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Acquire an understanding of French culture, use the basic foundation of verbs.	Lecture	Assignment
CO 2	Describe a place, learn pronom en, y and adjectives.	Tutorial / Case Studies	Seminar
CO 3	Recall the tenses and learn Imparfait tense	Lectures / Video Lessons	Quiz
CO 4	Write about the weather and learn pronom COD,	Word game / Lecture	Assignment
CO 5	Write short passages and translate, Comprehend the passage and learn pronom COI	Lecture	Group project

Offered by	Department of French

Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	Goûter à la campagne	1	5
	Instructional Hours		**12**
Suggested Learning Methods: Worksheets, TV5 App			
II	Voyager dans sa ville	1	6
	Instructional Hours		**12**
Suggested Learning Methods: Kahoot App, Duolingo			
III	Faire du neuf avec du vieux	1	7
	Instructional Hours		**12**
Suggested Learning Methods : Comprehensive Writing			

IV	Changer d'air	1	8
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive Writing			
V	Devenir éco-citoyen	1	9
		Instructional Hours	**12**
Suggested Learning Methods : Translating simple sentences and short passages			
		Total Hours	**60**

Text Books	Saison 1 Méthode de Français – Marie-Noëlle Cocton, Anouchka De Oliveira, Dorothée Dupleix (Unit 5 to 9)
Reference Books	A1 Echo Méthode de Français
Web. URLs	Lingua.com, TV 5 app, Learn French by podcast (spotify)

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	H	M	H	H	-	-	-	-	-	L	L
CO2	-	-	H	L	H	M	-	-	-	-	-	L	L
CO3	-	-	-	M	M	H	-	-	-	-	-	L	L
CO4	-	-	L	M	L	H	-	-	-	-	-	L	L
CO5	-	-	L	-	H	-	-	-	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by
D Balaji	D Balaji

Course Code	Title		
23U2ENG202	Part – II : Professional English – II		
Semester : II	Credits : 3	CIA : 20 Marks	ESE : 55 Marks
(Common to all UG Programmes)			
Course Objective	To equip the students with the language skills and its functional usage. Facilitate the insight and taste of Literature.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	SD: Helps to develop LSRW skill		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Mastering life skills through prose discourse.	Lecture/Tutorial	Assignment
CO 2	Acquire ethics and values through poetic genre.	Lecture/Tutorial	Assignment
CO 3	Recognise the nuances of English language through short stories.	Lecture/Tutorial	Speaking
CO 4	Enhance fluency over language with self-confidence.	Lecture/Tutorial	Reading
CO 5	Examine how the language is used in literature and develop LSRW Skills	Lecture/Tutorial	Writing

Offered by | **Department of English**

Course Content | **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	**Prose** E.M. Forster - Tolerance Mahatma Gandhi - Women Not the Weaker Sex Issac Asimov - The Fun They had **Listening Activity** – Comprehension practice from Prose.	1	1-3
		Instructional Hours	**12**
Suggested Learning Methods : Cooperative Learning			
II	**Poetry** Robert Frost - Stopping by Woods on a Snowy Evening William Blake - A Poison Tree Alexander Pope – Ode on Solitude **Speaking Activity** – Group Discussion Forum	1	4-6
		Instructional Hours	**12**
Suggested Learning Methods : Inquiry Based Learning			
III	**Short Stories** Mark Twain - The Cat and the Painkiller Japanese Folk Tale - The Envious Neighbour Hector Hugh Munro (Saki) – The Open Window **Reading Activity** – Pronunciation practice and enhancement from Short-stories	1	7-9
		Instructional Hours	**12**
Suggested Learning Methods : Classroom Activity			

IV	**Grammar** Articles Concord Active and Passive Voices Direct and Indirect Speech **Writing Activity** – Paragraph Writing using grammar Components	1	10-13
		Instructional Hours	**12**
Suggested Learning Methods : Direct Method			
V	**Writing Skills** Resume Writing Email Writing Dialogue Writing Testimonial Writing Creative Writing	1	14-17
		Instructional Hours	**12**
Suggested Learning Methods : Activity Based Learning			
		Total Hours	**60**

Text Books	Compiled by the Department of English NASC.
Reference Books	CLIL (Content & Language Integrated Learning) – Module by TANSCHE NOTE: (Text: Prescribed chapters or pages will be given to the students by the department and the college)
Web. URLs	

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Speaking	Reading	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	L	H	L	M	M	H	M	H	H	M	H	M
CO2	M	L	H	L	H	M	H	M	H	H	M	H	M
CO3	M	L	H	L	H	H	H	H	H	H	M	H	M
CO4	M	L	H	L	H	L	H	H	H	H	M	H	H
CO5	H	M	H	L	H	H	H	H	H	H	H	H	M

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
D Pradeek	Dr R Malathi

Course Code	Title		
23U3CAC202	Core Paper IV: C Programming		
Semester: II	Credits: 4	CIA: 25 Marks	ESE: 75 Marks

Course Objective	On successful completion of this subject the students have the programming ability in C Language
Course Category	Employability
Development Needs	Global
Course Description	To gain the knowledge in C Programming language and develop programs for real time applications.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the Programming basics and the fundamentals of C, Datatypes in C, Mathematical and logical operations.	Lecture / Demonstration	Class Participation
CO 2	Understand the concepts of Decision Making and Branching.	Demonstration	Quiz
CO 3	Write programs for the given problems using the array concepts.	Demonstration	Seminar
CO 4	Develop applications using functions, structure and unions.	Lecture	Program Development
CO 5	Implement pointer concept to create real time applications.	Problem-based Teaching,	Assignment

Offered by	**Computer Science**

Course Content — **Instructional Hours / Week: 5**

Unit	Description	Text Book	Chapters
I	**Overview of C:** - Introduction - Character set - C tokens - keyword & Identifiers - Constants - Variables - Data types - Declaration of variables - Assigning values to variables - Defining Symbolic Constants - Arithmetic, Relational, Logical, Assignment, Conditional, Bitwise, Special, Increment and Decrement operators - Arithmetic Expressions - Evaluation of expression - precedence of arithmetic operators - Type conversion in expression – Operator Precedence & Associativity- Mathematical functions - Reading & Writing a character -Formatted input and output.	1	3,4,5
		Instructional Hours	**15**
	Suggested Learning Methods: Code Debugging		
II	**Decision Making and Branching:** Introduction – if, if….else, nesting of if …else statements- else if ladder – The switch statement, The ?: Operator – The goto Statement. Decision Making and Looping: Introduction- The while statement- the do statement – the for statement-jumps in loops.	1	6 &7
		Instructional Hours	**15**
	Suggested Learning Methods: Code Debugging		

III	**Arrays**: Declaration and accessing of one & two-dimensional arrays, initializing two-dimensional arrays, multidimensional arrays. Strings.- String Manipulating functions.	1	8 & 9
		Instructional Hours	**15**
	Suggested Learning Methods: Simple Application Development		
IV	**User-Defined Functions:** Introduction – Need and Elements of User-Defined Functions- Definition-Return Values and their types - Function Calls – Declarations – Category of Functions- Nesting of Functions - Recursion – Passing Arrays and Strings to Functions - The Scope, Visibility and Lifetime of Variables-Multi file Programs. Structures and Unions.	1	10 & 11
		Instructional Hours	**15**
	Suggested Learning Methods: Simple Application Development		
V	**Pointers:** Introduction-Understanding Pointers-Accessing the address of a variable Declaration and Initialization of pointer Variable – Accessing a variable through its pointer Chain of pointers- Pointer Expressions – Pointer Increments and Scale factor- Pointers and Arrays- Pointers and Strings – Array of pointers – Pointers as Function Arguments Functions returning pointers – Pointers to Functions – Pointers and Structures. File Management in C.	1	12
		Instructional Hours	**15**
	Suggested Learning Methods: Simple Application Development		
		Total Hours	**75**

Text Books	1. E.Balagurusamy, Programming in ANSIC, Fifth Edition, TataMcGraw-Hill, 2010.
Reference Books	1. ByronGottfried,Schaum's Outline Programming with C, Fourth Edition,TataMcGraw-Hill,2018. 2. KernighanandRitchie, The C Programming Language, Second Edition, PrenticeHall,1998 3. YashavantKanetkar, Let Us C, Eighteenth Edition, BPB Publications, 2021.
Web. URLs	1. https://www.cprogramming.com/ 2. https://www.geeksforgeeks.org/c-programming-language/

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	-	M	H	M	M	H	H	H	H	M	M
CO2	M	H	-	M	H	M	M	H	H	H	H	M	M
CO3	M	H	-	M	H	M	M	H	H	H	H	H	H
CO4	H	H	-	M	H	H	M	H	H	H	H	H	H
CO5	H	H	-	M	H	H	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. A. Kalaivani	Dr. K. Selvavinayaki

Course Code	Title		
23U3CKC204	Core Paper V: Data Structures		
Semester: II	Credits: 4	CIA: 25 Marks	ESE: 75 Marks
(Common to B. Sc. CS / IT / BCA)			
Course Objective	To enable the students to understand about the various techniques such as Linked list, Searching and Sorting, apply them to solve complex programs.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	To understand the concept of Arrays, Stacks and Queues, Linked list, searching and sorting and apply to solve real world problem using appropriate Data Structure.		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the representation of Arrays, Stacks and Queues.	Lecture	Group Discussion
CO 2	Solve the problems using Queues and List.	Constructivist Approach	Quiz
CO 3	Demonstrate different types of Tree representation and Graph.	Tutorial	Seminar
CO 4	Design Algorithm to perform different types of Sorting.	Video Lessons	Seminar
CO 5	Illustrate Symbol, hash and File organization and apply to solve real world problem using appropriate Data Structure.	Lecture	Assignment

Offered by	Computer Science

Course Content	Instructional Hours / Week: 5

Unit	Description	Text Book	Chapters
I	**Introduction:** Overview - create Programs - Analyse Programs. **Arrays:** Axiomatization - Sparse Matrices - Representation of Arrays.**Stacks& Queues:** Fundamentals - Evaluation of Expressions - Multiple Stacks and Queues.	1	1,2,3
	Instructional Hours		**15**
	Suggested Learning Methods: Write Algorithms for Real time Scenario		
II	**Recursion:** Recursive definition and process - recursion in C - Writing Recursive program - simulating Recursion - efficiency of recursion. **Queues and List:** The queue and its sequential representation - Linked list - List in C - An example Simulation using linked list - other list structure.	2	3,4
	Instructional Hours		**15**
	Suggested Learning Methods: Write Algorithms for Real time Scenario		
III	**Trees:** Binary Tree - Binary Tree representation - the Huffman algorithm - representing list as Binary - Trees and their applications - Game trees. **Graphs:** A Flow problem - The linked representation of Graph - Graph traversal and spanning forests	2	5,8
	Instructional Hours		**15**
	Suggested Learning Methods: Group Discussion		
IV	**Internal Sorting:** Insertion Sort - Quick Sort - 2-Way Merge Sort - Heap Sort - Shell Sort.**External Sorting:** Storage Devices -	1	7,8

	K-Way Merging.**Sorting With Tapes:** Balanced Merge Sorts - Polyphase Merge.		
		Instructional Hours	**15**
	Suggested Learning Methods: Group Discussion		
V	**Symbol Table:** Static Tree Tables - Dynamic Tree Tables. **Hash Tables:** Hashing Functions- Overflow Handling. **Files:** Files, Queries and Sequential Organizations- Index Techniques - **File Organization:** Sequential Organization- Random Organization- Linked Organization.	1	9, 10
		Instructional Hours	**15**
	Suggested Learning Methods - Video Presentation		
		Total Hours	**75**

Text Books	1. Ellis Horowitz &SartajSahni, **Fundamentals of Data Structures**, Galgotia Publication. 2. Aaron M. Tenenbaum, YedidyahLangsam, Moshe J.Augenstein, **Data Structure using C**, Pearson Education, 2009.
Reference Books	1. Ellis Horowitz, SartajSahni&SanguthevarRajasekaran, **Fundamentals of Computer Algorithms**, Galgotia Publications Pvt Ltd, 1999. 2. Jean-Paul Tremblay and Paul G.Sorenson, **An Introduction to Data Structures with Applications**, Second Edition, Tata MaGraw Hill,2008. 3. Mark Allen Weiss, **Data Structures and Algorithm Analysis in C**, Florida International University, Pearson Education, Second Edition, 1997.
Web. URLs	**https://www.programiz.com/dsa**

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Class Participation	Assignment	Seminar	Total
5	5	6	3	3	3	25

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	M	M	M	-	M	H	H	H	H	M	M
CO2	H	H	M	M	M	-	M	H	H	H	H	M	M
CO3	H	H	M	M	M	-	M	H	H	H	H	H	H
CO4	H	H	M	M	M	-	M	H	H	H	H	H	H
CO5	H	H	M	M	M	-	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
M. Senthilkumar	Dr. N. Kavitha

Course Code	Title		
23U3CAP203	Core Paper VI: Practical in C Programming		
Semester: II	Credits: 4	CIA:40 Marks	ESE: 60 Marks

Course Objective	To make the student learn a programming language, problem solving techniques and to write programs in C and to solve the problems.
Course Category	Employability
Development Needs	Global
Course Description	To provide students with the knowledge to develop logics that will help them create programs and applications in C..

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand and execute programs in C language	Problem Based Teaching	Program Creativity
CO 2	Experiment with structured programs using control structures and functions	Demonstration	Debugging
CO 3	Develop programs that perform operations using derived data types	Demonstration	Application of Logic
CO 4	Design applications using sequential and random access file processing	Problem Based Teaching	Program Development
CO 5	Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.	Problem Based Teaching	Program Development

Offered by	**Computer Applications**

Course Content — **Instructional Hours / Week: 4**

Unit	List of Practical
1	Write a C program to generate the first n terms of the Fibonacci sequence
2	Write a C program to generate prime numbers between 1 to n.
3	Write a C program to evaluate algebraic expression (ax+b)/(ax-b).
4	Write a C program to implement stack using array.
5	Write a C program to implement queue using array.
6	Write a C program array implementation of list.
7	Write a C program using user defined functions to determine whether the given string is palindrome or not.
8	Write a C program to perform the following operation in Matrix a. Addition b. Subtraction c. Multiplication d. Transpose
9	Write a C program to perform the swapping of two numbers using call by value and call by reference.
10	Write a C program to perform following operation on strings using string functions 1. Addition 2.Copying 3. Reverse 4. Length of Strings.
11	Write a C program to implement Quick Sort
12	Write a C program that uses stack operations to convert a given infix expression into its postfix equivalent.

13	Write a C program to implement circular linked list.
14	Write a C program to reverse the elements in the stack using recursion.
15	Write a C program to search an element in the array using Linear Search.

Suggested Learning Methods: Solving Case studies, Peer tutoring and pair programming	
Total Hours	**60 Hrs**

Tools for Assessment (40 Marks)

Application of Logic	Program Creativity	Program Debugging	Test 1	Test 2	Observation Note Book	Total
5	5	5	10	10	5	**40**

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	-	M	M	-	-	H	M	H	H	M	M
CO2	M	H	-	M	M	-	M	H	M	H	M	H	M
CO3	M	H	-	M	M	-	-	H	H	M	M	M	H
CO4	H	H	-	M	M	-	-	H	M	H	H	H	M
CO5	H	H	-	M	M	-	-	H	H	M	H	M	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. A. Kalaivani	Dr. K. Selvavinayaki

Course Code	Title		
23U3MIA202	Allied Paper II : Discrete Mathematics		
Semester: II	Credits: 4	CIA:25 Marks	ESE: 75 Marks
(Common to B. Sc. CS / DS / IT / AIML / DCFS / BCA)			
Course Objective	To learn about the Discrete Structure for Computer Based Application.		
Course Category	Skill Development		
Development Needs	Regional		
Course Description	This course is to understand and use abstract discrete structures that are backbones of Computer Science. In particular, this course meant to introduce logic, proofs, sets, relations, functions, counting, and graphwith an emphasis on applications in Computer Science.		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Learn the basic concepts of Set theory	Lectures / Peer Teaching	Assignment
CO 2	Implement the basic ideas of Mathematical Logic in Computer Science	Lectures / Tutorial	Seminar
CO 3	Classify different types of Relations and Functions	Lectures / Video Lectures	Assignment
CO 4	Infer the concepts of Grammar and Automata theory.	Lectures / Tutorial	Work Sheet
CO 5	Know the concepts of Graph theory	Lectures / Video Lectures	Quiz

Offered by	Mathematics

Course Content	Instructional Hours / Week : 5

Unit	Description	Text Book	Chapters
I	**Set Theory:** Introduction-Set& its Elements-Set Description-Types of sets-Venn-Euler Diagrams-Set operations & Laws of set theory. Fundamental products- Partitions of sets – Minsets- Algebra of sets and Duality-Inclusion and Exclusion Principle	1	1
		Instructional Hours	**15**
Suggested Learning Methods: Problem Solving Practice			
II	**Mathematical Logic:** Introduction- prepositional calculus –Basic logical operations- Tautologies-Contradiction – Argument-PDNF & PCNF - Method of proof.	1	12
		Instructional Hours	**15**
Suggested Learning Methods: Class Test			
III	**Relations:** Binary Relations – Set operation on relations-Types of Relations – Partial order relation – Equivalence relation – Composition of relations. Functions – Types of functions – Invertible functions – Composition of functions.	1	3,4
		Instructional Hours	**15**
Suggested Learning Methods: Assignments			

IV	**Languages:** Operations on languages – Regular Expressions and regular languages. **Grammar:** Types of grammars – Grammar Construction-Finite state machine –Finite State Automata- DFA- NDFA- Conversion of NDFA into DFA.	1	15
		Instructional Hours	**15**
Suggested Learning Methods: Problem Solving Practice			
V	**Graph Theory:** Basic terminology – paths, cycle & Connectivity – Sub graphs – Types of graphs. Trees – Properties of trees – Binary trees-Traversal of Binary Trees.	1	9,10
		Instructional Hours	**15**
Suggested Learning Methods: Problem Solving Practice			
		Total Hours	**75 Hrs**

Text Books	1. J.K. Sharma, **Discrete Mathematics**, Macmillan India Ltd, 2nd edition, 2005.
Reference Books	1. J. P. Tremblay, R. Manohar, **Discrete Mathematics Structures with Applications to Computer Science**, McGraw Hill International Edition, 2005. 2. T. Veerarajan, **Discrete Mathematics with Graph Theory and Combinatories**, McGraw Hill International Edition, 2008
Web. URLs	**1.** **https://www.youtube.com/watch?v=oaOm2pnKkyY** 2. **https://youtu.be/tyDKR4FG3Yw**

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	**25**

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO 4	PSO 5
CO1	H	H	L	M	H	M	M	M	H	H	H	M	M
CO2	H	H	L	M	H	M	M	H	H	H	H	M	M
CO3	H	H	L	M	H	M	M	H	H	H	H	H	H
CO4	H	H	L	M	M	M	M	M	H	H	H	H	H
CO5	H	H	L	H	M	M	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Ms. S. Ruth Kethsial	Dr. T. Chandrapushpam

Course Code	Title	
21U4HRC202	Ability Enhancement Compulsory Course - **Human Rights and Constitution of India**	
Semester : II	**Credits : 2**	**CIA : 50 Marks**

(Common to all UG Programmes)

Course Objective:

Understand the concept of human rights and the importance of Indian Constitution.

Course Outcomes:

CO1	Understand the principal aspects of human rights and duties in a broad sweep.
CO2	Acquire the knowledge about the Fundamental Duties and Rights of Indian Citizen
CO3	To know the rights of women and Children in India
CO4	Understand the structure and importance of Indian Constitution
CO5	Know the functions of Government and Election Commission of India

Course Content **Instructional Hours / Week : 2**

Unit	Description	
I	An Introduction to Human Rights :Values – Dignity, Liberty, Equality, Justice, Unity in Diversity - Human Rights – Meaning and features; Significance of the study - Classification of Human Rights - Rights and Duties – Correlation	
	Instructional Hours	**6**
II	Human Rights and Fundamental Rights - Fundamental Rights and Fundamental Duties- Directive Principles - Role of Judiciary in the protection of Human Rights- National Human Rights Commission *Activity : Case Study related to Human Rights*	
	Instructional Hours	**6**
III	Human Rights of Women and Children- Social Practice and Constitutional Safeguards – Female foeticide and infanticide-Physical assault and Harassment- Domestic violence- Conditions of Working Women *Activity : Conduct a Group Discussion on the above topics*	
	Instructional Hours	**6**
IV	**Constitution – Structure and Principles -** Meaning and importance of Constitution - Making of Indian Constitution –Sources - Salient features of Indian Constitution- Government of Union- Government of State-Features of judicial system in India	
	Instructional Hours	**6**
V	Federalism in India – Features - Local Government -Panchayat –Powers and functions -Election Commission –Organisation and functions-Citizen oriented measures – RTI – Provisions and significance *Activity : Seminar/ Role play related to Indian Constitution*	
	Instructional Hours	**6**
	Total Hours	**30**

Text Book:

1. **"Human Rights and Constitution of India",** Complied by Curriculum Development Cell, Nehru Artsand Science College.

Tools for Assessment (50 Marks)

Case Study and Report submission	Seminar / Role play	Group Discussion	Comprehensive test for 5×5 = 25 marks	Total
10	10	5	25	50

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	-	L	H	H	H	H	L	L	-	-	L
CO2	-	-	-	L	H	H	H	H	L	L	-	-	L
CO3	-	-	-	L	H	H	H	H	L	L	-	-	L
CO4	-	-	-	L	H	H	H	H	L	L	-	-	L
CO5	-	-	-	L	H	H	H	H	L	L	-	-	L

H-High; M-Medium; L-Low

Course Designed by	Verified by
Dr. N Saranya	Dr. N Saranya

Course Code	Title	
22U4HVY201	Value Education : Human Values and Yoga Practice	
Semesters : I & II	Credits : 2	CIA : 50 Marks

(Common to all UG Programmes)

Course Objective:

- To help the students appreciate the essential complementarity between 'values' and 'skills' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings.
- To prepare and distribute standardized Yoga teaching and training material with reference to institute health**.**

Course Outcomes:

CO1	To know the importance of Ethics to be followed in the Human life.
CO2	To inculcate a sense of respect towards harnessing values of life and spirit of fulfilling social responsibilities.
CO3	To gain knowledge about the values that develops life skills.
CO4	To understand and Practice Meditation & Surya Namaskar.
CO5	To understand and apply the knowledge for physical health and well being through Asanas

Course Content **Instructional Hours / Week : 1 (For Semesters I and II)**

Unit	Description
I	**Human Values –** Introduction - Definition of Ethics and Values - Character and Conduct - Nature and Scope of Ethics. **Individual and Society -** Theories of Society - Social Relationships and Society - Empathy: Compassion towards other beings.
	Instructional Hours 4
II	**Self-realization and Human Values-**Self-realization and Harmony-Rules and Regulations-Rights and Duties-Good and Obligation-Integrity and Conscience. **Obligation to Family-**Trust and Respect-Codes of Conduct.
	Instructional Hours 5
III	**Character Formation Towards Positive Personality**: Truthfulness, Constructivity, Sacrifice, Sincerity, Self Control, Altruism, Tolerance, Scientific Vision. **Refinement of worries**: Neutralization of anger-Intelligent quotient(IQ),Emotional quotient(EQ),Spiritual Quotient (SQ)
	Instructional Hours 5
IV	**Power of Meditation-** Development of mind in stages - Mental Frequencies Methods for Concentration. Meditation Practices - Surya Namaskar. Physical Exercises -Kayakalpa Practices Training for Potentialising the Mind.
	Instructional Hours 6
V	**ASANAS** **Standing Posture:** Tadasana, Utkattasana, arthaKadi Chakrasana, Trikonasana, Artha

Chandrarasana, Padahastasana, Virabhadrasana, Vrikshasana, Artha, Natarajasana. **Sitting posture:** Padmasana, Gomukasana, Ustrasana, ArdhaMatsyendrasana, Patchimottanasana. **Prone posture:**Bhujangasana, shalabhasana, Dhanurasana, Chakrasana. **Supine posture:**Sarvangasana, Halasana, Matsyasana, Shanti asana **Pranayama:** Bhastrika, Bhramari, NadiShodhan	
Instructional Hours	**10**
Total Hours	**30**

Text book:

1. **"Value Education ",** compiled by Curriculum Development cell, Nehru Arts and Science College.

Tools for Assessment

25 marks	25 marks
Comprehensive test in Units I to III for 25 marks during CIA III of Sem. II	Perform 02 Yoga postures for Practical exam to be conducted during the mid. of Sem. II

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	-	H	L	M	H	H	-	L	-	-	L
CO2	-	-	-	L	M	H	M	H	-	L	-	-	L
CO3	-	-	-	L	M	H	S	H	-	L	-	-	L
CO4	-	-	-	L	L	H	M	H	-	L	-	-	L
CO5	-	-	-	L	L	H	M	H	-	L	-	-	L

H-High; M-Medium; L-Low

Course Designed by	Verified by HOD
Karthi M	Dr. N Kavitha

Course Code	Title		
23U1TAM303	Part -I : Arunthamizh (அருந்தமிழ்)		
Semester: III	Credits: 3	CIA: 20 Marks	ESE: 55 Marks

Course Objective	தமிழ்க் காப்பியங்களின் வழி அறம் சார்ந்த சிந்தனைகளை உருவாக்குதல்
Course Category	**Skill Development (**மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)
Development Needs	**Global/Regional (**உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்**)**
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல் மற்றும் உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	தமிழ் நூல்களில் அணிநலம் அறிதல், அறம் சார்ந்த சிந்தனைகளை வளர்த்தல்.	விரிவுரை/ காணொளிப்பட விளக்கம்	ஒப்படைவு
CO 2	தமிழ் இலக்கிய வகைகளைக் கூறுவதன் மூலம் தமிழின் இலக்கிய வளத்தை உணரச்செய்தல்.	விரிவுரை	குழுத்திட்டம்
CO 3	மாணவர்களிடையே காலத்திற்கேற்ப மொழிவளர்ச்சியை உருவாக்குதல்.	விரிவுரை/ காணொளிப்பட விளக்கம்	ஒப்படைவு
CO 4	நாட்டின் சிறந்த குடிமக்களாக மாணவர்களை உருவாக்குதல்.	விரிவுரை// குழு விவாதம்	கருத்தரங்கு
CO 5	மாணவர்களின் மனநலத்தை வளர்த்தல்.	விரிவுரை/ குழு விவாதம்	கருத்தரங்கு

Offered by தமிழ்த்துறை

Course Content : Arunthamizh (அருந்தமிழ்) — **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	காப்பியங்கள்	1.சிலப்பதிகாரம் 2.மணிமேகலை 3.சீவகசிந்தாமணி 4.கம்பராமாயணம்	1.1அடைக்கலக்காதை (மதுரைக்காண்டம்-பகுதி- 15) 1.2.பீடிகைக் கண்டுபிறப்புணர்ந்தக் காதை-பகுதி-9) 1.3.பூமகள் இலம்பகம் (பகுதி- 11-2347-2377 பாடல்கள்) 1.4சுந்தரகாண்டம்(கடல் தாவுப்படலம் 1-10பாடல்கள்)
		Instructional Hours	**12 Hours**
Suggested Learning Methods: நாடக முறையில் கலந்துரையாடல்			
II	சைவ,வைணவ, சுவடியியல்	1. தேவாரம் 2..நாலாயிரத்திவ்வியப் பிரபந்தம் 3.சுவடியியல்	2.1.திருநல்லூர்ப் பெருமணம் (பாடல் எண்-4137-4146) 2.2.ஆண்டாள் திருப்பாவை - (பாடல் எண்- 474-483) 2.3.சுவடியியல் - அறிமுகம் 2.4 சைவம் தமிழுக்குச் செய்த தொண்டு 2.5 வைணவம் தமிழுக்குச் செய்த தொண்டு
		Instructional Hours	**12 Hours**
Suggested Learning Methods : பக்தி பாசுரங்கள் கலந்துரையாடல்			

III	மொழித்திறன் (இலக்கணம்)	1.நன்னூல் 2.தொல்காப்பியம்	3.1 நூல் வரலாறு (முதல் நூல், வழி நூல், சார்பு நூல்) 3.2 மாணாக்கர் வரலாறு 3.3 ஆசிரியர் வரலாறு 3.4 எண்வகை மெய்ப்பாடுகள்
Instructional Hours			**12 Hours**
Suggested Learning Methods :	மொழித்திறன் வாயிலாக பிழையின்றி எழுதும் திறன் பெற்றமை		
IV	நாட்டுப்புற வழக்காறுகள்	நாட்டுப்புறவியல்	4.1. பழமொழிகள் 4.2. விடுகதைகள் 4.3 தமிழர்க்கலைகள் 4.4 சிறுதெய்வ வழிபாடு மட்டும் 4.5 விளையாட்டுகள் (சிறுவர்,சிறுமியர் மட்டும்)
Instructional Hours			**12 Hours**
Suggested Learning Methods :	நாட்டுப்புறவியல் வழி நாட்டுப்புற மக்களின் வாழ்வியலை அறியச்செய்தல்		
V	இலக்கிய வரலாற்றுத் திறன்	தமிழ் இலக்கிய வரலாறு	1. காப்பியத்தின் தோற்றமும் வளர்ச்சியும் 2. பக்தி இலக்கியத்தின் தோற்றமும் வளர்ச்சியும் 3. தமிழக நாட்டுப்புறவியல் வரலாறு
Instructional Hours			**12 Hours**
Suggested Learning Methods:	பாடத்திட்டத்தில் கொடுக்கப்பட்டுள்ள இலக்கிய வரலாற்றினை உணர்த்துதல்		
Total Hours			**60 Hours**
Text Books	இளங்கலை இரண்டாம் ஆண்டு தமிழ் மாணவர்களுக்குரிய பாடநூல் **"அருந்தமிம்"** தொகுப்பு: தமிழ்த்துறை, நேரு கலை மற்றும் அறிவியல் கல்லூரி, கோயம்புத்தூர்.		
Reference Books	நாட்டுப்புறவியல் ஓர் ஆய்வு: டாக்டர் சு. சக்திவேல் விஜயா பதிப்பகம் சென்னை. தமிழண்ணல் - புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, மீனாட்சிப் புத்தக நிலையம், மதுரை- 625 001.		
Web. URLs	https://youtu.be/EJcYgyw7e94, https://youtu.be/MgtwmerI4yw		

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Seminar	Assignment	Group Project	Total
4	4	5	2	2	3	20

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	L	H	L	L	H	M	L	-	-	-	L	L
CO2	M	L	H	L	H	L	M	H	-	-	-	L	L
CO3	H	L	L	L	H	M	H	M	-	-	-	L	L
CO4	M	L	H	L	M	M	H	L	-	-	-	L	L
CO5	H	L	M	L	H	L	M	H	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S. Satheesh Kumar	Dr. A. Sridevi

Course Code	Title		
23U1HIN303	Part I - Sahityak Hindi (साहित्यिक हिंदी)		
Semester: III	Credits: 3	CIA: 20 Marks	ESE: 55 Marks

(Common to all UG Programmes)

Course Objective	चुनिंदा कविताओं के माध्यम से हिंदी कविता की उत्पत्ति और विकास को समझना।. संकलन में उपलब्ध कराए गए सर्वोत्तम नमूनों का उपयोग करते हुए कविता की सराहना।
Course Category	Skill Development
Development Needs	National
Course Description	Improves Writing Skills.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	छात्र हिंदी भाषा से अच्छी तरह वाकिफ हो सकेंगे।	Role play	Assignment
CO 2	व्यक्तिगत अनुभवों की पहचान करें जिनका उपयोग कविताएँ लिखते समय किया जा सकता है।	Group learning Acting	Seminar
CO 3	कविता की मूल शब्दावली और व्यावहारिक तत्वों को समझें।	Story Narration	Assignment
CO 4	छात्रों को रचनात्मक लेखन में अच्छा अभ्यास मिलेगा।	Group learning and Work sheets	Group Project
CO 5	पाठ्यक्रम संवादी हिंदी में पारंगत होने में मदद करता है।	Worksheets and Exercises	Seminar

Offered by | **Hindi**

Course Content | **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	नाटक – सत्यमेव जयते – (श्री सूर्यनारायण मूर्ति)	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
II	प्राचीन काव्य : कबीर के दोहे (10 दोहा), सूरदास के पद (4 पद) (काव्य तरंग)	1	2
		Instructional Hours	**12**
Suggested Learning Methods : Auditory			**02 Hrs**
III	1.आधुनिक काव्य : पुष्प की अभिलाषा– माखनलाल चतुर्वेदी, जलियांवाला बाग़ में बसंत – सुभद्राकुमारी चौहान, शक्ति और क्षमा – रामधारी सिंह दिनकर 2.संक्षिप्तीकरण	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive Writing			**02 Hrs**
IV	**अलंकार** : 1) **अर्थ अलंकार** और **शब्द अलंकार**, 2) **दिए गए चित्र पर कुछ वाक्य लिखना ।**	1	2
		Instructional Hours	**12**
Suggested Learning Methods : Auditory, Visual, Comprehensive			**02 Hrs**

V	गद्यांश लेखन, वाक्य शुद्धि, शब्द शुद्धि, अनेक शब्द के लिए एक शब्द	1	4
		Instructional Hours	**12**
Suggested Learning Methods : comprehensive writing			**02 Hrs**
		Total Hours	**60 Hrs**

Text Books	**1. नाटक – सत्यमेव जयते – (श्री सूर्यनारायण मूर्ति)** 2. काव्य सुमन - राजपाल एंड सन्स
Reference Books	1. हिंदी नाटक और रंगमंच - डॉ राम कुमार वर्मा 2. ओंकार नाथ वर्मा , सामान्य हिंदी अरिहंत प्रकाशन इंडिया लिमिटेड
Web. URLs	1. www.webdunia.com 2. https://www.hindikunj.com 3. www.bhashaindia 4. www.hindisamay.com

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Group Project	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	M	M	L	H	M	-	-	-	L	L
CO2	H	H	H	L	L	H	M	H	-	-	-	L	L
CO3	L	M	L	L	M	H	M	L	-	-	-	L	L
CO4	M	M	M	M	H	L	L	L	-	-	-	L	L
CO5	M	L	L	M	H	L	L	H	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr.S.Swarnalatha	Dr.S.Swarnalatha

Course Code	Title		
23U1MAL303	**Part - I : Kavithayum Smaranayum** (കവിതയും സ്മരണയും)		
Semester: III	**Credits: 3**	**CIA: 20 Marks**	**ESE: 55 Marks**
(Common to all UG Programmes)			
Course Objective	കവിതാ സാഹിത്യ പരിചയത്തോടൊപ്പം പുതു കവിതകളെ കുറിച്ച് അവബോധവും ആസ്വാദനവും ഉയർത്തുക. വിദ്യാർത്ഥികൾക്ക് മാതൃകയാവുന്ന സമൂഹത്തിലെ ഉന്നത വ്യക്തിത്വങ്ങളെ പരിചയപ്പെടുത്തുക		
Course Category	Skill Development		
Development Needs	Regional		
Course Description	Developing Personality and Self confidence		

Course Outcomes		**Assessment Methods**	**Assessment Methods**
CO 1	കവിതയിലൂടെയുള്ള സംവേദനം	Smart boards/ Chalk and Talk	Assignment
CO 2	പ്രകൃതിയുടെ നിസ്വാർത്ഥമായ പ്രവർത്തനങ്ങൾ	Group learning	Seminar
CO 3	അധ്യാപക വിഭാഗത്തിനിടയിൽ അവകാശ ബോധം ഉണ്ടാക്കുന്നു	Peer Teaching	Assignment
CO 4	സമൂഹത്തിന് മൂല്യബോധമുണ്ടാക്കുന്ന പ്രവർത്തനങ്ങൾ	Group learning	Group Project
CO 5	സമൂഹത്തിൽ അധ്യാപനത്തിന്റെ പ്രാധാന്യം	Smart boards/ Chalk and Talk	Assignment

Offered by	**Malayalam**

Course Content	**Instructional Hours / Week : 4**

Unit	**Description**	**Text Book**	**Chapters**
I	നവീന കവിത - പുതു കവിതകൾ	1	4
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
II	നവീന കവിത - പുതു കവിതകൾ	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Auditory Method			**02 Hrs**
III	കണ്ണീരും കിനാവും - വി.ടി.ഭട്ടതിരിപ്പാട്	1	3
		Instructional Hours	**12**
Suggested Learning Methods : : Comprehensive writing			**02 Hrs**
IV	കണ്ടൽക്കാടുകൾക്കിടയിൽ എന്റെ ജീവിതം - കല്ലേൻ പൊക്കുടൻ	1	2
		Instructional Hours	**12**
Suggested Learning Methods: Auditory &Visual Methods			**02 Hrs**
V	കണ്ടൽക്കാടുകൾക്കിടയിൽ എന്റെ ജീവിതം - കല്ലേൻ പൊക്കുടൻ	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive Writing			**02 Hrs**
		Total Hours	**60 Hrs**

Text Books	1. നവീന കവിത (പുതു കവിതകൾ) - നെഹ്റു കോളെജ് മലയാള വിഭാഗം എഡിറ്റു ചെയ്ത 10 കവിതകൾ . 2. കണ്ണീരും കിനാവും - വി.ടി.ഭട്ടതിരിപ്പാട് -ഡി.സി. ബുക്ക്സ്

	3. കണ്ടൽകാടുകൾക്കിടയിൽ എന്റെ ജീവിതം - കല്ലേൻ പൊക്കുടൻ - ഗ്രീൻ ബുക്ക്സ്
Reference Books	1. മലയാള കവിതാപഠനങ്ങൾ - സച്ചിദാനന്ദൻ ,മാതൃഭൂമി ബുക്സ്, കോഴിക്കോട് 2. കവിതാ സാഹിത്യ ചരിത്രം - ഡോ.എം.ലീലാവതി കേരള സാഹിത്യ അക്കാദമി, തൃശൂർ 3. ആധുനികത മലയാള കവിതയിൽ എൻ. അജയകുമാർ , പഠനസംഘം, ചങ്ങനാശ്ശേരി 4. സാഹിത്യം മലയാളത്തിൽ ആത്മകഥ - നടുവട്ടം ഗോപാലകൃഷ്ണൻ , ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട് , തിരുവനന്തപുരം
Web. URLs :	**http://www.keralaculture.org>literature**

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	L	H	M	H	H	H	H	-	-	-	L	L
CO2	M	L	H	L	H	M	H	H	-	-	-	L	L
CO3	H	L	L	M	M	H	M	H	-	-	-	L	L
CO4	M	L	L	M	L	H	H	M	-	-	-	L	L
CO5	M	L	L	M	H	L	H	M	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Ms.RAJANI N.	Dr. SMITHA C.R.

Course Code	Title		
23U1FRN303	Part – I : Le Francais General – III		
Semester : III	Credits : 3	CIA : 20 Marks	ESE : 55 Marks
(Common to all UG Programmes)			
Course Objective	Acquisition of standard French by knowing more about the culture.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	Improved understanding and communication		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Learn about the other French speaking nations, hobbies,	Lectures/ Tutorial	Assignment
CO 2	Le passé compose, l'imparfait	Group Learning	Assignment
CO 3	Social network, les indicateurs de temps	Peer Teaching	Seminar
CO 4	Le discours direct et indirect	Video Lecture / Lectures	Group Project
CO 5	To learn to answer questions orally in French	Group learning	Assignment

Offered by	Department of French

Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	La langue francaise en action	1	1
		Instructional Hours	12
Suggested Learning Methods : Visuals			
II	Aller a la rencontre des autres	1	2
		Instructional Hours	12
Suggested Learning Methods : Group discussions			
III	Enrichir son reseau	1	3
		Instructional Hours	12
Suggested Learning Methods : Group discussions			
IV	Vivre l'information	1	4
		Instructional Hours	12
Suggested Learning Methods : Visuals			
V	Interroger le passe	1	5
		Instructional Hours	12
Suggested Learning Methods : Comprehensive writing			
		Total Hours	60

Text Books	1. Saison 2 Méthode de Français – Marie-Noëlle Cocton, Anouchka De Oliveira, Dorothée Dupleix (Unit 0 to 4)
Reference Books	1. Connexions 2 Methode de Français Régine Mérieux , Yves Loiseau
Web. URLs	1. www.academia.edu

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	H	M	H	H	-	-	-	-	-	-	-
CO2	-	-	H	L	H	M	-	-	-	-	-	-	-
CO3	-	-	-	M	M	H	-	-	-	-	-	-	-
CO4	-	-	L	M	L	H	-	-	-	-	-	-	-
CO5	-	-	L	-	H	-	-	-	-	-	-	-	-

H-High; M-Medium; L-Low

Course designed by	Verified by
D Balaji	D Balaji

Course Code	Title		
23U2ENG303	Part – II : Communicative English – I		
Semester : III	Credits : 3	CIA : 20 Marks	ESE : 55 Marks
(Common to All UG Programmes)			
Course Objective	To enable the students to learn the different genres of literature and gain a better understanding of the English language.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	SD: Helps to develop LSRW skill		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Execute moral, ethical and literary merits and relate it to the society.	Lecture/Tutorial	Assignment
CO 2	Exhibit a comprehensive knowledge of poetry and execute life skills and human values through it.	Lecture/Tutorial	Assignment
CO 3	Develop reading strategies with enriched vocabulary, through short story.	Lecture/Tutorial	Speaking
CO 4	Identify the use of English language through the study of Grammar and use them in specific contexts.	Lecture/Tutorial	Reading
CO 5	Interpret their understanding of English works in LSRW mode	Lecture/Tutorial	Writing

Offered by | **Department of English**

Course Content | **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	**Prose** J.B. Priestley - Travel by Train R.K. Narayan - Headache E.M. Forster - Tolerance	1	1 - 3
		Instructional Hours	**12**
Suggested Learning Methods : Intensive Reading			
II	**Poetry** William Blake - The School Boy Rudyard Kipling - If Sarojini Naidu - The Queen's Rival	1	4 - 6
		Instructional Hours	**12**
Suggested Learning Methods : Scaffolding Method			
III	**Short Stories** O. Henry - After Twenty Years Edgar Allan Poe – Tell - Tale Heart Frank R.Stockton - The Lady or The Tiger?	1	7 - 9
		Instructional Hours	**12**
Suggested Learning Methods : Flipped Learning			

IV	Herman Melville-Moby Dick (Abridged Version)	1	10 - 13
		Instructional Hours	**12**
Suggested Learning Methods : Flipped Learning			
V	**Oral & Written Communication (UnitI–IV) Listening** – Comprehension practice from Poetry, Prose, Online Voice Practice, observing / viewing E-content (with subtitles), Guest / Invited Lectures, Conference/ Seminar Presentations & Tests, and DD National News Live, BBC, CNN, VOA etc **Speaking** – In Group Discussion Forum, participate in the Turn Taking, and Conversation Management, Debating, Defending / Mock Viva Voce, Seminar Presentations on Classroom-Assignments, and Peer-Team-interactions. **Reading**–Different Reading Strategies in Poetry, Prose, Novel, Newspaper etc **Writing** – Modals, Concord, E-Mail & Report Writing, Spotting the Errors and How to avoid them, Sentence Completion, Prepositions, Idioms and Phrases, Collocation.	1	14 - 17
		Instructional Hours	**12**
Suggested Learning Methods : Activity Based Learning			
		Total Hours	**60**

Text Books	Unit I–V: Compiled by the Department of English
Reference Books	CLIL (Content & Language Integrated Learning) – Module by TANSCHE NOTE:(Text: Prescribed chapters or pages will be given to the students by the department
Web. URLs	

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Speaking	Reading	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	-	H	-	M	M	H	M	H	H	M	H	M
CO2	M	-	H	-	H	M	H	M	H	H	M	H	M
CO3	M	-	H	-	H	H	H	H	H	H	M	H	M
CO4	M	L	H	-	H	-	H	H	H	H	M	H	H
CO5	H	M	H	-	H	H	H	H	H	H	H	H	M

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. Adappatu Ancy Antony	Dr. R. Malathi

Course Code	Title		
23U3CKC305	Core Paper VII: Operating Systems		
Semester: III	Credits: 3	CIA: 20 Marks	ESE: 55 Marks
(Common to B. Sc. CS / B. Sc. IT / BCA)			
Course Objective	To understand the importance of Operating Systems and its functionalities to manage resources of Computer and Peripherals.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	Describes the types of operating system, memory management, Paging and Segmentations		

Course Outcomes		Teaching Methods	Assessment Methods
CO1	Understand the basic concepts of operating system	Lecture / Flipped Classroom	Assignment
CO2	Illustrate the concepts of processes and scheduling of process.	Lecture / Tutorial	Assignment
CO3	Apply the techniques of managing the deadlock and memory	Lecture	Seminar
CO4	Analyse the concepts of Segmentation of Paging and Page Replacement policies.	Lecture / Tutorial	Quiz
CO5	Apply various file system implementation	Lecture / Case Studies	Quiz

Offered by | **Computer Applications**

Course Content | **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	Introduction: Abstract views of an OS – Goals of an OS – OS and the Computer System – Classes of Operating System: Batch Processing systems – Multiprogramming systems – Time sharing systems – Real Time Operating System – Distributed Operating System – Modern Operating systems	1	1,2
		Instructional Hours	**12**
Suggested Learning Methods: Assignment and Seminar Preparation			
II	Processes and Programs – Programmer View of Process – OS view of Process – Controlling Processes – Process State Transitions – Process Control Block – Process Scheduling: Scheduling Concepts and Terminology – Fundamental Techniques of scheduling – Non Preemptive scheduling policies - Preemptive scheduling policies	1	3,4
		Instructional Hours	**12**
Suggested Learning Methods: Assignment and Seminar Preparation			
III	Deadlock: Definition – Deadlocks in Resource Allocation – Handling deadlocks – Deadlock Detection and Resolution - Deadlock Prevention – Deadlock Avoidance. Memory Management: Static and dynamic Memory Allocation – The Memory Allocation Model – reuse of Memory – Contiguous Memory allocation – Non Contiguous Memory Allocation.	1	11
		Instructional Hours	**12**
Suggested Learning Methods: Preparing Procedure for Deadlock and Memory Management			

IV	Paging – Segmentation – Segmentation with Paging. Virtual Memory: Basics – Demand Paging – Overview of Paging – Demand Paging preliminaries – Page replacement policies – Virtual Memory using segmentation	1	5
		Instructional Hours	**12**
Suggested Learning Methods: Preparation for Quiz			
V	Layers of the Input Output Control System (IOCS) – Overview of I/O Organization – Disk Scheduling. File systems: File System and IOCS – Files and File Operations – Fundamental File organizations – directory Structures – Case study on LINUX OS ,UNIX OS, Android OS (Self Study)	1	7
		Instructional Hours	**12**
Suggested Learning Methods: Case Studies on Latest Operating Systems			
		Total Hours	**60**

Text Books	1. D M Dhamdhere, **"Operating Systems- A Concept –Based Approach"**, 2nd Edition, 2006.
Reference Books	1. William Stallimgs, **"Operating Systems Internals and Design Principles"**, Seventh Edition,Pearson Education Inc.2012. 2. Abraham Silberchatz, Peter Baer Galvin,Greg Gagne, **"Operating System Concepts"**, Seventh Edition, Pearson 2009.
Web. URLs	https://www.geeksforgeeks.org/operating-systems

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	2	2	3	**20**

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	M	M	M	L	M	H	H	H	H	M	M
CO2	H	H	M	M	M	L	M	H	H	H	H	M	M
CO3	H	H	M	M	M	L	M	H	H	H	H	H	H
CO4	H	H	M	M	M	L	M	H	H	H	H	H	H
CO5	H	H	M	M	M	L	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Mrs. M. Sheela Newsheeba	Dr. K. Selvavinayaki

Course Code	Title		
23U3CKC306	Core Paper VIII: Java Programming		
Semester: III	Credits: 3	CIA: 20 Marks	ESE:55 Marks
(Common to B. Sc. AIML / B. Sc. DCFS / BCA)			
Course Objective	To gain knowledge about basic Java language syntax and semantics to write java programs and understand the principles of classes, methods, inheritance, polymorphism and packages.		
Course Category	Entrepreneurship		
Development Needs	Global		
Course Description	To understand the Object-Oriented Paradigm for developing programs using Control statements, Arrays, Packages, Interfaces, Exceptional Handling, Multi-threading and create networking applications		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Remember the fundamental concepts of Object-oriented Programming.	Lecture / Demonstration	Class Participation
CO 2	Develop simple Java programs with Control statements and arrays.	Demonstration, Constructivist learning	Quiz
CO 3	Apply the principles of packages and interfaces.	Constructivist learning Demonstration	Seminar
CO 4	Design Java application using the concepts of Exception Handling and Multithreading.	Lecture, Constructivist learning,	Seminar
CO 5	Develop applications using IO Streams and AWT.	Problem-based Teaching, Constructivist learning	Assignment

Offered by	Computer Applications

Course Content	Instructional Hours / Week: 4

Unit	Description	Text Book	Chapters
I	**Fundamentals of Object-Oriented Programming:** Object-Oriented Paradigm – Basic Concepts of Object-Oriented Programming – Benefits of Object-Oriented Programming – Application of Object-Oriented Programming. **Java Evolution:** History – Features – How Java differs from C and C++ – Java and Internet – Java and www –Web Browsers. **Overview of Java:** simple Java program – Structure – Java Tokens – Statements – Java Virtual Machine-Command Line Arguments.	1	1,2,3
	Instructional Hours		**12**
	Suggested Learning Methods: Code Debugging		
II	Constants, Variables, Data Types, Operators and Expressions, **Decision Making and Branching:** if, if...else, nested if, switch,? : Operator, **Decision Making and Looping:** while, do, for – Jumps in Loops - Labelled Loops, Classes, Objects and Methods. **Arrays:** One Dimensional Array-Creating an Array- Two Dimensional Array.	1	4,5,6,7 & 8
	Instructional Hours		**12**
	Suggested Learning Methods: Code Debugging		
III	**Interfaces: Multiple Interface-**Introduction-Defining Interface-Extending Interface-Implementing Interface-Accessing Interface Variables. **Packages:** Introduction-Java API Packages-Using System Packages-Naming Conventions-Creating Packages-Accessing a Package-Using a Package-Adding a Class to a	1	10,11 & 12

	Package-Hiding Classes-Static Import.		
		Instructional Hours	**12**
	Suggested Learning Methods: Simple Application Development		
IV	**Exception Handling:** Fundamentals-Hierarchy of the Exception Classes- Types of Exception –Exception Class-Uncaught Exceptions-Handling Exception-User Defined Exception. **Multithreaded Programming:** The Java Thread Model-Concept of Thread-Runnable Interface-Thread Class-Thread Creation-Thread's Life Cycle-Thread Scheduling-Synchronization and Deadlock-Inter Thread Communication-Joining Threads-Suspending, Resuming and Stopping Threads-JDBC.	**2**	10 & 11
		Instructional Hours	**12**
	Suggested Learning Methods: Simple Application Development		
V	**Input/Output Classes:** Input and Output Operations-Hierarchy of Classes in java.io Package-File Class-InputStream and OutputStream Classes-FileInputStream and FileOutputStream Classes-Reader and Writer Classes-RandomAccessFile Class-Stream Tokenizer. **Applets:** Applet Basics-Applet Life Cycle-Running Applets-Methods of the Applet Class-Graphics Class-Color Class-Font Class-Limitations of Applets. Java Networking -INetaddress-User Datagram Protocol, Internet Control Protocol, UDP Programming in Java Transmission Control Protocol, Multithreading & TCP Sockets Programming in Java.	2	16,18 &19
		Instructional Hours	**12**
	Suggested Learning Methods: Simple Application Development		
		Total Hours	**60**

Text Books	1. E. Balagurusamy, **Programming with Java – A Primer**, Tata McGraw Hill Publication, 3rd Edition, 2007 2. ISRD Group, **Introduction to Object Oriented Programming Through Java**, Tata McGraw Hill Publication, Forth Reprint 2008. 3. Java Network Programming, 4th Edition,Orielly Publication.
Reference Books	1. Patrick Naughton& Hebert Schildt, **The Complete Reference Java 2,** Tata McGraw Hill Publication**,** 3rdEdition, 2002 2. John R. Hubbard, **Programming with Java**, Tata McGraw Hill Publication, 2nd Edition, 2009.
Web. URLs	https://www.w3schools.com/java/default.asp

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	2	2	3	**20**

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	-	M	H	-	M	H	H	H	H	M	M
CO2	H	H	-	M	H	-	M	H	H	H	H	M	M
CO3	H	H	-	M	H	-	M	H	H	H	H	H	H
CO4	H	H	-	M	H	-	M	H	H	H	H	H	H
CO5	H	H	-	M	H	-	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. K. Selvavinayaki	Dr. K. Selvavinayaki

Course Code	Title		
23U3CAP304	Core Paper IX: Practical in Java Programming		
Semester: III	Credits: 3	CIA:30 Marks	ESE: 45 Marks

Course Objective	To enable the students to develop problem solving skills and programming ability in Java language.
Course Category	Entrepreneurship
Development Needs	Global
Course Description	To make the students to understand the object-oriented paradigm, design technique, syntax.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Develop programs to implement the string, array and multiple inheritance concepts.	Problem Based Teaching, Constructivist learning	Program Creativity
CO 2	Implement the multithreading, exception handling concepts to solve real world problems	Constructivist learning, Code Review	Debugging
CO 3	Apply the concept of package to illustrate reusability.	Constructivist learning	Application of Logic
CO 4	Create application for file handling.	Problem Based Teaching, Constructivist learning	Program Development
CO 5	Create Networking Applications using Java Network Programming concepts	Problem Based Teaching, Constructivist learning	Program Development

Offered by	**Computer Applications**

Course Content **Instructional Hours / Week: 3**

Unit	List of Practical
1	Write a Java Applications to extract a portion of a character string and print the extracted string.
2	Write a Java program to insert an element (specific position) into an array.
3	Write a Java Program to implement the concept of Interfaces.
4	Write Java program to implement overloading of methods.
5	Write a program to implement the concept of Exception Handling.
6	Write java program to demonstrate runtime polymorphism using overriding.
7	Write Java program to add two matrices.
8	Write a Java Program to implement the concept of multithreading with the use of any three multiplication tables and assign three different priorities to them.
9	Write a Java program to import classes from user defined package and creating package.
10	Write a Java program to process text file.
11	Write a Java Program to find the IP Address of the Machine
12	Write a Java Program to implement TCP Protocol.
13	Write a Java Program to illustrate the Local Loop in the network.

14	Write a Java Program to implement UDP Protocol.
15	Write a Java Program to implement Stop and Wait Protocol

Suggested Learning Methods: Solving Case studies, Peer tutoring and pair programming	
Total Hours	**45**

Tools for Assessment (30 Marks)

Application of Logic	Program Creativity	Program Debugging	Test 1	Test 2	Observation Note Book	Total
4	4	4	7	7	4	**30**

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	-	M	M	-	-	H	M	H	H	M	M
CO2	M	H	-	M	M	-	M	H	M	H	M	H	M
CO3	M	H	-	M	M	-	-	H	H	M	M	M	H
CO4	H	H	-	M	M	-	-	H	M	H	H	H	M
CO5	H	H	-	M	M	-	-	H	H	M	H	M	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. K. Selvavinayaki	Dr. K. Selvavinayaki

Course Code	Title		
22U3MIA303/ 23U3MIA303	**Allied Paper III : Operations Research**		
Semester: III	**Credits : 4**	**CIA: 25 Marks**	**ESE: 75 Marks**

(Common to all UG Programmes)

Course Objective	On successful completion of the course the students to learn various mathematical applications in industries, decision making for real time environment
Course Category	Skill Development
Development Needs	Global
Course Description	Operations research is an analytical approach of problem-solving skill and Decision-making that is useful in the management of organizations.

Course Outcomes		**Teaching Methods**	**Assessment Methods**
CO 1	Classify different OR models and knowing their advantages in decision making environment	Group learning/ Lectures	Assignment
CO 2	Recognize and formulate transportation, assignment problems and derive their optimal solution.	Peer Teaching/ Lectures	Unit Test
CO 3	Gain knowledge about Game theory and replacement models.	Lectures/ Tutorial	Seminar
CO 4	Outlining the Queuing Theory concepts.	Group learning/ Lectures	Assignment
CO 5	Construct Network models (PERT & CPM) for scheduling the project.	Video Lectures/ Lectures	Quiz

Offered by	**Mathematics**

Course Content	**Instructional Hours / Week :4**

Unit	**Description**	**Text Book**	**Chapters**
I	Linear programming – Mathematical Formulation-Solving LPP using Graphical Method-Canonical and Standard form of LPP .	1	2, 3
	Simplex Method - Big-M Method, Principles of Duality.	1	4,5
		Instructional Hours	**12**
Suggested Learning Methods:Problem Solving Practice			
II	**Transportation Problems**: Introduction – Initial Basic Feasible solutions – Balanced Transportation Problem : North West Corner Rule, Least Cost Method , Vogel's Approximation Method - Unbalanced Transportation Problem-Optimality – MODI Method (Non Degeneracy).	1	10
	Assignment Problem: Introduction –Hungarian Assignment method –Maximization in Assignment problem-Unbalanced Assignment problem- Travelling salesman problem.	1	11
		Instructional Hours	**12**
Suggested Learning Methods: Seminar			
III	**Game Theory:** Concept of Pure and Mixed Strategies – Solving 2 x 2 matrix with and without saddle point - n x 2 & 2 x m games by Graphical Method - Dominance Property.	1	17

	Replacement models: Elementary Replacement Models - Present Value - Rate of Return - Depreciation - Individual Replacement – Group Replacement.	1	18
		Instructional Hours	**12**
Suggested Learning Methods : Group Discussion			
IV	**Queuing Theory (Derivations not included):**Introduction – Elements of Queuing System – Operating Characteristics of Queuing systems – Probability Distributions in Queuing Systems - Birth death process.	1	20
	Classification of Queuing Models: Single Server - finite and infinite population models. (Model I , Model II & Model III) – Problems only.	1	20
		Instructional Hours	**12**
Suggested Learning Methods :https://youtu.be/xGkpXk-AnWU			
V	**Network Scheduling:** Critical Path Method–Principles of Network Construction: Forward Pass – Backward Pass computations –Types of Floats- Practical Problems in Networking Methods. **PERT:**Critical Path – Probability of completion of project-Difference between PERT and CPM.	1	21
		Instructional Hours	**12**
Suggested Learning Methods : Problem Solving Practice			
		Total Hours	**60**

Text Books	1.Kanti Swarup, P.K. Gupta, Man Mohan, **Operations Research,** S. Chand & Sons, 1997.
Reference Books	1.Hamdy A Taha, **Operations Research – An introduction,** Prentice Hall of India PVT.LTD, 8th edition, 2008. 2.J. K. Sharma, **Operations Research Theory and Applications**, MacMillan India Ltd,2008.
Web. URLs	1.https://youtu.be/4U3B5lr-MqM.(Introduction to OR) 2.https://www.youtube.com/watch?v=2AOhCWhwOKo (PERT concepts)

Tools for Assessment (25 Marks)

CIA I	CIA II	Model	Seminar	Assignment	Periodical Quizzes	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	L	-	M	M	-	M	H	L	L	M	L	L
CO2	M	M	-	M	M	-	M	H	L	M	M	L	M
CO3	M	M	-	M	M	-	M	H	M	M	M	L	M
CO4	M	M	-	M	M	-	M	H	M	M	M	L	M
CO5	M	M	-	M	M	-	M	H	M	M	M	L	M

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Ms. P. Sheeba Maybell	Dr. T. Chandrapushpam

Course Code	Title		
23U4CAZ301	Skill Based Paper I: Practical in LINUX		
Semester: III	Credits: 3	CIA: 30 Marks	ESE:45 Marks

Course Objective	To know about the basics of Shell Script programming language
Course Category	Employability
Development Needs	Global
Course Description	This course examines the important techniques in operating system design and implementation.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Familiarise the OS types, Path setting, directories	Demonstration	Program Creativity
CO 2	Apply various scripting concepts and write simple programs.	Demonstration	Program Debugging
CO 3	Apply the shell programming commands.	Demonstration	Program Creativity
CO 4	Create shell programs using manipulating concepts.	Demonstration	Program Development
CO 5	Develop shell scripts to solve real time problems.	Demonstration	Program Development

Offered by	**Computer Applications**

Course Content	Instructional Hours / Week : 3

Programme	Description
1	Write a shell script to stimulate the file commands: rm, cp, cat, mv, cmp, wc, split, diff.
2	Write a shell script to show the following system configuration : a. currently logged user and his log name b. current shell, home directory, Operating System type, current Path setting, current working directory c. show currently logged number of users, show all available shells d. show CPU information like processor type, speed e. show memory information
3	Write a Shell Script to implement the following: pipes, Redirection and tee commands.
4	Write a shell script for displaying current date, user name, file listing and directories by getting user choice.
5	Write a shell script to implement the filter commands.
6	Write a shell script to remove the files which has file size as zero bytes.
7	Write a shell script to find the sum of the individual digits of a given number.

8	Write a shell script to find the greatest among the given set of numbers using command line arguments.
9	Write a shell script for palindrome checking.
10	Write a shell script to print the multiplication table of the given argument using for loop.

Suggested Learning Methods: Solving Case studies, Program development, Code Review and Peer Coding	
Total Hours	**45**

Tools for Assessment (30 Marks)

Application of Logic	Program Creativity	Program Debugging	Test 1	Test 2	Observation Note Book	Total
4	4	4	7	7	4	**30**

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	H	M	M	M	H	H	H	H	M	H	H
CO2	H	M	H	M	M	H	H	M	M	H	H	M	H
CO3	H	L	H	H	H	H	L	H	H	L	H	H	H
CO4	H	L	H	H	H	H	L	H	H	L	H	H	H
CO5	H	L	H	H	H	H	L	H	H	L	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. A. Kalaivani	Dr. K. Selvavinayaki

Course Code	Title	
22U4NM3BT1	Part IV : Basic Tamil – I (அடிப்படைத்தமிழ் - I)	
Semester: III	Credits: 2	CIA: 50 Marks

(Common to all UG Programmes)

Course Objective	தமிழ் மொழியைக் கற்பித்தல்–மொழித்திறனை வளர்த்தல்.
Course Category	Skill Development (மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)
Development Needs	Regional (தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்)
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	தமிழ் எழுத்துக்கள் அறிமுகம் செய்தல் மற்றும் வாசித்தல் ஆகியவற்றின் பயன்பாடு.	குழு விவாதம்	ஒப்படைவு
CO 2	பிறமொழி கற்றல் ஆர்வம் தூண்டல்.	குழு விவாதம்	கருத்தரங்கு
CO 3	பிறமொழி அறிவுத் திறன் மேம்படச்செய்தல	விரிவுரை/ காணொளிப்பட விளக்கம்	குழுத்திட்டம்
CO 4	வார்த்தை அமைக்கும் திறன் பெறச்செய்தல்.	விரிவுரை/ குழு விவாதம்	குழுத்திட்டம்
CO 5	கையெழுத்துத்திறன் பெறச்செய்தல்.	குழு விவாதம்	குழுத்திட்டம்

Offered by தமிழ்த்துறை

Course Content : Basic Tamil – I அடிப்படைத்தமிழ் - I — **Instructional Hours / Week : 2 Hours**

Unit	Description	Text Book	Chapters
I	தமிழ் மொழியின் அடிப்படைக் கூறுகள்	இலக்கணம்	1.உயிர்எழுத்துக்கள் 2.மெய் எழுத்துக்கள் 3.உயிர்மெய் எழுத்துக்கள்
		Instructional Hours	**6 Hours**
Suggested Learning Methods : எழுத்துக்களை எழுதும் மற்றும் வாசிக்கும் திறன் பெற்றமை			
II	சொல் அமைத்தல்	இலக்கணம்	1.ஓர் எழுத்து ஒருமொழி 2.இரண்டுமுதல் ஐந்து எழுத்துச்சொற்கள் 3.தமிழ் மாதங்கள் பெயர்,கிழமைகளின் பெயர் 4.வண்ணங்கள் பெயர், 5.சொல் ஆக்கம்
		Instructional Hours	**6 Hours**
Suggested Learning Methods : எழுத்துக்களை கொண்டு சொற்களை உருவாக்கும் பயிற்சி பெற்றமை			
III	தொடரமைப்பு	தொடரமைப்பு	1.எழுவாய் 2.செயப்படுபொருள்
		Instructional Hours	**6 Hours**
Suggested Learning Methods : சொற்களைக் கொண்டு தொடர் உருவாக்கும் பயிற்சி பெற்றமை			
IV	குறிப்பு எழுதுதல்	இலக்கண	1.தொடரமைப்பு 2.பத்தி அமைப்பு
		Instructional Hours	**6 Hours**
Suggested Learning Methods : பத்தி அமைப்பு உருவாக்கும் திறன் பெற்றமை			

V	பிழைநீக்குதல்	இலக்கணம்	1.ஒற்றுப்பிழை 2.வாக்கியப் பிழை
		Instructional Hours	**6 Hours**
Suggested Learning Methods : இலக்கணப் பிழை இன்றி எழுதும் திறன் பெற்றமை			
		Total Hours	**30 Hours**

Text Books	1. இளங்கலை தமிழ் மாணவர்களுக்குரிய பாடநூல்"அரிச்சுவடி" தொகுப்பு: தமிழ்த்துறை,நேரு கலை மற்றும் அறிவியல் கல்லூரி,கோயம்புத்தூர்.
Reference Books	1. பவணந்தி முனிவர்,நன்னூல் பூலியூர்க்கேசிகன் உரை,சாரதா பதிப்பகம், சென்னை–40. 2. தொல்காப்பியம், கணேசையர் பதிப்பு,உலகத் தமிழாராய்ச்சி நிறுவனம், சென்னை -113.
Web. URLs	https://youtu.be/P7vvUnjI6vY, https://youtu.be/Zx4R3yZseuQ.

Tools for Assessment (50 Marks)

CIA I	CIA II	CIA III	Seminar	Assignment	Group Project	Total
8	8	10	8	8	8	50

Mapping

CO/PO	PO 1	PO2	PO3	PO4	PO 5	PO6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO4	PSO5
CO1	L	L	H	L	H	M	H	H	-	-	-	L	L
CO2	M	L	H	L	M	M	L	H	-	-	-	L	L
CO3	H	L	H	L	L	M	M	H	-	-	-	L	L
CO4	H	L	M	L	L	M	H	M	-	-	-	L	L
CO5	M	L	H	L	M	M	H	H	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S. Satheesh kumar	Dr. A. Sridevi

Course Code	Title	
22U4NM3AT1	Part IV: Advanced Tamil – I (சிறப்புத்தமிழ் -I)	
Semester: III	Credits: 2	ESE: 50 Marks
Course Objective	புதுக்கவிதை உருவாக்கும் திறன் வளர்த்தல் - மொழித்திறனை மேம்படுத்துதல்	
Course Category	Skill Development (மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)	
Development Needs	Regional (தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்)	
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்	

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	புதுக்கவிதை படைக்கும் திறன்வளர்த்தல்	விரிவுரை	குழுத்திட்டம்
CO 2	படைப்பாக்கத்திறன் அறிவு பெறச்செய்தல்.	விரிவுரை / குழு விவாதம்	கருத்தரங்கு
CO 3	தகவல் தொடர்பியலுக்கான கடிதம்,அமைவுத்திறன் பெறச்செய்தல்	விரிவுரை / காணொளிப்பட விளக்கம்	கருத்தரங்கு
CO 4	மொழியைப் பிழையின்றிப் பேசும் ,எழுதும் திறன் பெறச் செய்தல்	விரிவுரை	ஒப்படைவு
CO 5	கடிதம் எழுதுதல் மற்றும் மொழியறிவைப் பெறுதல்.	விரிவுரை / காணொளிப்பட விளக்கம்	குழுத்திட்டம்

Offered by	தமிழ்த்துறை

Course Content: Advanced Tamil - I (சிறப்புத்தமிழ் -I)	Instructional Hours / Week : 2 Hours

Unit	Description	Text Book	Chapters
I	புதுக்கவிதை	1. பாரதியார் 2. பாரதிதாசன்	1.1.தேசபக்திபாடல் தாயின் மணிக்கொடி பாரீர் 1.2.பாரதிதாசன்(தமிழ்மொழிபற்று- கனியிடை,தமிழுக்கும் அமுதென்று)
		Instructional Hours	6 Hours
Suggested Learning Methods : கவிதை எழுதும் திறன் பெற்றமை			
II	பிழை நீக்குதல்	இலக்கணம்	2.1.சொற்பிழை நீக்கம் 2.2.தொடர் பிழை நீக்கம் 2.3.பத்தி எழுதச் செய்தல்
		Instructional Hours	6 Hours
Suggested Learning Methods :வாக்கியங்களைப் பிழை இன்றி எழுதும் திறன் பெற்றமை			
III	இலக்கணப் பயிற்சி அளித்தல்	இலக்கணம்	3.1.தொகை நிலைத்தொடர், 3.2.தொகா நிலைத்தொடர் 3.3.ஆகுபெயர் வகைகள்

		Instructional Hours	**6 Hours**
Suggested Learning Methods : இலக்கணப் பிழை இன்றி எழுதும் பயிற்சி பெற்றமை			
IV	கடிதம் எழுதுதல்	இலக்கணப் பயிற்சி ஏடு	4.1. பாராட்டுக்கடிதம் 4.2. நன்றிக்கடிதம் 4.3. அழைப்புக்கடிதம் 4.4. அலுவலகக் கடிதம் 4.5. நட்புக்கடிதம்
		Instructional Hours	**6 Hours**
Suggested Learning Methods : கடிதம் எழுதும் திறன் பெற்றமை			
V	இலக்கிய வரலாறு	தமிழ் இலக்கிய வரலாறு	1.வேலு நாச்சியார் 2.கப்பலோட்டிய தமிழன்
		Instructional Hours	**6 Hours**
Suggested Learning Methods : தமிழ் இலக்கிய வரலாற்றின் சிறப்பினை அறிய பெற்றமை			
		Total Hours	**30 Hours**

Text Books	1. இளங்கலை தமிழ் மாணவர்களுக்குரிய பாட நூல்"திரட்டு"தமிழ்த்துறை. தொகுப்பு: தமிழ்த்துறை,நேரு கலை மற்றும் அறிவியல் கல்லூரி, கோயம்புத்தூர்.
Reference Books	1. பாரதியார்- பாரதியார் கவிதைகள், அபிராமி பதிப்பகம், 7- பி, கொடிமரத் தெரு, சென்னை– 013. 2. பவணந்தி முனிவர் – நன்னூல் புலியூர்க்கேசிகன் உரை, சாரதா பதிப்பகம், சென்னை -040.
Web. URLs	https://youtu.be/xnsvFOHxDeo, https://youtu.be/kQoIj-29VIk.

Course designed by	**Verified by**
Dr. S. Satheesh kumar	Dr. A. Sridevi

Course Code	Title	
22U4NM3CAF	Non Major Elective: Consumer Affairs	
Semester: III	Credits: 2	ESE: 50 Marks

Course Objective	To enable the students to understand the concepts of Consumers and Markets
Course Category	Employability
Development Needs	National & Global
Course Description	Understanding the importance of Emotional Intelligence

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Know their rights and responsibilities as a consumer	Lecture/ Video Lectures	Assignment
CO 2	Gain knowledge about Consumer protection law in India	Lecture/ Peer Teaching	Seminar
CO 3	Understand the procedure about redressed of consumer complaints	Lecture/ Group Discussion	Seminar
CO 4	Learn about Consumer related regulatory agencies and Norms	Lecture/ Role Play	Assignment
CO 5	Comprehend Business Firms, Interface with Consumers.	Lecture/ Group Discussion	Quiz

Offered by Department of Business Administration

Course Content | **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Conceptual Framework - Consumer and Markets:** Concept of Consumer, Nature of markets: Liberalization and Globalization of markets with special reference to Indian Consumer Markets, Concept of Price in Retail and Wholesale, Maximum Retail Price (MRP), Fair Price, GST, labelling and packaging along with relevant laws, Legal Metrology. Consumer Complaining Behaviour: Alternatives available to Dissatisfied Consumers; Complaint Handling Process.	1	1 & 2
		Instructional Hours	**06**
Suggested Learning Methods : Video lectures			
II	**The Consumer Protection Law in India** **Objectives and Basic Concepts:** Consumer rights and UN Guidelines on consumer protection, Consumer goods, defect in goods, spurious goods and services, service, deficiency in service, unfair trade practice.	1	5 & 6
		Instructional Hours	**06**
Suggested Learning Methods : Peer Teaching			
III	**Grievance Redressal Mechanism under the Indian Consumer Protection Law** Who can file a complaint? Grounds of filing a complaint;	2	1

	Limitation period; Procedure for filing and hearing of a complaint; Disposal f cases, Relief/Remedy available; Temporary Injunction, Offences and penalties.		
		Instructional Hours	**06**
Suggested Learning Methods : Group Discussion			
IV	**Role of Industry Regulators in Consumer Protection-** Industry self-regulation (ISR) Protection Policies, Consumer Protection Agencies i. Telecommunication: TRAI ii. Food Products: FSSAI Insurance : IRDA and Insurance Ombudsman	2	4
		Instructional Hours	**06**
Suggested Learning Methods : Role Play			
V	**Contemporary Issues in Consumer Affairs** **Consumer Movement in India:** Formation of consumer organizations and their role in consumer protection, Misleading Advertisements and sustainable consumption, National Consumer Helpline, Comparative Product testing. **Quality and Standardization:** Voluntary and Mandatory standards; Role of BIS, Indian Standards Mark (ISI), Ag-mark, Hallmarking, Licensing and Surveillance.	2	6 & 7
		Instructional Hours	**06**
Suggested Learning Methods : Group Discussion			
		Total Hours	**30 Hrs**

Text Books	1. Khanna, Sri Ram, Savita Hanspal, Sheetal Kapoor, and H.K. Awasthi. (2007) Consumer Affairs, Universities Press. 2. Choudhary, Ram Naresh Prasad (2005). Consumer Protection Law Provisions and Procedure, Deep and Deep Publications Pvt Ltd.
Reference Books	1. G. Ganesan and M. Sumathy. (2012). Globalisation and Consumerism: Issues and Challenges, Regal Publications. 2. Suresh Misra and Sapna Chadah (2012). Consumer Protection in India:Issues and Concerns, IIPA, New Delhi. 3. Rajyalaxmi Rao (2012), Consumer is King, Universal Law Publishing Company. Girimaji, Pushpa (2002). Consumer Right for Everyone, Penguin Books.

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	L	-	-	-	M	H	H	M	M	-	-	-	-
CO2	L	-	-	-	M	H	H	M	M	-	-	-	-
CO3	L	-	-	-	M	H	M	M	M	-	-	-	-
CO4	L	-	-	-	M	H	H	M	M	-	-	-	-
CO5	L	-	-	-	M	H	H	M	M	-	-	-	-

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. R A Ayyapparajan	Dr. R A Ayyapparajan

Course Code	Title	
22U4NM3GST	Non Major Elective - Gender Sensitization	
Semester: IV	Credits:2	ESE:50Marks

Course Objective	To raise awareness of gender, promote gender equality, and equip learners with key concepts and principles of gender sensitization.
Course Category	Skill Development, Employability and Entrepreneurship
Development Needs	Local, National and Global
Course Description	The course aims an exploration of overview of gender, its social construction, gender issues and challenges in India, and equips learners with key concepts and principles of gender sensitization to promote inclusivity and equity.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Learn gender roles, socialization, and stereotypes.	Direct Instruction	Assignment
CO 2	Recognize the gender discrimination causes, areas, and levels in institutions.	Direct Instruction	Seminar
CO 3	Identify thegender identity formation, types, families, and socialization in India.	Video Lessons	Assignment
CO 4	Understand the gender concerns in access, enrollment, retention, participation, and achievement.	Direct Instruction	Assignment
CO 5	Apply theLaws Related to Women	Direct Instruction	Exhibition

Offered by Department of Costume Design and Fashion

Course Content — **Instructional Hours / Week: 2**

Unit	Description	Text Book	Chapters
I	**Gender Socialisation and Gender Roles:** Introduction- Meaning of Sex and Gender, Gender Socialisation– Definitions, Agents of Gender Socialisation, Gender Roles- Meaning, Definitions, Nature of Gender Roles, Factors Determining Gender Roles/Stereotypes	1	-
		Instructional Hours	**6**
Suggested Learning Methods: Group discussions			
II	**Gender Discrimination:** Gender Discrimination - Meaning and Causes of Gender Discrimination, Areas of Gender Discrimination, Gender Discrimination at Different Levels of Institutions	1	-
		Instructional Hours	**6**
Suggested Learning Methods :Video documentaries and films			
III	**Gender Identity:** Gender Identity - Meaning, Formation and Factors of Gender Identity, Types of Gender Identity, Types of Families in India, Gender Socialisation within Indian Families	1	-
		Instructional Hours	**6**
Suggested Learning Methods :Case Method			

IV	**Gender Concerns:** Gender Concerns Related to Access, Enrolment, Retention, Participation, and Achievement	1	-
		Instructional Hours	**6**
Suggested Learning Methods: Video documentaries and films			
V	**Laws Related to Women:** Laws Related to Rape, Laws Related to Dowry- Dowry Prohibition Act, 1961, Laws Related to Remarriage, Laws Related to Divorce, Laws Related to Property Inheritance, Laws Related to Trafficking, Constitutional and Legal Aspects related to Women- Women's Reservation Bill –History and Current Status	1	-
		Instructional Hours	**6**
Suggested Learning Methods :Case Method			
		Total Hours	**30**

Text Books	1. Gender School and Society : Self-learning Material, MANGALORE UNIVERSITY, Printed at Datacon Technologies, Bangalore, 2018
Reference Books	1. United Nations Development Programme. (2014). Gender Equality and Women's Empowerment: Training Manual. New York: UNDP.
Web. URLs	1. Coursera - https://www.coursera.org/courses?query=gender%20sensitization 2. edX - https://www.edx.org/learn/gender-sensitization 3. Udemy - https://www.udemy.com/topic/gender-sensitization/

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	M	M	M	H	H	M	M	-	-	-	-
CO2	H	M	M	M	H	H	M	M	M	-	-	-	-
CO3	H	M	M	M	M	H	H	M	M	-	-	-	-
CO4	H	M	M	M	L	H	H	M	M	-	-	-	-
CO5	H	M	M	M	M	H	M	M	M	-	-	-	-

H-High; M-Medium; L-Low

Course designed by	Verified by
M Nandhini	Dr S Jayapriya

Course Code	Title	
22U4NM3WRT	Non Major Elective : Women's Rights	
Semester: III	Credits: 2	ESE: 50 Marks

Course Objective	To facilitate the awareness about the social, economical, political, intellectual or cultural contributions of Women in India.
Course Category	Skill Development
Development Needs	National
Course Description	Apply the knowledge of Rights related to women for their betterment.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Aware of basic constitutional rights	Lecture/ Case Study/ Role Play	Seminar
CO 2	Gain awareness on Political rights	Lecture/ Case Study/ Role Play	Role Play
CO 3	Understand individual and familial rights	Lecture/ Case Study/ Role Play	Role Play
CO 4	Grasp the provisions for Women's Rights in India	Lecture/ Case Study/ Role Play	Role Play
CO 5	Develop an understanding of the Protection Mechanisms for women	Lecture/ Case Study/ Role Play	Assignment

Offered by **Department of Social Work**

Course Content **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Constitutional Rights of Women in India**: Indian constitution relating to women - Fundamental rights - Directive principles of state policy - right to equality – rights against exploitation cultural and educational rights - the right to constitutional remedy - University Declaration of Human Rights -Enforcement of Human Rights for Women and Children - Role of Cells and Counseling Centers - Legal AID cells, Help line, State and National level Commission	4	2
		Instructional Hours	**06**
Suggested Learning Methods : Seminar			
II	**Political Rights of Women in India:** Political Rights of Women in India - Electoral process – women as voters - candidates and leader - pressure group, 73rd and 74th amendment and representation of women in local self –government – women in Rural and urban local bodies - Reservation of women - party ideologies and women's issues.	5	1
		Instructional Hours	**06**
Suggested Learning Methods : Role Play			
III	**Women's Rights: Access to Justice:** Introduction–Criminal Law–Crime Against Women Domestic Violence – Dowry Related Harassment and Dowry Deaths - Molestation – Sexual Abuse and Rape Loopholes in Practice–Law Enforcement Agency	3	7

		Instructional Hours	**06**
Suggested Learning Methods : Role Play			
IV	**Women's Rights:** Violence Against Women – Domestic Violence The Protection of Women from Domestic Violence Act 2005, The Marriage Validation Act 1982 - The Hindu Widow Remarriage Act 1856 - The Dowry Prohibition Act 1961.	3	5
		Instructional Hours	**06**
Suggested Learning Methods : Creative Art Assignments			
V	**Special Women Welfare Laws:** Sexual Harassment at Work Places, Rape and Indecent Representation, The Indecent Representation (Prohibition) Act, 1986, Immoral Trafficking, The Immoral Traffic (Prevention) Act, 1956 - Acts Enacted for Women Development and Empowerment, Role of Rape Crisis Centers. Protection of Children from sexual Offences Act 2012.	3	9
		Instructional Hours	**6**
Suggested Learning Methods : Community Participation Program			
		Total Hours	**30**

Text Books	1. Nitya Rao Good Women do not Inherit Land Social Science Press and 2. OrientBlackswan2008 3. International Solidarity Network Knowing Our Rights An imprint of 4. KaliforWomen2006 5. P. D. Kaushik "Women Rights" Book well Publication 2007 UN Centre for Human Rights, Discrimination against Women (Geneva: World Campaign for Human Rights,1994). 6. Agnes, Flavia. (1992). "Give us "Give us This Day Our Daily Bread: Procedures and Case Law on Maintenance". Majlis, Bombay. 7. Agnes, Flavia. (1999). "Law and Gender Inequality: The Politics of Women‟s Rights in India". OUP, New Delhi
Reference Books	1. Aruna Goal Violence Protective Measures for Women Development and Empowerment, Deep and Deep Publications Pvt.2004 2. Monica Chawla Gender Justice, Deep and Deep Publications Pvt. Ltd. 2006 3. Preeti Mishra Domestic Violence Against Women, Deep and Deep Publications Pvt.2007 4. Clair M.Renzetti, JeffreyL. Edleson, Raquel Kennedy Bergen, Source Book on Violence Against Women Sage Publications 2001.

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	M	M	H	M	M	M	H	M	H	H	H
CO2	H	M	M	H	M	M	H	H	H	M	H	H	H
CO3	H	M	M	H	M	H	M	M	M	M	M	M	M
CO4	M	H	M	H	M	M	M	H	M	H	M	M	M
CO5	H	M	M	H	M	H	M	M	H	M	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr P Nathiya	Dr P Nathiya

Course Code	Title		
23U4CA3ED1	Skill Based Open Elective Courses Extra Departmental Course : Multimedia Tools - Practical		
Semester: III	Credits: 2	CIA: - -	ESE:50 Marks
Course Objective	To make the students to be a proficient in a broad range of design skills and animation.		
Course Category	Entrepreneurship		
Development Needs	Global		
Course Description	This course introduces the many applications that enhance the world of multimedia and the web, as well as the technological decisions that are needed to deploy them. Students learn how various tools are used to create a rich, dynamic Image/visual experience for users in many different formats.		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Apply the graphical designs and functions using Photoshop, CorelDraw and Flash	Laboratory Practice	Program Creativity
CO 2	Create Professional design & animation	Laboratory Practice	Program Creativity
CO3	Frame banner using graphical designs and functions	Laboratory Practice	Program Creativity
CO4	Develop Professional design & animation	Laboratory Practice	Program Creativity
CO5	Create Animated Objects	Laboratory Practice	Program Creativity

Offered by	Computer Applications

Course Content	Instructional Hours / Week: 2

Unit	List of Practical for Photoshop&CorelDraw
	List of Practical for Photoshop
1	Create Sun Flower using Photoshop.
2	Animate Plane Flying the Clouds using Photoshop.
3	Create Plastic Surgery for Nose using Photoshop.
4	Create See thru text using Photoshop.
5	Create Web Page using Photoshop.
	List of Practical for CorelDraw
6	Create a 3D text in Corel Draw
7	Create a logo for your department in Corel Draw.
8	Create an advertisement for a Textile company in Corel Draw.
9	Using Corel Draw, design a business card for a company.
10	Using Corel Draw, design a banner for a marriage function.

Suggested Learning Methods: Creative theme and poster development.	
Total Hours	30 Hrs

Mapping												
CO / PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	H	H	L	M	H	L	M	H	H	H	H	M	M
CO2	H	H	L	M	H	L	M	H	H	H	H	M	M
CO3	H	H	L	M	H	L	M	H	H	H	H	H	H
CO4	H	H	L	M	H	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H
H-High; M-Medium; L-Low													

Course designed by	**Verified by Chairman**
Mrs. M. Sheela Newsheeba	Dr. K. Selvavinayaki

Course Code	Title		
23U4CA3ED2	**Skill Based Open Elective Courses** **Extra Departmental Course:Web Development using HTML - Practical**		
Semester: III	**Credits: 2**	**CIA: - -**	**ESE:50 Marks**
Course Objective	To enable the student to create the static web pages and web applications.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	To develop skill set in HTML and apply the concepts to create applications in order to meet the Local and Global needs		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Remember about WebPages and Web sites.	Demonstration	Program Creativity
CO 2	Understand about different HTML Tags	Demonstration	Debugging
CO 3	Apply the tags which they understood to design web pages and web applications	Demonstration	Application of Logic
CO 4	Analyze the usage of Web tags	Demonstration	Program Development
CO 5	Evaluate website on real world problems according to dynamic content	Demonstration	Program Development

Offered by	**Computer Applications**
Course Content	**Instructional Hours / Week :2**

Program List

1. Develop a HTML document which displays the entire header tags, it must open another HTML document.
2. Write names of several countries in a paragraph and store it as an HTML document, world.html. Each country name must be a hot text. When you click India (for example), it must open india.html and it should provide a brief introduction about India.
3. Design a HTML document describing you. Assign a suitable background design and background color and a text color and Image.
4. Write a HTML program using Marquee Behavior.
5. Write a HTML document to print your class Time Table.
6. Develop a Complete Web Page using Frames and Framesets which gives the Information about a Hospital using HTML.
7. Design a HTML document with link to send e-mail messages.
8. Write a HTML Program to illustrate the ordered list.
9. Write a HTML Program to print your Bio-Data in the following format: NAME Religion Community Street Town District State Address PIN Code Office Phone Residence Mobile Educational Qualification Degree University / Institute Month & year Grade / Mark.
10. Develop a HTML document to display a Registration Form for an inter-collegiate function.

Suggested Learning Methods: Solving Case studies and Program development	
Total Hours	**30 Hrs**

Mapping													
CO \ PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	H	H	L	M	H	L	M	H	H	H	H	M	M
CO2	H	H	L	M	H	L	M	H	H	H	H	M	M
CO3	H	H	L	M	H	L	M	H	H	H	H	H	H
CO4	H	H	L	M	H	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H
H-High; M-Medium; L-Low													

Course designed by	**Verified by**
Mrs. B. Jijitha	Dr. K. Selvavinayaki

23U1TAM404	Part - I : Muthamizh (முத்தமிழ்)		
Semester: IV	**Credits: 3**	**CIA: 20 Marks**	**ESE: 55 Marks**
Course Objective	சங்ககால மக்களின் வாழ்வியல் வாயிலாக பண்பாட்டுக் கூறுகளை உணர்த்துதல		
Course Category	Skill Development (மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)		
Development Needs	Global/Regional (உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்)		
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல் மற்றும் உலக அளவில் தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்		

Course Outcomes		**Teaching Methods**	**Assessment Methods**
CO 1	தமிழர்களின் வாழ்வியல் பண்புகளைக் கற்று அறிதல்.	விரிவுரை/காணொளிப் பட விளக்கம்	ஒப்படைவு
CO 2	தமிழ் இலக்கிய வகைகளைக் கூறுவதன் மூலம் தமிழின் இலக்கிய வளத்தை உணரச்செய்தல்.	விரிவுரை	குழுத்திட்டம்
CO 3	மாணவர்களிடையே காலத்திற்கேற்ப மனவளர்ச்சியை உருவாக்குதல்.	விரிவுரை/காணொளிப் பட விளக்கம்	கருத்தரங்கு
CO 4	நாட்டின் சிறந்த குடிமக்களாக மாணவர்களை உருவாக்குதல்.	விரிவுரை	ஒப்படைவு
CO 5	மாணவர்களின் மனநலத்தை வளர்த்தல்.	விரிவுரை/குழு விவாதம்	கருத்தரங்கு

Offered by தமிழ்த்துறை

Course Content: Muthamizh (முத்தமிழ்)			**Instructional Hours / Week : 4**
Unit	**Description**	**Text Book**	**Chapters**
I	எட்டுத்தொகை	1. நற்றிணை 2. குறுந்தொகை 3. பதிற்றுப்பத்து 4. புறநானூறு	1.1 குறிஞ்சி: நின்ற சொல்லார் .., 1.2 முல்லை : இளமை பாரார் ..., குறிஞ்சி : நிலத்தினும்..., பாலை :ஆடு அமை ...விளையாட்டு ஆயமொடு 1.3 ஐந்தாம் பத்து : ஊன் தூவை அடிசில் 1.4. யாதும் ஊரே .. பல் சான்றீரே .., அற்றைத்திங்கள்
			Instructional Hours **12 Hours**
Suggested Learning Methods: சங்க இலக்கிய வழி நற்பண்புகளை அறியச்செய்தல்			
II	பத்துப்பாட்டு	1.சிறுபாணாற்றுப்படை 2.குறிஞ்சிப்பாட்டு 3.பொருநர்ஆற்றுப்படை 4.மதுரைக்காஞ்சி	2.1 கடையெழு வள்ளல்கள் சிறப்பு 2.2 அறத்தொடு நிற்றல் 2.3 மன்னனின் விருந்தோம்பல் 2.4 பாண்டிய நெடுஞ்செழியன் குடிச்சிறப்பு
			Instructional Hours **12 Hours**
Suggested Learning Methods : புலவர்களின் மாண்புகளை வெளிப்படுத்துதல்			
III	அற இலக்கியங்கள்	1. நான்மணிக்கடிகை 2. இனியவை நாற்பது 3. களவழி நாற்பது- 4. ஆசாரக்கோவை	விளம்பிநாகனார் - (1-5 பாடல்கள்) பூதஞ்சேந்தனார் - (1-5 பாடல்கள்) பொய்கையார் - (11-15பாடல்கள்) பெருவாயின் முள்ளியார் (1-5 பாடல்கள்)
			Instructional Hours **12 Hours**
Suggested Learning Methods : அற இலக்கியங்களின் மாண்புகளை அறிய பெற்றமை			
IV	தமிழ்ச் செயலிகள்	தனித்தமிழ்	4.1 செயலிகள் அறிமுகம் 4.2 வகைகள்

			4.3 மொழிபெயர்ப்புச் செயலிகள் 4.4 தமிழ்ச் செயலிகள்
		Instructional Hours	**12 Hours**
Suggested Learning Methods : தமிழ்ச் செயலிகள் பற்றி அறியும் வாய்ப்பு பெற்றமை			
V	இலக்கணம்	1.நன்னூல் 2.தொல்காப்பியம்	5.1 முதற்பொருள், கருப்பொருள், உரிப்பொருள் 5.2 பத்து அழகு 5.3 பத்து குற்றம் 5.4 ஆங்கிலத்திலிருந்து தமிழில் மொழிபெயர்த்தல்
		Instructional Hours	**12 Hours**
Suggested Learning Methods : இலக்கண மாண்புகளை அறியும் திறன் பெற்றமை			
		Total Hours	**60 Hours**

Text Books	1. இளங்கலை முதலாம் ஆண்டு தமிழ் மாணவர்களுக்குரிய பாடநூல் தொகுப்பு: "முத்தமிழ்" தமிழ்த்துறை, நேரு கலை மற்றும் அறிவியல் கல்லூரி, கோயம்புத்தூர்.
Reference Books	1. சங்க இலக்கியங்கள் - எட்டுத்தொகை, பத்துப்பாட்டு கழக வெளியீடு, திருநெல்வேலி. 2. தனித்தமிழ்- இளசுந்தரம், விகடன் பிரசுரம். சென்னை.
Web. URLs	https://youtu.be/GrNnb68Fd6w , https://youtu.be/14-sEAUzXP8 .

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Seminar	Assignment	Group Project	Total
4	4	5	2	2	3	20

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	**L**	H	L	H	H	M	H	-	-	-	L	L
CO2	M	**L**	H	L	M	L	M	H	-	-	-	L	L
CO3	H	**L**	H	L	H	H	M	H	-	-	-	L	L
CO4	M	**L**	M	L	H	H	H	M	-	-	-	L	L
CO5	H	**L**	L	L	M	H	L	M	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S. Satheesh kuma	Dr. A. Sridevi

Course Code	Title		
23U1HIN404	Part I - Prayogik Hindi (प्रायोगिक हिंदी)		
Semester: IV	Credits: 3	CIA: 20 Marks	ESE: 55 Marks
(Common to all UG Programmes)			
Course Objective	साक्षरता प्रशंसा और विश्लेषण के सौंदर्य, सांस्कृतिक और सामाजिक पहलुओं के प्रति छात्रों को संवेदनशील बनाना | उन्हें विभिन्न कालों के प्रख्यात लेखकों के हिंदी कथा साहित्य के बेहतरीन नमूने उपलब्ध कराना |		
Course Category	Skill Development		
Development Needs	National		
Course Description	Improves Creative Writing.		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	छात्र हिंदी भाषा से अच्छी तरह वाकिफ हो सकेंगे।	Role play	Assignment
CO 2	पाठ्यक्रम संवादी हिंदी में पारंगत होने में मदद करता है।	Group learning Acting	Seminar
CO 3	छात्र आधुनिक हिंदी साहित्य का ज्ञान प्राप्त कर सकेंगे।	Story Narration	Assignment
CO 4	छात्रों को निबंध लेखन में अच्छा अभ्यास मिलेगा।	Group learning and Work sheets	Group Project
CO 5	छात्रों को फिल्म की समीक्षा करने का अभ्यास मिलेगा।	Worksheets and Exercises	Seminar

Offered by	Hindi

Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	विरुद्ध उपन्यास: (मृणाल पाण्डे)	1	4
		Instructional Hours	12
Suggested Learning Methods : Visual Learning			02 Hrs
II	कथा माला , (मृदुला गर्ग) लौटना और लौटना : ममता जयशंकर) ,प्रसाद आदमी का बच्चा (यशपाल)	1	3
		Instructional Hours	12
Suggested Learning Methods : Auditory			02 Hrs
III	1.दिए गए अनुच्छेद पर समीक्षा लिखना 2.आधुनिक काल: प्रवृतियां और कवि	1	3
		Instructional Hours	12
Suggested Learning Methods : Comprehensive Writing			02 Hrs

IV	1.सामान्य निबंध: आधुनिक शिक्षा प्रणाली, मोबाइल का दुष्परिणाम, आधुनिक युवा पीढ़ी 2. हिंदी में दी गई कहानी के लिए सारांश लिखना।	1	2
		Instructional Hours	**12**
Suggested Learning Methods : Auditory, Visual, Comprehensive			**02 Hrs**
V	सिनेमा समीक्षा : पद्मावत	1	4
		Instructional Hours	**12**
Suggested Learning Methods : Comprehensive writing			**02 Hrs**
		Total Hours	**60 Hrs**

Text Books	1. विरुद्ध उपन्यास: (मृणाल पाण्डे) 2. कहानी कुंज , गोविंद प्रकाशन , मथुरा 3. हर हाल बेगाने - मृदुला गर्ग , राजपाल एंड संस , दिल्ली 4. मेरा परिवार , लोकभारत प्रकाशन , इलाहाबाद
Reference Books	1. संजय चौहान , समकालीन हिंदी साहित्य विचार और विवाद , आशा किताबें 2. श्री रामदेव, व्याकरण प्रदीप, लोकभारती प्रकाशन, अलाहाबाद 3. डॉ वासुदेव नंदन प्रसाद, आधुनिक हिंदी व्याकरण और रचना, भारती भवन प्रकाशक 4. ओंकार नाथ वर्मा , सामान्य हिंदी , अरिहंत प्रकाशन भारत लिमिटेड
Web. URLs	1. www.webdunia.com 2. www.hindikunj.com 3. hindi-natak-vikas.html 4. www.bhashaindia. 5. www.hindisamay.com 6. https://ebook.pustak.org/

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Group Project	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO 5
CO1	L	M	H	M	M	L	H	L	-	-	-	L	L
CO2	L	M	H	H	L	H	L	M	-	-	-	L	L
CO3	M	L	L	L	L	H	M	M	-	-	-	L	L
CO4	M	M	M	M	H	L	M	H	-	-	-	L	L
CO5	H	H	L	L	H	L	H	H	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr.S.Swarnalatha	Dr.S.Swarnalatha

Course Code	Title		
23U1MAL404	**Part - I : Drisyakalaa Saahithyam** (ദൃശ്യകലാസാഹിത്യം)		
Semester: IV	**Credits: 3**	**CIA: 20 Marks**	**ESE: 55 Marks**

(Common to all UG Programmes)

Course Objective	സിനിമ എന്ന മാധ്യമത്തിന്റെ വിവിധ തലങ്ങളെ ആഴത്തിൽ മനസ്സിലാക്കാൻ കഴിയുന്നു.ദൃശ്യാവിഷ്ക്കരണത്തെ കുറിച്ചുള്ള അറിവ് ലഭിക്കുന്നു.
Course Category	Skill Development
Development Needs	Regional
Course Description	Guide and encourage them to achieve their ambitions

	Course Outcomes	Teaching Methods	Assessment Methods
CO 1	തിരക്കഥയിലെ സംഭാഷണത്തിന്റെ പ്രസക്തി	Smart boards/ chalk and Talk	Assignment
CO 2	മനക്കരുത്തിലൂടെ വീട്ടിലെ എല്ലാ അംഗങ്ങളെയും ദുഃഖം അറിയിക്കാതെ മംഗളകർമ്മം നടത്തുന്നു.	Group learning	Seminar
CO 3	കുടുംബത്തിന്റെ തകരുന്ന മൂല്യത്തെ ഉയർത്തുന്നു	Peer Teaching	Assignment
CO 4	ദൃ ശ്യാവിഷ്ക്കരണം മലയാളത്തിൽ	Group learning	Group Project
CO 5	രംഗവേദിയുടെ അവതരണം	Smart boards/ chalk and Talk	Assignment

Offered by **Malayalam**

Course Content **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	തിരക്കഥ - ഞാൻ പ്രകാശൻ	1	5
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
II	തിരക്കഥ - ഞാൻ പ്രകാശൻ	1	5
		Instructional Hours	**12**
Suggested Learning Methods : Auditory, Visual			**02 Hrs**
III	തിരക്കഥ - ഞാൻ പ്രകാശൻ	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
IV	നാടകം - ഭരതവാക്യം	1	2
		Instructional Hours	**12**
Suggested Learning Methods: Auditory, Visual			**02 Hrs**
V	നാടകം - ഭരതവാക്യം	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Visual Learning			**02 Hrs**
		Total Hours	**60 Hrs**

Text Books	1. തിരക്കഥ - ഞാൻ പ്രകാശൻ - ശ്രീനിവാസൻ, ഡി.സി.ബുക്സ് 2. നാടകം - ഭരതവാക്യം , ജി. ശങ്കരപ്പിള്ള
Reference Books	1. കഥയും തിരക്കഥയും ഡോ.ആർ.വി.എം.ദിവാകരൻ - എൻ. ബി. എസ് കോട്ടയം 2. മലയാള സിനിമയും സാഹിത്യവും - മധു ഇറവങ്കര - ഡി.സി.ബുക്സ് 3. ഒരു സിനിമ എങ്ങനെ ഉണ്ടാകുന്നു. - കെ.കെ. ചന്ദ്രൻ

	4. നാടക സാഹിത്യ ചരിത്രം - ജി. ശങ്കരപ്പിള്ള - ഡി.സി.ബുക്സ് 5. നാടകം കലയും കാഴ്ചയും - പി.ജി.സദാനന്ദൻ - ഡി.സി.ബുക്സ്
Web. URLs	**http://www.keralaculture.org>literature** **http://www.manoramaonline.com**

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Group Project	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO 5
CO1	H	L	H	H	H	H	H	H	-	-	-	L	L
CO2	M	L	H	M	H	M	M	M	-	-	-	L	L
CO3	H	L	M	M	M	H	M	H	-	-	-	L	L
CO4	H	L	L	H	L	H	M	M	-	-	-	L	L
CO5	M	L	L	H	L	H	M	M	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Ms.RAJANI N.	Dr.SMITHA C. R.

Course Code	Title		
23U1FRN404	Part – I : Le Francais General – IV		
Semester : IV	Credits : 3	CIA : 20 Marks	ESE : 55 Marks
(Common to all UG Programmes)			
Course Objective	Acquisition of standard French through French grammar and oral communication		
Course Category	Skill Development		
Development Needs	Global		
Course Description	Improved understanding and communication		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	learn pronouns, gérondif along with culture adaptation in foreign countries	Lectures /Tutorial	Assignment
CO 2	French food culture, manners, futur simple & futur proche.	Group Learning	Assignment
CO 3	Business and economic culture, la cause et la consequence.	Peer Teaching	Seminar
CO 4	Letter writing official and to a patron, le passif, les doubles pronoms	Group Learning	Group Project
CO 5	The city and country, urbanisation, l'opposition et la concession, le subjonctif et l'infinitif	Group Learning	Assignment

Offered by	Department of French

Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	Explorer l'inconnu	1	1
		Instructional Hours	12
Suggested Learning Methods : Visuals			
II	Goûter l'insolite	1	2
		Instructional Hours	12
Suggested Learning Methods : Comprehensive writing			
III	Consommer autrement	1	3
		Instructional Hours	12
Suggested Learning Methods : Group discussions			
IV	S'engager pour une cause	1	4
		Instructional Hours	12
Suggested Learning Methods : Visuals			

V	Repenser le quotidien	1	5
		Instructional Hours	**12**
Suggested Learning Methods : Group Discussion			
		Total Hours	**60**
Text Books	1. Saison 2 Méthode de Français – Marie-Noëlle Cocton, Anouchka De Oliveira, Dorothée Dupleix (Unit 0 to 4)		
Reference Books	1. Connexions 2 Methode de Français Régine Mérieux , Yves Loiseau		
Web. URLs	1. www.academia.edu		

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	-	-	H	M	H	H	-	-	-	-	-	-	-
CO2	-	-	H	L	H	M	-	-	-	-	-	-	-
CO3	-	-	-	M	M	H	-	-	-	-	-	-	-
CO4	-	-	L	M	L	H	-	-	-	-	-	-	-
CO5	-	-	L	-	H	-	-	-	-	-	-	-	-

H-High; M-Medium; L-Low

Course designed by	Verified by
D Balaji	D Balaji

Course Code	Title		
23U2ENG404	Part – II : Communicative English – II		
Semester : IV	Credits : 3	CIA : 20 Marks	ESE : 55 Marks

(Common to All UG Programmes)

Course Objective	To equip the students with Language Skills and develop interest in and appreciation of literature.
Course Category	Skill Development
Development Needs	Global
Course Description	SD: Helps to develop LSRW skill

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the values of life reflected in the prescribed prose	Lecture/Tutorial	Assignment
CO 2	Learn to interpret poem based on contextual evidence.	Lecture/Tutorial	Assignment
CO 3	Enhance imaginative and communication skills through short stories.	Lecture/Tutorial	Speaking
CO 4	Understand the performing art through drama.	Lecture/Tutorial	Reading
CO 5	Acquire proficiency in English for global competency.	Lecture/Tutorial	Writing

Offered by | **Department of English**

Course Content | **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	**Prose** Francis Bacon – Of Adversity Dr. Radhakrishnan - Character is Destiny Sudha Murty - How I taught my grandmother to read	1	1
		Instructional Hours	**12**
Suggested Learning Methods : Intensive Reading			
II	**Poetry** Sarojini Naidu - The Soul's Prayer Emily Dickinson - Death in the Opposite House William Blake – London	1	2
		Instructional Hours	**12**
Suggested Learning Methods : Scaffolding Method			
III	**Short Stories** W. Somerset Maugham - Mr. Know-All Edgar Allan Poe-The Purloined Letter Ruskin Bond-The Thief Story	1	3
		Instructional Hours	**12**
Suggested Learning Methods : Flipped Learning			

IV	**Drama** William Shakespeare – As You Like It	1	4
		Instructional Hours	**12**
Suggested Learning Methods : Flipped Learning			
V	**GRAMMAR AND COMPOSITION** **Oral & Written Communication (Unit I–IV) Listening** – Comprehension practice from Poetry, Prose, Online Voice Practice, observing/viewing E-content (with subtitles), Guest/Invited Lectures, Conference/Seminar Presentations & Tests, and DD National News Live, BBC, CNN, VOA etc **Speaking** – In Group Discussion Forum, participate in the Turn Taking, and Conversation Management, Debating, Defending/Mock Viva- Voce, Seminar Presentations on Classroom-Assignments, and Peer-Team-interactions. **Reading**–Different Reading Strategies in Poetry, Prose, Novel, Newspaper etc **Writing** – Clauses – Conditional, Relative, Restrictive, Non-Restrictive, Denotation and Connotations Précis Writing, One word substitution.	1	5
		Instructional Hours	**12**
Suggested Learning Methods : Activity Based Learning			
		Total Hours	**60**

Text Books	Unit I – V: Compiled by the Department of English
Reference Books	CLIL (Content & Language Integrated Learning) – Module by TANSCHE NOTE: (Text: Prescribed chapters or pages will be given to the students by the department)
Web. URLs	

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Presentation	Total
4	4	5	2	2	3	20

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	-	H	-	M	M	H	M	H	H	M	H	M
CO2	M	-	H	-	H	M	H	M	H	H	M	H	M
CO3	M	-	H	-	H	H	H	H	H	H	M	H	M
CO4	M	L	H	-	H	-	H	H	H	H	M	H	H
CO5	H	M	H	-	H	H	H	H	H	H	H	H	M

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. Adappatu Ancy Antony	Dr R Malathi

Course Code	Title		
23U3CKC407	Core Paper X: RDBMS and MYSQL		
Semester: IV	Credits: 3	CIA: 20 Marks	ESE: 55 Marks
(Common to B. Sc. CS / B. Sc. IT / BCA)			
Course Objective	To inculcate fundamental knowledge in RDBMS concepts and make them to create, manipulate information with the real time datasets.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	The course gives introduction to the fundamentals of relational databases using database programming techniques emphasizing database structures, modelling and database access.		

Course Outcomes		Teaching Methods	Assessment Methods
CO1	Remember the Data types and fundamentals of database.	Lecture / Flipped Classroom	Assignment
CO2	Understanding the concept of Database and Various queries in SQL.	Lecture / Tutorial	Assignment
CO3	Applying the concept in various tables to retrieve information.	Tutorial	Seminar
CO4	Understanding the concept of PL/SQL using cursors.	Lectures / Tutorial	Seminar
CO5	Able to evaluate the errors and write triggers in PL/SQL.	Lecture / Flipped Classroom	Quiz

Offered by	Computer Applications

Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	**Introduction:** Database - Purpose of Database Systems - Data Models – Database Language – Transaction Management - Overall System Structure.	2,1	1
	A Relational approach: Relationships –Relational Database Model – Integrity Rules – Theoretical Relational Languages. **Database Design:** Data Modelling and Normalization: Data Modelling – Dependency –Normal forms – Dependency Diagrams – De – Normalization.		
		Instructional Hours	**12**

Suggested Learning Methods: Video lectures about the basics of Database			
II	**Oracle9*i*:**Oracle9i an introduction – SQL –SQL *Plus Commands – Errors & Help – Alternate Text Editors. Oracle Tables.**DDL:** Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.	1	3,4
		Instructional Hours	**12**
Suggested Learning Methods:SQL Query Writing			
III	**Working with Table:** Data Management and Retrieval: DML – Adding a new Row/Record – Updating and Deleting an Existing Rows/Records – Retrieving Data from Table -Restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions – Grouping Data. **Multiple Tables:** Joins and Set operations: Join – Set operations.	1	5,6
		Instructional Hours	**12**
Suggested Learning Methods: SQL Query Writing			
IV	**PL/SQL:** A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. **Control Structures and Embedded SQL:** Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.	1	10, 11&12
		Instructional Hours	**12**
Suggested Learning Methods: Video lectures about the basics of PL/SQL			
V	**PL/SQL Composite Data Types:** Records – Tables. **Named Blocks:** Procedures – Functions – Packages –Triggers – Data Dictionary Views	1	13,14
		Instructional Hours	**12**
Suggested Learning Methods: Writing PL/SQL Procedures			
		Total Hours	**60**

Text Books	1. NileshShah ,**"Database Systems Using Oracle"**, 2nd edition, PHI. 2. Abraham Silberschatz, Henry F.Korth, S. Sudarshan , "**Database System Concepts**", 3rd Edition, McGraw – Hill Companies, inc.

Reference Books	1. ArunMajumdar&PritimoyBhattacharya, **"Database Management Systems"**, TMH, 2007. 2. Gerald V. Post , **"Database Management Systems"**, 3rd Edition, TMH.
Web. URLs	https://www.tutorialspoint.com/sql/sql-rdbms-concepts.htm

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
4	4	5	2	2	3	**20**

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	L	M	H	L	M	H	H	H	H	M	M
CO2	H	H	L	M	H	L	M	H	H	H	H	M	M
CO3	H	H	L	M	H	L	M	H	H	H	H	H	H
CO4	H	H	L	M	H	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. A. Kalaivani	Dr. K. Selvavinayaki

Course Code	Title		
23U3CJC405	Core Paper XI: Computer Networks		
Semester: IV	Credits: 3	CIA: 20 Marks	ESE: 55 Marks
(Common to B. Sc. IT / BCA)			
Course Objective	To equip the students with an exposure towards data communication strategies with the fundamental concepts of computer networks.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	The course introduces main concepts of networking, application areas, reference models, transmission environment, routing algorithms, IP, UDP and TCP protocols, application protocols and network security.		

Course Outcomes		Teaching Methods	Assessment Methods
CO1	Understand about Network Hardware, Software and uses of computer networks.	Lecture	Assignment
CO2	Differentiate the features of guided and unguided transmission media.	Lecture/ Flipped Classroom	Seminar
CO3	Apply error detection and correction code to detect and correct the errors and illustrate the features of Data Link Protocols.	Tutorials	Assignment
CO4	Identify the appropriate routing for data transmission using routing algorithms and analyse the features of transport protocols.	Lecture	Seminar
CO5	Evaluate the various Cryptographic principles.	Tutorials	Quiz

Offered by	Computer Applications

Course Content	Instructional Hours / Week : 4

Unit	Description	Text Book	Chapters
I	**Uses of Computer Networks**: Business Applications - Home Applications - Mobile Users - Social Issues. **Network Hardware**: Personal Area Networks - Local Area Networks - Metropolitan Area Networks - Wide Area Networks - Internetworks. **Network Software**: Protocol Hierarchies - Design Issues for the Layers - Connection-Oriented and Connectionless Services - Service Primitives - The Relationship of Services to Protocols. **Reference Models**: The OSI Reference Model - The TCP/IP Reference Model- A Comparison of the OSI and TCP/IP Reference Models.	1	1
		Instructional Hours	**12**
Suggested learning methods: Report Presentation			
II	**Physical Layer: Guided Transmission Media**: Magnetic Media – Twisted Pair – Coaxial Cable – Fiber Optics. **Wireless Transmission**: The Electromagnetic Spectrum – Radio Transmission – Microwave Transmission – Infrared and Millimeter Waves – Lightwave Transmission. **Communication Satellites**: Geostationary Satellites - Medium-Earth Orbit Satellites – Low-Earth Orbit Satellites – Satellites versus Fiber.	1	2
		Instructional Hours	**12**
Suggested learning methods: Video Presentation			
III	**Data Link Layer: Data Link Layer Design Issues:** Services provided to the Network Layer - Framing - Error Control - Flow Control. **Error Detection and Correction:** Error-Correcting Codes - Error-Detecting Codes. **Elementary Data Link Protocols**: An Unrestricted Simplex Protocol - A Simplex Stop-and-Wait Protocol - A Simplex Protocol for a Noisy Channel. **Sliding Window Protocols:** A One-Bit Sliding Window	1	3

	Protocol – A Protocol using Go Back N – A Protocol using Selective Repeat.		
		Instructional Hours	**12**
Suggested learning methods: Report Presentation			
IV	**Network Layer: Routing Algorithms:** The Optimality Principle - Shortest Path Routing - Flooding - Distance Vector Routing - Link State Routing - Hierarchical Routing - Broadcast Routing - Multicast Routing - Routing for Mobile Hosts - Routing in Ad Hoc Networks. **Transport Layer: Elements of Transport Protocols:** Addressing - Connection Establishment - Connection Release - Flow Control and Buffering - Multiplexing - Crash Recovery. **The Internet Transport Protocols UDP:** Introduction to UDP. **The Internet Transport Protocols TCP:** Introduction to TCP - The TCP Service Model - The TCP Protocol - The TCP Segment Header - TCP Connection Establishment - TCP Connection Release - Modelling TCP Connection Management - TCP Congestion Control - TCP Timer Management.	1	5,6
		Instructional Hours	**12**
Suggested learning methods: Video Presentation			
V	**Application Layer: DNS - The Domain Name System:** The DNS Name Space - Resource Records - Name Servers. **Electronic Mail:** Architecture and Services - The User Agent - Message Formats - Message Transfer - Final Delivery. **Network Security: Cryptography:** Introduction to Cryptography - Substitution Ciphers - Transposition Ciphers - One-Time Pads - Two Fundamental Cryptographic Principles.	1	7,8
		Instructional Hours	**12**
Suggested learning methods: Group Discussion			
		Total Hours	**60 Hrs**

Text Books	1. Andrew S. Tanenbaum, "Computer Networks", 4th Edition, PHI.
Reference Books	1. Achyut Godbole, "Data Communication and Networks", 2007, TMH. 2. Uyless Black, "Computer Networks: Protocols, Standards and Interfaces", 2nd Edition, PHI
Web. URLs	https://www.geeksforgeeks.org/basics-computer-networking/

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Quiz	Assignment	Seminar	Total
4	4	5	2	2	3	20

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	H	M	H	L	M	H	H	H	M	H	M
CO2	M	H	M	H	M	H	M	M	M	H	H	M	M
CO3	L	M	H	L	M	M	H	L	H	M	H	H	H
CO4	H	M	M	M	H	L	M	H	M	H	M	H	M
CO5	H	H	M	M	M	L	M	M	H	M	H	M	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. K. PrathapChandran	Dr. K. Selvavinayaki

Course Code	Title		
23U3CAP405	Core Paper XII: Practical in SQL and PL/SQL		
Semester: IV	Credits: 3	CIA: 30 Marks	ESE: 45 Marks

Course Objective	To acquire fundamental knowledge Relational Database Management System concepts.
Course Category	Skill Development
Development Needs	Global
Course Description	To make the students to understand Relational Database Management System concepts using Oracle and able to do the various operations on Tables

Course Outcomes		Teaching Methods	Assessment Methods
CO1	Apply query statements to create and manipulate tables.	Demonstration	Application of Logic
CO2	Apply DCL and TCL commands to perform table manipulation.	Demonstration	Program Development
CO3	Perform set operations for the given table.	Demonstration	Program Creativity
CO4	Create PL/SQL cursor and apply exception handling for the given problems.	Demonstration	Program Development
CO5	Develop PL/SQL statements for packages and triggers.	Demonstration	Program Development

Offered by	**Computer Applications**

Course Content	Instructional Hours / Week: 3

Program	List of Practical
1	Create an Employee table with primary key, foreign key and Insert the Values.
2	Alter the existing table with an appropriate query, Update the values and retrieve using Select Verb.
3	Create a table and perform various DCL & TCL Commands
4	Perform various Single – row and Grouping functions using SQL.
5	Create an appropriate table and perform various Join Operations.
6	Create suitable table and perform various Set Operations.
7	Write a PL/SQL program to check whether the given string is palindrome or not.
8	Write a PL/SQL Cursor for referencing fields in a record.
9	Write a PL/SQL to raise the exceptions in Bank Account Management table
10	Write a PL/SQL program to find factorial of numbers using function and procedure.
11	Write a PL/SQL to handle package.

12	Write a PL/SQL trigger for entering mark in the student table.

Total Hours	**45**
Suggested Learning Methods: Solving Case studies, Program development, Code Review and Peer Coding	

Tools for Assessment (30 Marks)

Application of Logic	Program Creativity	Program Debugging	Test 1	Test 2	Observation Note Book	Total
4	4	4	7	7	4	**30**

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	L	M	H	L	M	H	H	H	H	H	H
CO2	H	H	L	M	H	L	M	H	H	H	H	H	H
CO3	H	H	L	M	H	L	M	H	H	H	H	H	H
CO4	H	H	L	M	H	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. A. Kalaivani	Dr. K. Selvavinayaki

Course Code	Title		
23U3BAA404	Allied Paper – IV: Financial Accounting		
Semester: IV	Credits: 3	CIA: 20 Marks	ESE: 55 Marks

Course Objective:	To gain the knowledge on various systems of accounting and accounting procedures of Branch accounts, Departmental accounts, Royalty accounts and Hire Purchase and Instalment System.
Course Category:	Employability
Development Needs:	National
Course Description:	Financial Accounting provides the basis for understanding financial reporting and the basic use of financial information to assess a company's financial strength and viability.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the various accounting concepts.	Lecture / Flipped Classroom	Work Sheet
CO 2	Prepare hire purchase and installment system	Lecture / Tutorial	Assignment
CO 3	Analyse the performance of branch accounts and final accounts.	Lecture / Tutorial	Assignment
CO 4	Prepare Departmental Accounts for the given problems.	Lecture / Tutorial	Work Sheet
CO 5	Analyse the accounting treatments related to issue, acceptance, discounting, maturity and endorsement of bills and notes in the books of drawer and drawee and create royalty accounts	Lecture / Flipped Classroom	Class Participation

Course Content **Instructional Hours / Week : 4**

Unit	Description	Text Book	Chapters
I	Single Entry System – Meaning – Definition – Ascertainment of Profit – Difference Between Single Entry system and Double entry system – Net worth Method – Conversion Method	2	13
	Instructional Hours		**12**
Suggested Learning Methods: Problem Solving Practice			
II	Hire Purchase and Installment Purchase system – Calculation of Interest - Default and Repossession – Hire Purchase Trading Accounts	2	18
	Instructional Hours		**12**
Suggested Learning Methods : Seminar			
III	Branch Accounts - Meaning, Features and Types of Branch Accounting - Debtors System – Final Accounts - Wholesale Branch System - Stock & Debtors System	2	16
	Instructional Hours		**12**
Suggested Learning Methods : Group Discussion			

IV	Departmental accounts – Meaning – Objectives – Advantages – Distinction between branch and department - Transfers at cost or selling price – Interdepartmental Transfer	2	17
		Instructional Hours	**12**
Suggested Learning Methods: Peer Teaching			
V	Royalty Accounts - Lease (Excluding Sublease) – Bills of exchange (Trade Bills only)	2	20, 25
		Instructional Hours	**12**
Suggested Learning Methods : Problem Solving Practice			
		Total Hours	**60 Hrs**

Text Books :

1. S.P. Jain and K.L. Narang.,**"Advanced Accounting"**, Kalyani Publishers, 2015.
2. T.S Reddy and A. Murthy., **"Financial Accounting"**, Margham Publications, 2015.

Reference Books :

1. R.L. Gupta and Radhasamy, **"Advanced Accounting"**, Sultan Chand and Sons, 1994.
2. M.C. Shukla, T.S. Grewal and S.C. Gupta, **"Advanced Accounts"**, S. Chand and Company Pvt. Ltd., 2016.
3. R.L. Gupta, **"Advanced Accounting",** Sultan Chand & Sons, New Delhi, 2012.
4. M.C.Sukla, T.S.Grewal and S.C Gupta, **"Advanced Accounting",** Sultan Chand &Sons, New Delhi, 2015.R.L.

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Work Sheet	Class Participation	Total
4	4	5	2	2	3	**20**

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	L	-	L	-	L	L	M	H	L	L	M	H
CO2	M	L	-	L	-	L	L	M	H	M	M	M	H
CO3	M	L	-	L	-	L	L	M	H	M	M	H	M
CO4	M	L	-	L	-	L	L	M	H	M	M	M	M
CO5	M	L	-	L	-	L	L	M	M	H	H	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. S. Balaji	Dr. M. Shanthana Lakshmi

Course Code	Title	
23U3CAV406	In-plant Training	
Semester: IV	Credits: 2	ESE:50 Marks

Objective:

To give optimum exposure on the practical side of industrial society

Guidelines:

1. Duration of the internship training is **20 days** during the summer vacation which falls at the **end of the 4th semester.**
2. The departments concerned will prepare on exhaustive panel of institutions, industries and practitioners.
3. The individual student has to identify the institution / industry / practitioners of their choice and inform the same to the HOD / staff-in-charge.
4. The students hereafter will be called as trainees should maintain a work diary in which the daily work done should be entered and the same should be attested by the section in-charge.
5. The departments should prepare an outline of the job to be done, sections in which they have to be attached both in the office as well as in the field.
6. The trainees should strictly adhere to the rules and regulations and office timings of the institutions to which they are attached.
7. The trainees have to obtain a certificate on successful completion of the internship from the chief executive of the organization.
8. Monitoring and inspection by staff on a regular basis.
9. Report writing manual and format should be prepared by the respective departments.
10. All model forms are to be attached wherever it is necessary.
11. Report evaluation: Internal viva-voce examination will be conducted and the maximum mark awarded is 50.
12. In-Plant Training has to be carried out only in the approved industries by the department/College
13. Report should be submitted in the 5thsemester at end of the September

Course Code	Title		
23U4CAZ402	Skill Based Paper II: Practical in Multimedia Systems		
Semester: IV	Credits:3	CIA:30 Marks	ESE:45 Marks

Course Objective	To make the students to be a proficient in a broad range of design skills and animation
Course Category	Skill Development
Development Needs	Global
Course Description	This course introduces the many applications that enhance the world of multimedia and the web, as well as the technological decisions that are needed to deploy them. Students learn how various tools are used to create a rich, dynamic Image/visual experience for users in many different formats. Emphasis is given to understanding current, new, and emerging technologies and the impact they have on web-based media. Basic computer skills are required.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Apply the graphical designs and functions using Photoshop &CorelDraw	Laboratory Practice	Program Creativity
CO 2	Create Professional design & animation	Laboratory Practice	Program Creativity
CO3	Create frame banner using graphical designs and functions	Laboratory Practice	Program Creativity
CO4	Develop Professional design & animation	Laboratory Practice	Program Creativity
CO5	Create Animated Objects	Laboratory Practice	Program Creativity

Offered by	**Computer Applications**

Course Content	Instructional Hours / Week: 3

Unit	List of Practical for Photoshop & CorelDraw
1	Combine aspects of several images into one professional images using Photoshop.
2	Animate Plane Flying the Clouds using Photoshop.
3	Create Plastic Surgery for Nose using Photoshop.
4	Create 3D shapes and text using Photoshop
5	Create Web Page using Photoshop.
6	Create College Seminar Brochure
7	Create a 3D text in Corel Draw
8	Create a logo for your department in Corel Draw.
9	Create an advertisement for a Textile company in Corel Draw.
10	Using Corel Draw, design a business card for a company.
11	Using Corel Draw, design a banner for a marriage function.

12	Create New year Monthly Calendar

Suggested Learning Methods: Creative theme and poster development.	
Total Hours	**45 Hrs**

Tools for Assessment (30 Marks)

Designing	Theme development	Poster Presentation	Test I	Test II	Observation	Total
4	4	4	7	7	4	**30**

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	L	M	H	L	M	H	H	H	H	M	M
CO2	H	H	L	M	H	L	M	H	H	H	H	M	M
CO3	H	H	L	M	H	L	M	H	H	H	H	H	H
CO4	H	H	L	M	H	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Ms. Sheela Newsheeba	Dr. K. Selvavinayaki

Course Code	Title	
22U4NM4BT2	Part IV : Basic Tamil – II (அடிப்படைத்தமிழ் - II)	
Semester: IV	Credits: 2	CIA: 50 Marks

(Common to all UG Programmes)

Course Objective	அற இலக்கியங்களை அறிமுகப்படுத்தல்.
Course Category	Skill Development (மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)
Development Needs	**Regional (** தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்**)**
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	அற இலக்கிய அறிவு பெறுதல் - சிறுகதைகள் வழி சமூக அறிவு பெறுதல்.	விரிவுரை / காணொளி வகுப்பு	ஒப்படைவு
CO 2	தமிழ் எழுத்துக்கள் அறிமுகம் செய்தல் மற்றும் வாசித்தல் ஆகியவற்றின் பயன்பாடு.	குழு விவாதம்/ விரிவுரை	கருத்தரங்கு
CO 3	பிறமொழி அறிவுத் திறன் மேம்படச்செய்தல்.	விரிவுரை/காணொளி ப்பட விளக்கம்	ஒப்படைவு
CO 4	மொழிப்பெயர்ப்புத் திறன் மேம்படச்செய்தல்.	விரிவுரை/ குழு விவாதம்	குழுத்திட்டம்
CO 5	வார்த்தை அமைக்கும் திறன் பெறச்செய்தல்.	விரிவுரை / குழுத்திட்டம்	குழுத்திட்டம்

Offered by தமிழ்த்துறை

Course Content : Basic Tamil – II (அடிப்படைத்தமிழ் II) | **Instructional Hours / Week : 2 Hours**

Unit	Description	Text Book	Chapters
I	நீதி நூல்கள்	1.பாரதியார் ஆத்திச்சூடி 2.கொன்றைவேந்தன்	1.1 1 முதல் 12 வரிகள் 2.1 1 முதல் 7 வரிகள்
		Instructional Hours	**6 Hours**
Suggested Learning Methods : நீதிநூல்களின் சிறப்பினை அறியும் பயன் பெற்றமை			
II	பதினெண் கீழ்க்கணக்கு நூல் (திருக்குறள்)	திருக்குறள்	2.1.கடவுள் வாழ்த்து -அகர முதல எனத் தொடங்கும்... அதி 1 குறள் -1 2.2. வான் சிறப்பு- நீரின்றி அமையாது உலகு. அதி-2.குறள் - 10 2.3. அன்புடைமை - அன்பின் வழியது உயிர்நிலை. அதி - 8.குறள் - 10 2.4. கல்வி - கண்ணுடையார் என்பர் . அதி-40 குறள்-393 2.5. இனியவை கூறல் - இனிய உளவாக இன்னாத அதி10. குறள் -10
		Instructional Hours	**6 Hours**
Suggested Learning Methods : திருக்குறளின் சிறப்பினை அறிந்தமை			
III	கிராமியக் கதைகள்	கிராமியக் கதைகள்	3.1.பரமார்த்தக்குரு கதைகள் 3.2.நாட்டுப்புறக் கதைகள் அறிமுகம்
		Instructional Hours	**6 Hours**
Suggested Learning Methods : கிராமியக் கதைகளின் கதை அமைப்பினை அறியும் வாய்ப்பு பெற்றமை			

IV	மொழிப்பயிற்சி	மொழிப்பயிற்சி	4.1. பிறமொழிச் சொற்களுக்கு தமிழ்ச்சொல் எழுதுதல்
Instructional Hours			**6 Hours**
Suggested Learning Methods :		தமிழ்ச்சொல் எழுதும் திறன் பெற்றமை	
V	எழுத்துப்பயிற்சி	எழுத்துப்பயிற்சி	5.1தன்விவரம் எழுதுதல் 5.2 பெயர், கல்லூரி விவரம் எழுதச்செய்தல்
Instructional Hours			**6 Hours**
Suggested Learning Methods : பிறமொழி கலப்பு இன்றி தமிழ்ச்சொல் எழுதும் திறன் பெற்றமை			
Total Hours			**30 Hours**

Text Books	1. இளங்கலை தமிழ் மாணவர்களுக்குரிய பாடநூல்“அரிச்சுவடி” 2. தொகுப்பு: தமிழ்த்துறை, நேரு கலை மற்றும் அறிவியல் கல்லூரி, கோயம்புத்தூர்.
Reference Books	1. ஔவையார் ஆத்திச்சூடி மணிவாசகர் பதிப்பகம், கோயம்புத்தூர் இராஜவீதி,01. 2. திருக்குறள் - பரிமேலழகர் உரை, மணிவாசகர் பதிப்பகம், சென்னை - 600018.
Web. URLs	https://youtu.be/d5be921uxhE, https://youtu.be/Wtg-GJPfXTM.

Tools for Assessment (50 Marks)

CIA I	CIA II	CIA III	Seminar	Assignment	Group Project	Total
8	8	10	8	8	8	50

Mapping

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	L	H	L	H	M	H	H	-	-	-	L	L
CO2	L	L	H	L	M	M	L	H	-	-	-	L	L
CO3	H	L	H	L	L	M	M	H	-	-	-	L	L
CO4	H	L	M	L	L	M	H	M	-	-	-	L	L
CO5	H	L	H	L	M	M	H	H	-	-	-	L	L

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. S. Satheesh Kumar	**Dr. A. Sridevi**

Course Code	Title	
22U4NM4AT2	Part IV : Advanced Tamil – II (சிறப்புத்தமிழ் -II)	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	நூல்களின் வழி அறச் சிந்தனைகளை உருவாக்குதல் செம்மொழியினைச் செம்மைப்படுத்துதல்.
Course Category	Skill Development (மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்)
Development Needs	Regional (தமிழ் மொழியின் அவசியத்தை உணர்த்துதல்)
Course Description	மாணவர்களின் மொழித்திறனை ஊக்குவித்தல்

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	அறச்சிந்தனைகள் பெறுதல் மற்றும் இலக்கண வழக்கு முறைகளைப் பெறுதல்.	விரிவுரை/காணொளிப்பட விளக்கம்	கருத்தரங்கு
CO 2	கடிதம் எழுதுதல் மற்றும் மொழியறிவைப் பெறுதல்	விரிவுரை/ குழு விவாதம்	ஒப்படைவு
CO 3	படைப்பாக்கத்திறன் அறிவுபெறச்செய்தல்	விரிவுரை	கருத்தரங்கு
CO 4	தகவல் தொடர்பியலுக்கானகடிதம்,அமைவுத்திறன் பெறச்செய்தல்	விரிவுரை/ குழு விவாதம்	குழுத்திட்டம்
CO 5	மொழியைப் பிழையின்றிப் பேச,எழுதும் திறன் பெறச்செய்தல்	விரிவுரை/காணொளிப்பட விளக்கம்	ஒப்படைவு

Offered by தமிழ்த்துறை

Course Content : Advanced Tamil – II (சிறப்புத்தமிழ் -II) | **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	பதினெண் கீழ்க்கணக்கு நூல்கள்	1.திருக்குறள் 2.நாலடியார்	1.1. கூடாநட்பு 1.2. செய்நன்றியறிதல் - நாலடியார் 1.3. கல்வி (131,132 செய்யுள்கள்)
		Instructional Hours	**6**
Suggested Learning Methods : திருக்குறளின் சுவை அறியும் வாய்ப்பு பெற்றமை			
II	சிறுகதை	1.வெ.இறையன்பு - பூனாத்தி சிறுகதைகள்	2.1 சேவியர் வாத்தியார் 2.2 தூரிகை
		Instructional Hours	**6**
Suggested Learning Methods : சிறுகதைகளின் சுவை அறியும் வாய்ப்பு பெற்றமை			
III	இலக்கணம்	இலக்கணப் பயிற்சி ஏடு	3.1 எழுத்தும் சொல்லும் 3.2 சுட்டெழுத்துகள் 3.3 சொற்களைச் சரியாகப் பயன்படுத்தும் முறை 3.4 வினைச்சொற்கள், பெயர்ச்சொற்கள் 3.5 வினா எழுத்துகள்
		Instructional Hours	**6**
Suggested Learning Methods : இலக்கணப் பிழை இன்றி எழுதும் பயிற்சி பெற்றமை			
IV	வழக்கறிதல்	இலக்கணம்	மரபு வழக்கு - இயல்பு வழக்கு, தகுதி வழக்கு - அறிதல்
		Instructional Hours	**6**
Suggested Learning Methods : வழக்குகள் பற்றி முழுமையாக அறியும் பயிற்சி பெற்றமை			

V	படைப்பாற்றல் பயிற்சி	இலக்கிய வரலாறு	கவிதை–சிறுகதை–நூல் மதிப்பீடு எழுதுதல்
Instructional Hours			**6**
Suggested Learning Methods : மதிப்பீடு செய்யும் பயிற்சி பெற்றமை			
		Total Hours	**30 Hrs**

Text Books	1. இளங்கலைத்தமிழ் மாணவர்களுக்குரிய பாடநூல்"திரட்டு" தொகுப்பு: தமிழ்த்துறை, நேரு கலை மற்றும் அறிவியல் கல்லூரி, கோயம்புத்தூர்.
Reference Books	1. திருக்குறள் –பரிமேலழகர் உரை, மணிவாசகர் பதிப்பகம், சென்னை - 018 2. வெ.இறையன்பு - பூனாத்தி சிறுகதைகள், விஜயா பதிப்பகம், கோவை.
Web. URLs	https://youtu.be/_vB59q6At8s, https://youtu.be/aSvxO_rV9eQ.

Course designed by	**Verified by**
Dr. S. Satheesh Kumar	**Dr. A. Sridevi**

Course Code	Title	
21U4NM4GEN	Non Major Elective : General Awareness	
Semester : IV	Credits : 2	ESE : 50 Marks

(Common to all UG Programmes)

Course Objective:

Enable the students to learn General knowledge and prepare for different competitive exams.

Course Outcomes:

CO1	Determine Verbal Aptitude , Numerical Aptitude and Logical Reasoning
CO2	Recall basic Science, history , Tamil , Computer , Commerce concepts which would help to crack competitive Examinations
CO3	Acquire time Management skills to attempt competitive Examinations
CO4	Develop Aptitude and problem solving skills
CO5	Gain Knowledge about Current Affairs

Course Content **Instructional Hours / Week : 2**

S. No.	Topics
1.	Verbal Aptitude
2.	Numerical Aptitudeand Logical Reasoning
3.	Abstract Reasoning
4.	Tamil and Other Literature
5.	General Science and Technology
6.	Computer
7.	Economics and Commerce
8.	History and Freedom Struggle
9.	Sports
10.	Current Affairs
	Total Hours : 30

Text Book: "General Awareness", compiled by Nehru Arts and Science College, Coimbatore

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	L	-	-	H	-	-	L	-	L	-	L	L
CO2	H	L	-	-	H	-	-	L	-	L	-	L	L
CO3	H	L	-	-	H	-	-	L	-	L	-	L	L
CO4	H	L	-	-	H	-	-	L	-	L	-	L	L
CO5	H	L	-	-	H	-	-	L	-	L	-	L	L

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
P Sheeba Maybell	Dr. T Chandrapushpam

Course Code	Title	
22U4VBOE01	Value Based Open Elective Course : Design Ecosystem	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To gain the knowledge on ecosystem and environmental sustainability
Course Category	Crosscutting Issue : Environment And Sustainability
Development Needs	Global
Course Description	Design ecosystem describes about the components, types, structural and functional unit of ecology where the living organisms interact with each other and the surrounding environment.

Course Outcomes		Teaching Methods
CO 1	Understand about the basic concepts of ecosystem and environmental planning	Lecture / Video Lessons
CO 2	Gain knowledge of challenges and design process of ecosystem	Lectures / Video Lessons
CO 3	Understand about functions and flow of energy in ecosystem	Case study / Model
CO 4	Analyse about process and mechanism of ecosystem control	Tutorial / Group Discussion
CO 5	Demonstrate about green infrastructure and regulatory framework	Lecture / Tutorial

Course Content — **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Sustainable Human Dominated-Ecosystem and Environmental planning:** Introduction to Ecology & environmental sciences; Principles and Scope of Ecology. Axioms of Ecological Engineering, Sustainable design principles, Global population dymanics, Human dominated earth.	1	1
		Instructional Hours	**6**
Suggested Learning Methods : Video Lectures			
II	**Designing Ecosystem services & Biomes:** Design challenges and needs, the design process, biomes, ecoregions, other land classification systems.	1	3 & 4
		Instructional Hours	**6**
Suggested Learning Methods : Video Tutorials			
III	**Energy and mass flow through ecosystem:** Structure and Functions of Ecosystems - Abiotic and Biotic components, Flow of energy and cycling of materials; water, carbon, nitrogen and phosphorus	3	2
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			

IV	**Ecosystem control:** Population control process, community control process. Stream restoration design - hydrology, sedimentology, geomorphology, habitat, riparian corridor and construction.	2	6
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			
V	**Green infrastructure design:** Green infrastructure network, sustainable cities initiatives, agricultural sustainability indicators, surrounding environmental, ecological and social justice; environmental ethics, issues and possible solutions	3	4
		Instructional Hours	**6**
Suggested Learning Methods : Online Tutorial			
		Total Hours	**30**

Text Books	1. Matlock, M. D. and M. Robert. Ecological Engineering Design: Restoring and Conserving Ecosystem Services. JohnWiley & Sons, Inc. 2011. 2. Meffe, G.K., L. Nielson, R. L. Knight and D. Schenborn. Ecosystem Management: Adaptive, Community-Based Conservation. Island Press. 2012. 3. Elliot, D. 2003. Energy, Society and Environment, Technology for a Sustainable Future. Routledge Press.
Reference Books	1. Sim Van Der Ryn and S. Cowan. Ecological Design. Island Press, 1996. 2. Neeraja, N. Environment and Ecology: A Dymanic Approach, 3rd Edition. GKP Books Catalogue. 2018.
Web. URLs	1. https://www.nationalgeographic.org/encyclopedia/ecosystem/ 2. https://www.environmentandecology.com/

Course designed by	**Verified by Chairman**
Dr. S. Esath Natheer	Dr. N. Thangavel

Course Code	Title	
22U4VBOE02	Value Based Open Elective Course: Design Thinking	
Semester: IV	Credits : 2	ESE : 50 Marks

Course Objective	Inculcate the fundamental concepts of design thinking and develop the students as a good designer by imparting creativity and problem solving ability
Course Category	Crosscutting Issue : Professional Ethics
Development Needs	Local, National and Global
Course Description	The course aims to provideintroduction to the basic concepts and techniques of design thinking and methods of implementing design thinking in the real world.

Course Outcomes		Teaching Methods
CO 1	Learn the basic concepts of design thinking	Direct Instruction
CO 2	Develop the skill of applying the design thinking	Direct Instruction
CO 3	Learn the business uses of design thinking	Video Lessons
CO 4	Understand the variety of approaches within the design thinking discipline	Direct Instruction
CO 5	Impart knowledge in design thinking mindset	Direct Instruction

Course Content	Instructional Hours / Week: 2

Unit	Description	Text Book	Chapters
I	**Design Thinking Background** Definition of Design Thinking, Variety within the Design Thinking Discipline, Design Thinking Mindset	1	1
		Instructional Hours	**06**
Suggested Learning Methods: Brain Storming			
II	**Design Thinking Approach** Fundamental Concepts – Empathy, Ethnography, Divergent Thinking, Convergent Thinking, Visual Thinking, Assumption Testing, Prototyping, Time for Learning and Validation	1	5,1,3
		Instructional Hours	**06**
Suggested Learning Methods : Learning by Teaching			
III	**Design Thinking Resources** – People, place, material, organizational fit **Design Thinking Processes** - Numerous Approaches, Double Diamond Process, 5-Stage, School Process, Designing for Growth Process, Role of Project Management	1	5,6
		Instructional Hours	**06**
Suggested Learning Methods : DIY Activities			

IV	**Design Thinking in Practice I:** Process Stages of Designing for Growth - Design Thinking Tools and Methods – I- Purposeful Use of Tools and Alignment with Process, Visualization, Journey Mapping	1	6
		Instructional Hours	**06**
Suggested Learning Methods: Case Method			
V	**Design Thinking in Practice II:** Design Thinking Tools and Methods – II- Value Chain Analysis, Mind Mapping, Brainstorming, Concept Development, Assumption Testing, Rapid Prototyping, Customer Co-Creation, Learning Launch	2	8
		Instructional Hours	**06**
Suggested Learning Methods : Project Based Learning			
		Total Hours	**30**

Text Books	1. "Designing for growth: A design thinking tool kit for managers", by Jeanne Liedtka and Tim Ogilvie., 2011, ISBN 978-0-231-15838-1 2. "The design thinking playbook: Mindful digital transformation of teams, products, services, businesses and ecosystems", by Michael Lewrick, Patrick Link, Larry Leifer., 2018, ISBN 978-1-119-46747-2
Reference Books	1. "Presumptive design: Design provocations for innovation", by Leo Frishberg and Charles Lambdin., 2016, ISBN: 978-0-12-803086-8 2. "Systems thinking: Managing chaos and complexity: A platform for designing business architecture.", "Chapter Seven: Design Thinking", by JamshidGharajedaghi, 2011, ISBN 978-0-12-385915-0
Web. URLs	1. https://www.designcouncil.org.uk/news-opinion/design-process-what-double-diamond

Course designed by	**Verified by Chairman**
Ms. M. Nandhini	Dr. S. Jayapriya

Course Code	Title	
22U4VBOE03	Value Based Open Elective Course : Disaster Management	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To learn knowledge about disaster and risk and apply the same in the time of any disaster.
Course Category	Crosscutting Issue : Environment And Sustainability
Development Needs	National
Course Description	This course is designed to provide students with a comprehensive understanding of the concepts, theories, and practices of disaster and risk management. Students will learn how to identify and assess risks, develop emergency plans, and mitigate the impact of disasters on communities and organizations.

Course Outcomes		Teaching Methods
CO 1	Understand different types of disasters and their impact on individuals and communities.	Lecture/ Demonstration
CO 2	Analyze the disaster management scenario in India, the policy framework, and the role of different stakeholders in reducing disaster risk and building resilience	Lecture/ Case Studies
CO 3	Understand the concepts of risk and vulnerability in disaster management and analyze the different approaches to disaster risk reduction.	Lectures / Video Lessons
CO 4	Analyze the concept and nature of disaster preparedness, different components of a disaster preparedness plan	Tutorial / Case Studies
CO 5	Narrate the emergency responses to be taken by the national disaster management force and the practical training process on disaster management	Lecture / Class Projects

Course Content		Instructional Hours / Week:2	
Unit	**Description**	**Text Book**	**Chapters**
I	**Introduction on Disaster** Definitions and Terminologies used in Disaster Management, Basic concepts in Disaster Management, Types of Disaster: Natural Disaster: Flood, Cyclone, Earthquakes, Landslides, epidemic or Pandemic etc. (Case studies of each), Man-made Disaster: Fire, Industrial Pollution, Nuclear Disaster, Biological Disasters, Accidents (Air, Sea, Rail & Road), Structural failures (Building and Bridge), War & Terrorism etc. (Case studies of each).	1	1
	Instructional Hours		**6**
Suggested Learning Methods : Power Point Presentation			
II	**Disaster management in India** Hazard and Vulnerability Profile India, Disaster Management Indian scenario, India's vulnerability profile, Disaster Management Act 2005 and Policy guidelines, National Institute of Disaster Management, National Disaster Response Force (NDRF),	1	2

	National Disaster Management Authority, States Disaster Management Authority, District Disaster Management Authority and Cases Studies.		
		Instructional Hours	**6**
Suggested Learning Methods : PPT and Video Lecture			
III	**Risk and Vulnerability** Analysis Risk: Assessing Disaster Risk, Disaster Risk Reduction, Vulnerability: Its concept and analysis, Strategic Development for Vulnerability Reduction, Climate Variability & Disaster Risk, Industrial hazard and Risk Management	1	3
		Instructional Hours	**6**
Suggested Learning Methods : Video Lecture			
IV	**Disaster Preparedness** Concept and Nature, Disaster Preparedness Plan, Prediction, Early Warnings and Safety Measures of Disaster, Role of Information, Education, Communication, and Training, Role of Government, International and NGO Bodies.	1	4
		Instructional Hours	**6**
Suggested Learning Methods : PPT and Group Activity			
V	**Response and 3Rs** Emergency Response: Introduction, Crisis Response Plan (CRP), Communication, Participation, and Activation of Emergency Preparedness Plan, Search, Rescue, Evacuation and Logistic Management, Role of Government, International and NGO Bodies, Psychological relief and recovery, Relief operation and Recovery, Post Disaster Public Health Management, 3R - Rehabilitation, Reconstruction and Recovery, Reconstruction and Rehabilitation as a Means of Development, Damage Assessment, Post Disaster effects and Remedial Measures, Role of Educational Institutions in Disaster management.	1	5
		Instructional Hours	**6**
Suggested Learning Methods : Laboratory Practice			
		Total Hours	**30**

Text Books	1. Disaster and Risk Management (2023), Notes Compiled by the Department of Criminology, Nehru Arts and Science College, Coimbatore
Reference Books	1. J. P. Singhal, "Disaster Management", Laxmi Publications, 2003. 2. M C Gupta, "Manual on Natural Disaster Management in India", NIDM, New Delhi, 2013 3. R K Bhandani, "An Overview on Natural &Man-made Disasters and their Reduction", CSIR, New Delhi, 2000 4. Dr. Mrinalini Pandey, "Disaster Management", Wiley India Pvt. Ltd, 2014. 5. National Disaster Management Authority Publications-Guidelines & Templates for Disaster Management

Course designed by	**Verified by Chairman**
Dr. Reneesh K. Rajan	Dr. Reneesh K. Rajan

Course Code	Title	
22U4VBOE04	Value Based Open Elective Course : Environmental Pollution and Waste Management	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To acquire deeper knowledge about Environmental Management Systems
Course Category	Crosscutting Issue : Environment And Sustainability
Development Needs	Global
Course Description	Environmental Pollution and waste Management involves studying the management of any unnecessary resource use or release of substances into the water, land or air that could harm human health or the environment

Course Outcomes		Teaching Methods
CO 1	Understand the types of environmental pollutants	Lecture / Group Learning
CO 2	Describe, develop and interpret methods of the Environmental Management Systems.	Lecture/ Online Tutorial
CO 3	Critically evaluate methods and possibilities within Environmental Management Systems from asystems perspective.	Lecture/ Online Tutorial
CO 4	Understand the effective management of environmental pollutants	Lecture/ Online Tutorial
CO 5	Learn Environmental Auditing for various Industries/Projects.	Lecture/ Online Tutorial

Course Content		Instructional Hours / Week : 2	
Unit	**Description**	**Text Book**	**Chapters**
I	Introduction to Environmental pollutants,Types of pollutants, Biodegradable pollutants, Non-biodegradable pollutants; Air pollution, Water Pollution, Soil Pollution	1	1,2
		Instructional Hours	**6**
Suggested Learning Methods: Industrial Visit			
II	Introduction to Environmental Management System basic definitions and terms, Framework for Environmental Management Systems, Approach for developing an Environmental Management System.	2	2, 4
		Instructional Hours	**6**
Suggested Learning Methods :Web search			
III	The introduction and implementation of ISO 14001: environmental policy, planning, implementation and operation, checking, management review. Applications EMS in terms of Process flow chart, effluent Generation, composition and treatment of effluents from following industries – sugar, pulp and paper, electroplating, dairy, oil refineries, etc.	2	5
		Instructional Hours	**6**
Suggested Learning Methods : Online tutorial			

IV	Introduction to Environmental Auditing, Category "A" & "B" types of projects. Procedures and Guidelines to conduct Environmental Audit. Plastic Pollution: Causes, impacts, and reduction strategies -Global issue of plastic pollution and innovative solutions	3	7
		Instructional Hours	**6**
Suggested Learning Methods : Online tutorial			
V	Municipal Solid Waste Management: Collection, transportation, and disposal of solid waste - Examination of waste treatment technologies and waste-to-energy processes. E-waste Management: Challenges and recycling techniques for electronic waste - Discussion on the environmental and health hazards associated with improper e-waste disposal.	1	8
		Instructional Hours	**6**
Suggested Learning Methods : Online tutorial			
		Total Hours	**30**

Text Books	1. ISO 14001 Certification - Environmental Management Systems: A Practical Guide for Preparing Effective Environmental Management Systems Textbook Binding – Import, 10 Aug 1995 by W. Lee Kuhre (Author) 2. M. N Rao, "Waste Water Treatment" Oxford and IBH publishing Co. Pvt Ltd, 2007 3. Peavy, H.S, D.R. Rowe &T.George, "Environmental Engineering", New York: McGraw Hill, 1987
Reference Books	1. Christopher Sheldon and Mark Yoxon, "Installing Environmental management Systems – a step by step guide" Earthscan Publications Ltd, London, 1999.
Web. URLs	1. https://www.anits.edu.in/online_tutorials/es/Unit%203.pdf

Course designed by	**Verified by Chairman**
Dr. O. S. Nimmi	Dr. N. Saranya

Course Code	Title	
22U4VB0E05	Value Based Open Elective Course : History of Ancient India	
Semester: IV	Credits: 02	ESE : 50 Marks

Course Objective	To explore the rich and diverse history of ancient India, examining its civilizations, political systems and cultural achievements.
Course Category	Employability
Development Needs	Global
Course Description	This course gives an in depth analysis of the Ancient Indian History marking the beginning of urban civilization in the Indian subcontinent.

Course Outcomes		Teaching Methods
CO 1	Understand the salient features of Indus valley civilization	Lecture
CO 2	Evaluate the features Civilizations	Tutorial
CO 3	Evaluate the rise of new movements	Lecture
CO 4	Visualize the administration of Mauryas and the art and architecture of Mauryas	Tutorial
CO 5	Identify the administration of Guptas and their contribution to University	Lecture

Course Content — **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	Definitions - Nature and Scope of History - History and Its Relationship with other Social Sciences - Geographical Features of India Sources of Indian History: Pre- History Paleolithic, Mesolithic, Neolithic, Chalcolithic and Megalithic Cultures.	1 &4	1-5
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
II	Indus Valley Civilization - Its Features & Decline; Early Vedic and Later Vedic Civilizations Vedic Literature Society Economy - Polity Religion.	2	2-4
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
III	Rise of New Religious Movements Charvakas, Lokayathas, Jainism and Buddhism; Mahajanapadas - Rise of Magadha; Impact.	3	3
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			

IV	Foundation of the Mauryan Dynasty; Ashoka and His Dharma Polity Administration - Society Economy Religion Literature - Art and Architecture; Disintegration of the Mauryan Empire; Post-Mauryan Kingdoms - Indo-Greeks - Kushanas and Kanishka - Society Economy Literature Art and Architecture; The Satavahanas; Sangam Age Literary Development.	4	4 &5
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
V	Gupta Empire: A Brief Political Survey - Polity and Administration, Social and Economic Conditions, Agriculture and Land Grants - Feudalism, Caste System, Position of Women, Education, Literature, Science and Technology, Art and Architecture - Harshavardana and His Achievements.	4	5
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
		Total Hours	**30**

Text Books	1. E.H. Carr, What is History? Penguin Books, England, 1990. 2. Majumdar, R.C., History and Culture of the Indian People, Vols. I, II & & III. 3. Romila Thapar, Asoka and the Decline of the Mauryas, OUP, New Delhi, 1995. 4. Romila Thapar, Early India (From the earliest to AD 1300).
Reference Books	1. Poonam Dalal : Ancient and Medival India for UPSC & State Level Exam

Course designed by	**Verified by Chairman**
Ms. S. Kavitha	Dr. R. Malathi

Course Code	Title	
22U4VBOE06	Value Based Open Elective Course : Indian Knowledge System	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To make the students understand the knowledge system in India and apply it to their day to day life
Course Category	Value Education
Development Needs	National
Course Description	This course will actively engage for spreading the rich heritage of our country and traditional knowledge in the field of Arts and literature, Agriculture, Basic Sciences, Engineering & Technology, Architecture, Management, Economics, etc

Course Outcomes		Teaching Methods
CO 1	Understand the History and an overview of Indian knowledge System.	Flipped Classroom
CO 2	Interpret the Importance of Vedic Corpus and Philosophical System	Student Centric
CO 3	Analyse the Foundational Concepts like Linguistics and and Number Systems.	Blended Mode
CO 4	Interpret the concepts of Astronomy and Town Planning Architecture.	Flipped Classroom
CO 5	Describe the Importance of Health, Wellness, Psychology and Administrative Governance	Case-Base

Course Content | **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Indian Knowledge System** : An Introduction: Importance of Ancient Knowledge-Defining Indian Knowledge System –The Indian Knowledge System Corpus-A Classification Framework-History of Indian Knowledge System.	1	1
		Instructional Hours	**06**
Suggested Learning Methods : Cooperative Learning			
II	**The Vedic Corpus**: Introduction to Vedas-The four Vedas. **Philosophical System**: Indian Philosophical System – Development and Unique Features-Vedic schools of Philosophy.	1	2 & 3
		Instructional Hours	**06**

Suggested Learning Methods : Peer Learning			
III	**Linguistics:** Component of a Language-Role of Sanskrit in Natural Language Processing. **Mathematics:** Unique Aspects of Indian Mathematics-Great Mathematicians and their Contributions-Arithmetic Calculations.	1	5 & 8
		Instructional Hours	**06**
Suggested Learning Methods : Group Learning			
IV	**Astronomy:** Unique aspects of Indian Astronomy-Historical Development of Astronomy in India-Elements of the Indian Calendar **Town Planning Architecture:** Indian Architecture- A Historical Perspective –Town Planning-Unitary Building –Temple Architecture	1	9 & 12
		Instructional Hours	**06**
Suggested Learning Methods : Mind Mapping			
V	**Health, Wellness and Psychology:** Ayurveda -Definition of Health-Tridosas-Relationships to Health-Disease-Disease Management-Yoga way of Life-Indian Approach to Psychology. **Governance and Public Administration:** Arthasastra Governance and Administration.	1	13 & 14
		Instructional Hours	**06**
Suggested Learning Methods : Case Studies			
		Total Hours	**30**

Text Books	1. B.Mahadevan,Vinayak Rajat Bhat,Nagendra Pavana R.N , Introduction to Indian Knowledge System: Concepts and Applications, PHI Learning Private Limited,Delhi, 2022.
Reference Books	1. Traditional Knowledge System in India by Amit Jha Atlantic publishers, 2002. 2. Traditional Knowledge System in India, by Amit Jha, 2009.
Web. URLs	1. https://www.youtube.com/watch?v=LZP1StpYEPM 2. http://nptel.ac.in/courses/121106003/

Course designed by	**Verified by Chairman**
Dr. N. Saranya	**Dr. K. Raja Rajeswari**

Course Code	Title	
22U4VBOE07	**Value Based Open Elective Course : Principles of Intellectual Property Rights**	
Semester: IV	**Credits: 2**	**ESE: 50 Marks**

Course Objective	To make the students to recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights. To learn the procedure of obtaining Patents, Copyrights, Trade Marks & Industrial Design
Course Category	Entrepreneurship
Development Needs	Global
Course Description	The course is designed to provide comprehensive knowledge to students regarding the general principles of IPR, Concepts and Theories, Criticisms of Intellectual Property Rights, the registration process, and the International Regime Relating to IPR.

Course Outcomes		Teaching Methods
CO 1	Understand Intellectual Property Rights (IPR), its significance in promoting innovation and creativity, and the different types of IPRs.	Lecture
CO 2	Equip with the knowledge to navigate the patent filing process effectively.	Tutorial
CO 3	Comprehend the fundamentals of copyrights, their types, registration procedures, terms and remedies	Lecture
CO 4	Narrate the trademarks, their rights, types, purpose, registration process, and the trademark landscape in India	Tutorial
CO 5	Analyze the significance of geographical indications (GI) and the need for their protection, the relevant laws and regulations in India	Lecture

Course Content	Instructional Hours / Week : 2

Unit	Description	Text Book	Chapters
I	**Introduction to Intellectual Property Rights (IPR):** Definition of IPR, Importance of IPR, Kinds of Intellectual property rights: Copy Rights, Patent, Trade Mark, Trade Secret and trade dress, Design, Layout Design, Geographical Indication, Plant Varieties and Traditional Knowledge, IPR in India and the world, IPR and WTO.	1	1,2
		Instruction Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
II	**Patent:** Introduction to Patent, Patent Act 1970 and its amendments, Patentable and non-Patentable inventions, legal requirements for obtaining Patent, Registration Procedure of Patent, The role of Patentees and Different layers of the international patent system: National and International Patent filing procedures.	1	4
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
III	**Copyright**: Introduction to Copyrights, Origin, and Definition & Types of Copyrights, Registration procedure, Assignment & license, Terms of Copyright, Piracy, Infringement, Remedies, Copyrights with special reference to software, Copyrights in India.	1	

		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
IV	**Trademarks:** Introduction to trademarks, Rights of trademark, Types of trademark, purpose, and function of a trademark, trademark protection, and trademark registration process, trademarks in India.	1	9
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
V	**Design:** Introduction to Design, Registration of Design, Cancellation of Registration, International Convention on Design, functions of Design, **Geo Graphical Indication:** Introduction to Geo Graphical Indication, Why and how GI needs protection and GI laws, Indian GI act.	1	7,10
		Instructional Hours	**6**
Suggested Learning Methods : Lecture/Tutorial			
		Total Hours	**30**

Text Book	**1.** Intellectual Property Rights, Asha Vijay DurafeDhanashree K. Toradmalle, Wiley Publisher, 2022
Reference Book	1. B.L. Wadera, Patents, trademarks, copyright, Designs and Geographical Judications.
Web. URLs	1. https://dst.gov.in/sites/default/files/E-BOOK%20IPR.pdf

Course designed by	**Verified by Chairman**
Dr. K. Prathapchandran	Dr. K. Selvavinayaki

Course Code	Title	
22U4VBOE08	Value Based Open Elective Course : Science, Society and Culture	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To create awareness on Science, Indian Society and cultural heritage of our Country
Course Category	Skill Development
Development Needs	Global
Course Description	Facilitate the awareness on Science in everyday life, Indian Society and Social empowerment, Democracy and Freedom of our Country. Ancient Civilization, cultural heritage and perceptions of Indian Culture

Course Outcomes		Teaching Methods
CO 1	Know the concepts of Science in our daily life and awareness about Scientific community	Lecture / Video Lessons / Model
CO 2	Gain knowledge on Indian society and development of modern society	Lecture / Video Lessons
CO 3	Learn about Indian social issues and awareness on our social laws	Lectures / Case study
CO 4	Understand the Indian culture, diversity of culture and Traditional customs	Tutorial / Group Discussion
CO 5	Comparison of ancient heritage and civilization of our country and follow them in our life	Lecture / Tutorial

Course Content — **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Common Science** - Developments and their applications- effects in day to day Life - Achievements of Indians in Science and Technology. Awareness in the fields of IT, Space, Computers, Robotics, Nanotechnology and Biotechnology. Scientists of Ancient India, Science and Scientists of Medieval India, Scientists of Modern India. India's Policy in the Field of the Science, Policies and Reports related to Science-Innovative Technology Vision.	1	1
		Instructional Hours	**6**
Suggested Learning Methods : Video Lectures			
II	**Social Behaviour** - Salient features of our Society-Social diversity of India-Impact of globalization on Indian society. Social empowerment, Democracy and Freedom-Role of women and women's organization in the development of healthy society.	2	1
		Instructional Hours	**6**
Suggested Learning Methods : Video Tutorials			
III	**National Integration** – Communalism - Regionalism and Secularism – Problems relating to development and management of Social Sector-Services relating to Health, Education and Human Resources. Welfare schemes for vulnerable sections of the people-Performance of Centre and States schemes-Mechanisms-Laws,	2	1 & 2

	Institutions and Bodies constituted for the protection and development of vulnerable sections.		
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			
IV	**South Asian Cultures**-Indian culture-combination of several cultures-Indian philosophy-Religious culture-Family structure and marriage-Wedding rituals-Indian greetings-Indian foods- Festivals-Traditional clothing. Epics of India-Indian Arts and Music-Indian architecture and Sculptures-Indian Languages and Literature-Perceptions of Indian culture.	3	1
		Instructional Hours	**6**
Suggested Learning Methods : Video Tutorials			
V	**Ancient Civilization**-Indus Valley Civilization-Harappa and Mohenjo-Daro civilization-Evolutions of early Buddhist Architecture-Advent in China-Ellora caves civilization-King Gupta's period of civilization-Vijayanagara inscriptions-Mohall's period of civilization-British culture.	4	2
		Instructional Hours	**6**
Suggested Learning Methods : Online Tutorial			
		Total Hours	**30**

Text Books	1. Science, Culture and Society: Understanding Science in the 21st Century by Mark Erickson, Paperback – Illustrated, 2015. 2. Khanna, Indian Social order and Laws, Universities Press. 3. Choudhary, Social Protection Law Provisions and Procedure. 4. Indian Heritage systems-Universal Law Publishing Company. 5. Ancient Civilization of Indian sub-continent- Ancient Books.
Reference Books	1. National integration and Secularism: Issues and Challenges, Regal Publications. 2. Ancient Culture of India: Issues and Concerns.
Web. URLs	1. https://www.amazon.in/Science-Culture-Society-Understanding-Century-dp-0745662250/dp/0745662250/ref=dp_ob_title_bk. 2. https://iasscore.in/upsc-syllabus/indian-society/indian-society-mains. 3. https://www.worldhistory.org/india/

Course designed by	**Verified by Chairman**
Dr. K. Narayanasamy	Dr. M. Thangavel

Course Code	Title	
22U4VBOE09	Value Based Open Elective Course : Community Engagement	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	This course serves as an introduction to community engagement, helping learners to explore methods of community involvement, change making process, and professionalism within the community.
Course Category	Skill Development
Development Needs	National
Course Description	Apply the principles of communication for outreach to the diverse public, decision makers, and stakeholder groups.

Course Outcomes		Teaching Methods
CO 1	Apply professional behavior when working with community organizations	Lecture/ Case Study
CO 2	Investigate the complexity of problems related to community needs	Lecture/ Role Play
CO 3	Design and conduct the phases of a community engagement process, using consensus building and relating to formal planning procedures.	Lecture/ Case Study
CO 4	Recognize community interests, power dynamics, and conflict, and facilitate empowerment of excluded groups and negotiation	Lecture/ / Role Play
CO 5	Direct cross-jurisdictional, inter-agency, inter-disciplinary, and multi-stakeholder collaboration.	Lecture/ Case Study

Course Content | **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	Concept, Ethics and Spectrum of Community engagement, Local community, Rural culture and Practice of community engagement	3	2
		Instructional Hours	**6**
Suggested Learning Methods : Seminar			
II	Rural Development Programs and Rural institutions, Local Administration and Community Involvement	2	3
		Instructional Hours	**6**
Suggested Learning Methods : Role Play			
III	Stages, Components and Principles of community development, Utility of public resources. Social contribution of community networking, Various government schemes.	1	3
		Instructional Hours	**6**
Suggested Learning Methods : Role Play			

IV	Community Engaged Research and Ethics in Community Engaged Research. PRA, Programmes of community engagement and their evaluation.	1	2
		Instructional Hours	**6**
Suggested Learning Methods : Creative Art Assignments			
V	Rural Distress, Rural Poverty, Impact of Disasters on Migrant Laborers, Mitigation of Disaster.	2	1
		Instructional Hours	**6**
Suggested Learning Methods : Community Participation Program			
		Total Hours	**30**

Text Books	1. Participatory Rural Appraisal, PRA Application in Rural Development Planning, R Ramesh 2. Introduction to Community Development, Theory, Practice, and Service-Learning, Gary Paul Green, Jerry W. Robinson, Jr, 2011, SAGE Publications
Reference Books	1. Community-based participatory research: a capacity-building approach for policy advocacy aimed at eliminating health disparities. Am J Public Health. 2010 2. Achieving successful community engagement: A rapid realist review. BMC Health Services Research.
Web. URLs	1. https://unnatbharatabhiyan.gov.in › presentations 2. https://www.wellawareworld.org/

Course designed by	**Verified by Chairman**
Dr. T. Lidya	Dr. P. Nathiya

Course Code	Title	
22U4VBOE10	Value Based Open Elective Course : Emotional Intelligence	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To enable the Students to understand the concepts of Emotional Intelligence, its models and components
Course Category	Employability & Skill Development
Development Needs	National & Global
Course Description	Understanding the importance of Emotional Intelligence and build effective relationships

Course Outcomes		Teaching Methods
CO 1	Understand the Self-Awareness, Self-Management, Social Awareness and Relationship Management	Lecture/ Video Lectures
CO 2	Discover personal competence and techniques of building emotional intelligence.	Lecture/ Role Play
CO 3	Narrate the insights into establishing positive relationships	Lecture/ Peer Teaching
CO 4	Understand the emotional intelligence and its importance	Lecture/ Role Play
CO 5	Summarize the Self-Management Techniques	Lecture/ Group Discussion

Course Content — **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Fundamentals of Emotional Intelligence**: Meaning Definition Nature and Significance Models of Emotional Intelligence-: Ability, Trait and Mixed Building blocks of emotional intelligence: Self-awareness, Self-Management, Social Awareness, and Relationship Management	1	1&2
	Instructional Hours		**6**
Suggested Learning Methods : Video lectures			
II	**Personal Competence:** Meaning Definition Self Awareness: Observing and recognizing one's own feelings, Knowing one's strengths and areas of development. Self-Management: Managing emotions, anxiety, fear, and anger.	1	5&6
	Instructional Hours		**6**
Suggested Learning Methods : Role Play			
III	**Social Competence**: Social Awareness: Others' Perspectives, Empathy and Compassion Relationship Management: Effective communication, Collaboration, Teamwork and Conflict Management	2	1&2
	Instructional Hours		**6**

Suggested Learning Methods : Peer Teaching			
IV	**Emotional Intelligence:** Measurement and Development - Meaning Definition, Importance Measures of emotional intelligence Strategies to develop and enhance Emotional Intelligence	2	4&5
		Instructional Hours	**6**
Suggested Learning Methods : Role Play			
V	**Self-Management Techniques**: Meaning Definition Techniques to regulate emotions such as Mindfulness, Conditioned relaxation response and Boundary setting Techniques of Relationship Management: Display of empathy, Effective Communication , Teamwork , Conflict resolution	2	6&7
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			
		Total Hours	**30**

Text Books	1. Bar-On, R., & Parker, J.D.A.(Eds.) (2000). The handbook of emotional intelligence. San Francisco, California: Jossey Bros. 2. Goleman, D. (2005). Emotional Intelligence. New York: Bantam Book. 3. Sternberg, R. J. (Ed.). (2000). Handbook of intelligence. Cambridge University Press.
Reference Books	1. HBR's 10 Must Reads on Emotional Intelligence (2015) 2. HBR's 10 Must Reads on Managing Yourself (2011) 3. Self-Discipline: Life Management, Kindle Edition, Daniel Johnson.

Course designed by	**Verified by Chairman**
Dr. R. A. Ayyapparajan	Dr. R. A. Ayyapparajan

Course Code	Title	
22U4VBOE11	Value Based Open Elective Course : Fundamentals of Tourism	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To impart Knowledge on Tourism and its development in the economic growth and also to identify the tourist needs.
Course Category	Employability
Development Needs	Global
Course Description	To enhance the students to get part in the tourism industry and to know about concepts of tourism.

Course Outcomes		Teaching Methods
CO 1	Understand tourism and its development	Direct Instruction
CO 2	Analyse the Factors influencing the Travel Motivations.	Direct Instruction
CO 3	Comprehend the Tourist Transport	Video Lessons
CO 4	Understand the Tourist Accommodations	Direct Instruction
CO 5	Apply the Travel Agency Operations	Video Lessons

Course Content — **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**The Tourism Phenomenon:** Definition – Tourism; Tour; Tourist; Visitor; Excursionist; Domestic; International; Inbound; Outbound; Destination. Growth of Tourism / Evolution / History of Tourism & Present status of tourism in India. Thomas Cook – Grand Circular Tour.	1	9, Key Terms
		Instructional Hours	**6**
Suggested Learning Methods : Lecture Based Learning			
II	**Travel Motivations:** ***Categories of Motivations:*** Physical Motivators, Cultural Motivators, Interpersonal Motivators, Status and prestige Motivators. ***Types of Tourism:*** Pleasure, relaxation, Rest and recreation, Health, Participation in Sports, Curiosity and Culture, Ethnic and Family, Spiritual and Religious, Professional or Business.	1	3
		Instructional Hours	**6**
Suggested Learning Methods : Group Learning Method			
III	**Tourist Transport:** Role of Transport in Tourism, Modes of Transport, Road Transport, Air Transport, Rail Transport, Sea Transport.	2	15
		Instructional Hours	**6**
Suggested Learning Methods : Group Learning Method			
IV	**Tourist Accommodation:** Definition, Types of Hotels, International Hotels, Resort Hotels, Commercial Hotels, Residential Hotels, Floating Hotels. **Supplementary Accommodation:** Motel, Youth Hostel, Camping Sites, Pension, Bed and Breakfast Establishment, Tourist Holiday Villages, Time and Resort Condominiums.	1	8

		Instructional Hours	**6**
Suggested Learning Methods: Group Learning Method			
V	**Travel Agency:** Products of Travel Agency, Classification of Travel Agency, Functions, Travel Related Business, International Travel Requirements, Travel Agency Operations.	3	2,3
		Instructional Hours	**6**
Suggested Learning Methods: Lecture Based Learning			
		Total Hours	**30**

Text Books	1. A.K. Bhatia, Tourism Development: Principles & Practices, Sterling Publishers Pvt 2007. 2. A.K. Bhatia, International Tourism Management, Sterling Publishers Pvt 2012. 3. Jagmohan Negi, Travel Agency Operations Concepts and Principles, Kanishka Publishers and Distributors, 2003.
Reference Books	1. Biswanth Gosh, Tourism & travel management, Vikas Publishing House, Second Edition, 2008. 2. Christopher Holloway, Business of tourism, Elsevier Publisher, Second Edition, 2006.

Course designed by	**Verified by Chairman**
Dr. B. Tamilselvan	Dr. B. Tamilselvan

Course Code	Title	
22U4VBOE12	Value Based Open Elective : Health Education	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	1. Acquire knowledge on different dimensions of health. 2. Inbuilt healthy life style practices
Course Category	Value education
Development Needs	Local
Course Description	It provides knowledge on values and practices for healthy living

Course Outcomes		Teaching Methods
CO 1	Recall the importance of health education	Interactive session
CO 2	Enlist the right choice of foods and dietary pattern	Interactive session
CO 3	Identify methods to manage mental health issues	Activity based teaching
CO 4	Practice effective personal health habits	Interactive session
CO 5	Summarize the importance of environmental health for mankind	Interactive session

Course Content — **Instructional Hours /Week : 2**

Unit	Description	Text Book	Chapters
I	**Health Education:** Concept of health, Components of wellness, spectrum and determinants of health - Definition of health-health education-Aim, objective and principles of health education - Health services, Related Activity -Measuring the health attitudes of students	1	1
		Instructional Hours	**6**
Suggested Learning Methods: Group Activity			
II	**Food and Health** Basic 4, 5and7 food groups; functional food groups-energy yielding, body building and protective foods (only sources and functions), food pyramid, meal planning pattern, healthy eating pattern.Related Activity -Assessing dietary adequacy of students	3,4	1 & 1, 2
		Instructional Hours	**6**
Suggested Learning Methods: Peer learning			
III	**Mental Health** Meaning of mental health – importance of mental health-characteristics of emotionally healthy-Self esteem-Values and patterns in decision making- Mental health problem of adolescences – depression & stress -causes and management Related activity-Stress level assessment in students	1	6
		Instructional Hours	**6**
Suggested Learning Methods: Role play			

IV	**Personal Health** Definition of personal health- under nutrition and over nutrition -prevalence of life style disease-healthy lifestyle practices- personal hygiene-Importance of physical activities & exercise Related Activity -Analyzing the physical activity pattern of students	1	8
		Instructional Hours	**6**
Suggested Learning Methods: Assignment			
V	**Environment and Health** Definition of environmental health, Biodiversity, climate change and biodiversity, environmental pollution-causes and consequences of air, water and soil pollution-Food contamination and consequences Related Activity-Group discussion on case studies	2	5,8
		Instructional Hours	**6**
Suggested Learning Methods: Group Discussion			
		Total hours	**30**

Text Books	1. Anspaugh (2001), Teaching Today's Health, Library of Congress Cataloging, 6th Edition, US 2. Tyler Miller (2006), Environmental Science, Cengage learning India private ltd 3. Srilakshmi (2010), Dietetics, New age International private limited, New Delhi 4. Srilakshmi (2010), Food Science, New age International private limited, New Delhi
Reference Books	1. Howley & Don Franus(B) (2003) Health Fitness Instructor's Handbook. Human Kinetics publication. 2. Ramachandran. L. Dharmalingam. T (1993) Health Education India. Vikas publishing House Private Limited
Journals	1. Health education

Course designed by	**Verified by Chairman**
Dr. A. Swarnalatha	Dr. A. Swarnalatha

Course Code	Title	
22U4VBOE13	Value Based Open Elective Course : Media and Politics	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To Impart knowledge of understanding the media and politics
Course Category	Skill Development
Development Needs	Global
Course Description	This course examines how media and political institutions interact to shape public thinking and debates around social problems.

	Course Outcomes	Teaching Methods
CO 1	Understand the basic idea of media and Politics	Lecture and Demonstration
CO 2	Summarize the political stance of media.	Lecture
CO 3	Apply the Skills on writing political news.	Lecture and Demonstration
CO 4	Evaluate the various characteristics of media Organization.	Video Lectures
CO 5	Apply the mass media influences as individuals, groups, and society in political contexts	Discussion

Course Content	Instructional Hours / Week : 2

Unit	Description	Text Book	Chapters
I	Media –- Meaning and importance. Role of media in Society Political Communication – Mass Media politics and Society- Cinema and political manifestation. Social media and Political narration	1	1
		Instructional Hours	**06**
Suggested Learning Methods : Learning by Teaching			
II	Characteristics of Modern Mass Media: Print and Electronic Media – Political economy and Ownership	2	2
		Instructional Hours	**06**
Suggested Learning Methods : Active Learning			
III	Political Economy - State ownership versus private ownership of mass media – Consequences of private and public- Media ownership pattern Government Regulation – Monopoly- Media content and its Censorship.	1	2
		Instructional Hours	**06**
Suggested Learning Methods : Group Learning			
IV	Public Opinion- The relationship between the mass media and public sphere- Political manipulation of media content- the impact of mass media on global political processes.	3	3
		Instructional Hours	**06**

Suggested Learning Methods : Visual Learning			
V	Political effects of Mass Media: Individual- group- and Society Public- making public opinion- Setting of Political agenda- Political Socialization- Political mobilization	2	4
		Instructional Hours	**06**
Suggested Learning Methods : Case study based Learning			
		Total Hours	**30**

Text Books	1. Lowe, L. (2016). The Definitive Guide to Creative Writing and Media Productions. United States: Xlibris UK. 2. Marshall, C. (2018). Writing for Social Media. United Kingdom: BCS Learning & Development Limited. 3. Cain, S., Batty, C. (2016). Media Writing: A Practical Introduction. United Kingdom: Palgrave Macmillan.
Reference Books	1. Mencher, Melvin."Basic News Writing" Universal Bookstall, New Delhi.1993. 2. Sreenivas Rao. Academic Book Centre, Ahmedabad. 1981. 3. Barnard, J. (2019). The Multimodal Writer: Creative Writing Across Genres and Media. United Kingdom: Bloomsbury Academic. 4. Kuehn, S. A., Lingwall, J. A. (2016). The Basics of Media Writing: A Strategic Approach. United States: SAGE Publications.
Web. URLs	1. https://www.bing.com/videos/

Course designed by	**Verified by Chairman**
Dr. Baiju Paul	Dr. Paul Benzier

Course Code	Title	
22U4VBOE14	Value Based Open Elective : Positive Psychology and Work Life	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To bring an experience marked by predominance of positive emotions and informing them about emerging paradigm of Positive Psychology
Course Category	Skill Development
Development Needs	National
Course Description	Build relevant competencies for experiencing and sharing happiness as lived experience and its implications

Course Outcomes		Teaching Methods
CO 1	Understand the realities of Psychology and Work life	Lecture/ Case Study
CO 2	Insight on origin and development of Positive Psychology	Lecture/ Role Play
CO 3	Reveal the knowledge about phases of Positive Psychology	Lecture/ Case Study
CO 4	Perceptiveness about Happiness in Psychology and its Traits	Lecture/ Role Play
CO 5	Furnish the specific skills and techniques for working with Trust and Companionship	Lecture/ / Role Play

Course Content		Instructional Hours / Week : 2	
Unit	**Description**	**Text Book**	**Chapters**
I	Introduction to Positive Psychology : Positive Psychology: Concept, History, Nature, Dimension and scope of Positive Psychology Seligman's PERMA	3	1
	Instructional Hours		**6**
Suggested Learning Methods : Seminar			
II	Positive Emotional States and Processes, Positive Emotions and well being: Hope & Optimism, Love, The Positive Psychology of Emotional Intelligence, Influence of Positive Emotions	2	3
	Instructional Hours		**6**
Suggested Learning Methods : Role Play			
III	Strengths and Virtues : Character Strengths and Virtues Resilience in the phase of challenge & Loss, Empathy and Altruism	1	3
	Instructional Hours		**6**
Suggested Learning Methods : Role Play			
IV	Happiness : Introduction to Psychology of happiness, well being and scope, Types of happiness- Eudaimonic and Hedonic History of Happiness, Theories, Measures and Positive correlates of happiness, Traits associated with Happiness, Setting Goals for Life and Happiness	3	2
	Instructional Hours		**6**
Suggested Learning Methods : Creative Art Assignments			

V	**Forgiveness and Gratitude** : Forgiveness and Gratitude , Personal transformation and Role of suffering , Trust and Compassion	1	3
		Instructional Hours	**6**
Suggested Learning Methods : Community Participation Program			
		Total Hours	**30**
Text Books	1. Argyle, M. 1987. *The psychology of happiness*. London: Methuen. 2. Carr, Alan (2007). Positive Psychology: The science of human happiness and human strengths. Routledge, Taylor and Francis Group-London. Csikzentmihalyi, Mihaly (1990) Flow: The Psychology of Optimal Experience, Harper Perennial. 3. Garcia,Hector., & Mirrales. Francesc.(2017) IKIGAI-The Japanese Secret to a Long and Happy Life, Hutchinson London.		
Reference Books	1. Frankl, Viktor E. (1988). The Will to Meaning: Foundations and Applications of Logotherapy. Meridian/Plume 2. Frankl, Viktor E. (2000) Man's Search for Ultimate Meaning, Basic Books. 3. Snyder, C. R., & Lopez, S. J., & Pedrotti, J. T (2011) Positive Psychology: The Scientific and Practical Explorations of Human Strengths, Sage Publications India Pvt Ltd.		

Course designed by	**Verified by**
Ms. Merlin Jenefer	Dr. P. Nathiya

Course Code	Title	
22U4VBOE15	Value Based Open Elective Course : Professional Ethics	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	Students will understand the importance of Values and Ethics in their personal lives and Professional careers
Course Category	Employability & Skill Development
Development Needs	National & Global
Course Description	Understanding the importance of maintaining Professional Ethics and build effective career.

Course Outcomes		Teaching Methods
CO 1	Understand the basic purpose of Profession	Lecture
CO 2	Summarize the Professional Rights And Responsibilities	Lecture/ Peer Teaching
CO 3	Apply the various Roles in Applying Ethical Principles at Various Professional Levels	Lecture/ Case Study
CO 4	Professional Ethical Values and Contemporary Issues	Lecture/ Role Play
CO 5	Excelling in Competitive and Challenging Environment to Contribute to Industrial Growth.	Lecture/ Group Discussion

Course Content	Instructional Hours / Week : 2

Unit	Description	Text Book	Chapters
I	**Introduction to Professional Ethics: Meaning Definition Basic Concepts** Governing Ethics, Personal & Professional Ethics, Life Skills, Emotional Intelligence Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.	1	1&2
	Instructional Hours		**6**
Suggested Learning Methods : Video lectures			
II	**Basic Theories:** Basic Ethical Principles, Moral Developments, Deontology Virtue Theory, Rights Theory, Casuist Theory, Moral Absolution, Moral Rationalism, Moral Pluralism Ethical Egoism, Feminist Consequentialism, Moral Issues, Moral Dilemmas, Moral Autonomy	1	5&6
	Instructional Hours		**6**

Suggested Learning Methods : Mini Case Analysis			
III	**Professional Practices:** Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of ethics The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walk away Collapse.	2	1&2
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			
IV	Ethics in changing domains of Research: The US government wide definition of research misconduct, research misconduct distinguished from mistakes and errors, recent history of attention to research misconduct The emerging emphasis on understanding and fostering responsible conduct, responsible authorship, reviewing & editing.	2	4&5
		Instructional Hours	**6**
Suggested Learning Methods : Role Play			
V	Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, International Trade, World Summits, Issues Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Deflection, Pollution, Ethics in Manufacturing and Marketing Media Ethics; War Ethics; Bio Ethics, Intellectual Property Rights	2	6&7
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			
		Total Hours	**30**

Text Books	1. Professional Ethics: R. Subramanian, Oxford University Press, 2015. 2. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e, Cambridge University Press, 2015
Reference Books	1. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI, 2008

Course designed by	**Verified by**
Dr. R. A. Ayyapparajan	Dr. R. A. Ayyapparajan

Course Code	Title	
22U4VBOE16	Value Based Open Elective Course : The Science of Happiness	
Semester: IV	Credits: 2	ESE: 50 Marks

Course Objective	To explore the key elements of happiness at work and strategies to cultivate joy, well-being, and productivity in the workplace, relationship between happiness and various work-related factors, such as efficiency, creativity, innovation, work-life balance, and making a difference for others.
Course Category	Skill Development
Development Needs	Global
Course Description	To create a positive work environment and promote happiness for themselves and others.

Course Outcomes		Teaching Methods
CO 1	Understand the Happiness as a Scientific Construct	Lecture Method
CO 2	Apply the Theories and Models of Well-being	Flipped Teaching
CO 3	Demonstrate the Individual Factors and Happiness	Lecture Method
CO 4	Analyze the Social and Environmental Factors in Happiness	Lecture Method
CO 5	Apply Happiness and Work Efficiency	Flipped Teaching

Course Content — **Instructional Hours / Week : 2**

Unit	Description	Text Book	Chapters
I	**Introduction to Happiness as a Scientific Construct** Defining happiness and its importance in individual and societal well-being, Overview of subjective well-being and its components - life satisfaction, positive emotions, and negative emotions, Exploration of cultural variations in happiness and its measurement	1	1
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			
II	**Theories and Models of Well-being** Prominent theories of well-being - hedonic well-being, eudemonic well-being, PERMA model. Role of factors - autonomy, meaning, and engagement in happiness. Strengths and limitations of different well-being models	1	2
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			
III	**Individual Factors and Happiness** Personality traits - optimism, resilience and their influence on happiness. Role of genetics and biological factors in determining happiness levels. Examination of personal values, goals, and self-esteem and their impact on subjective well-being	1	3
		Instructional Hours	**6**

Suggested Learning Methods : Group Discussion			
IV	**Social and Environmental Factors in Happiness** Importance of social relationships and social support in promoting happiness. Influence of social comparison, social norms, and cultural factors on well-being. Impact of environmental factors - access to nature, quality of living conditions on happiness.	1	4
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			
V	**Happiness and Work Efficiency** Impact of happiness on work efficiency and productivity, strategies for managing daily hassles and reducing stress in the workplace, link between happiness and creativity in the workplace, Strategies for fostering a creative and innovative work environment	1	5
		Instructional Hours	**6**
Suggested Learning Methods : Group Discussion			
		Total Hours	**30**

Text Books	1. Susan A. David, IlonaBOni well, and Amanda Conley Ayers; The Oxford Hand book of Happiness.
Reference Books	1. Achor, S. (2010). The happiness advantage: The seven principles of positive psychology that fuel success and performance at work. Random House. 2. Lyubomirsky, S. (2008). The how of happiness: A scientific approach to getting the life you want. Penguin. 3. Diener, E., & Seligman, M. E. P. (2002). Very happy people. Psychological Science, 13(1), 81-84.
Web. URLs	1. https://onlinecourses.nptel.ac.in/noc23_hs06/preview

Course designed by	**Verified by Chairman**
Dr. S. Balaji	Dr. K. Rajarajeswari

Course Code	Title		
23U3CAC507	Core Paper XIII : Software Engineering		
Semester: V	Credits: 4	CIA: 25 MARKS	ESE: 75 MARKS

Course Objective	To gain knowledge about basic concepts of Software Engineering
Course Category	Skill Development
Development Needs	Global
Course Description	This course introduces students to the different software development lifecycle (SDLC) phases used in developing, delivering, and maintaining software products. Students will also acquire basic software development skills and understand common terminology used in the software engineering profession

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the basics of Software Engineering and Process models.	Lecture	Assignment
CO 2	Understand the requirements and data modeling to develop the software	Tutorial	Assignment
CO 3	Distinguish between various designs techniques to develop the software.	Lecture	Seminar
CO 4	Analyse the types of testing and testing tools	Lecture/Tutorial	Seminar
CO 5	Understand the Risk Management concepts and Design a software model for the given system.	Lecture/Flipped Classroom	Case StudyAnalysis

Offered by | **Computer Science**

Course Content | **Instructional Hours / Week :5**

Unit	Description	Text Book	Chapters
I	**Software and Software Engineering**: The nature of software – Software Engineering-The software process-Software Engineering practice- software myths.	1	1
	Process Models: A Generic process model -Prescriptive process models - Specialized process models - The Unified Process.	1	2
		Instructional Hours	**15**
Suggested Learning Methods : Video lectures about the basics of Software Engineering			
II	**Understanding Requirements**: Requirements Engineering - Eliciting Requirements -Requirement Modeling: Requirements Analysis.	1	5
	Data Modeling Concepts - Class - Based Modeling.	1	6
	Flow oriented modeling - Creating a behavioral model.	1	7
		Instructional Hours	**15**
Suggested Learning Methods: Video lectures about the basics of Software Engineering			
III	Design Concepts: Design Concepts - The design model.	1	8
	Architectural Design: Software Architecture - ArchitecturalStyles - Architectural Design.	1	9
	Component - Level Design: Component - Designing Class - Based Components	1	10
	User Interface Design: User Interface Analysis and Design - Interface Design steps.	1	11
		Instructional Hours	**15**
Suggested Learning Methods : Video lectures about the basics of Software Engineering			

IV	**Testing:** Validation testing - System testing - Software testingfundamentals - White box testing - Control structure testing - Black box Testing	1	17,18
	Testing Tools: Test Planning - Test Metrics And Test Reports - Qualitative And Quantitative Analysis.	2	13
		Instructional Hours	**15**
	Suggested Learning Methods : Video lectures about the basics of Software Testing		
V	**Risk Management:** Software Risks - Risk Identification - RiskProjection - Risk Refinement - Risk Mitigation, Monitoring and Management.	1	28
	Reengineering: Reengineering - Software Reengineering - Reverse Engineering. **Case study:** SRS for Banking System.		29
		Instructional Hours	**15**
	Suggested Learning Methods : Case Studies		
		Total Hours	**75 Hrs**

Text Books	1. Roger S Pressman, **Software Engineering a Practitioner's Approach**, Seventh Edition, McGraw Hill, International Edition, 2013. 2. M G Limaye, Software Testing Principles, Techniques and Tools, Tata McGrawHill Companies, Ist Edition, 2009.
Reference Books	1. Richard Fairley, **Software Engineering Concepts**, Tata McGraw-Hill PublishingCompany Limited, 2010. 2. Waman S. Jawadekar, **Software Engineering – Principles and Practice**, TataMcGraw Hill Publishing Company Limited, 2011.
Web. URLs	https://www.youtube.com/watch?v=tZreaH_FyMs&list=PLV8vIYTIdSnat3WCO9jfehtZyjnxb74wm

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Case Study Analysis	Total
5	5	6	3	3	3	**25**

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	M	M	M	L	M	H	H	H	H	M	M
CO2	H	H	M	M	M	L	M	H	H	H	H	M	M
CO3	H	H	M	M	M	L	M	H	H	H	H	H	H
CO4	H	H	M	M	M	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. K. Selvavinayaki	Dr. K. Selvavinayaki

Course Code	Title		
23U3CAC508	Core Paper XIV: .Net Programming		
Semester: V	Credits: 3	CIA: 20 Marks	ESE: 55 Marks

Course Objective	To inculcate programming algorithm process and structure of VB.Net and ASP.Net.
Course Category	Employability
Development Needs	Global
Course Description	To understand the concept of GUI Design Tool, also to make them aware of controls in VB.NET by coding programs and develop interface using Visual Basic .NET.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Remember the .Net Controls and statements	Lecture /Flipped Classroom	Assignment
CO 2	Understand the Structures and OOPs Concepts	Lecture / Tutorial	Assignment
CO 3	Develop and implement windows, console and web-based application	Lecture	Seminar
CO 4	Examine webpage, file management, ADO.Net for Database Connection	Lecture / Tutorial	Seminar
CO 5	Design ASP Page for the given domain	Lecture / Flipped Classroom	Quiz

Offered by	**Computer Applications**

Course Content	Instructional Hours / Week : 5

Unit	Description	Text Book	Chapters
I	Visual Studio .Net :Beginning**:** Programming with Visual Studio .Net Environment- Working with variables and Operations- Writing Methods Applying Scope - Using Decision Statements – Using Iteration Statements.	1	1
		Instructional Hours	**15**
Suggested learning methods: Video lectures about the basics of Visual Studio .Net			
II	What is Classification? -What is Encapsulation? - Working with Constructors and the new Keyword – Copying int variables and Classes. Using ref and out Parameters. **Inheritance and Interface:** Inheritance – Multiple Inheritance - Abstraction – Encapsulation – Polymorphism.	1	6
		Instructional Hours	**15**
Suggested learning Methods: Video lectures about the basics of OOPs Concepts			
III	**Windows Forms:** Forms as classes – Forms at Design Time – Forms at Runtime - **Controls** – **Data Access with ADO.Net:** why do we need ADO.Net? – The ADO.Net Architecture - .Net Data Provider – The Dataset Component.	1	22,23,27
		Instructional Hours	**15**
Suggested learning Methods: Write Programs for Forms using Database Connectivity			

IV	What is ASP.Net? – Setting up for ASP.Net – An Overview Programming Basics – Basics of Programming – ASP.Net Data types – Operators – Common ASP.Net Page Syntax – Built-in ASP.Net objects and interactivity- The Response object – The ASP Server object.	2	33,34
		Instructional Hours	**15**
Suggested learning Methods: Video lectures about the basics of ASP. Net			
V	Web Forms and ASP.Net – Web Forms – ASP.Net and Configuration – ASP.Net and state- The Application Scope – ASP Sessions – The Session Object – The Scripting Object Model – Active Server Components and Controls– More Active Server Component.	2	33,34,35
		Instructional Hours	**15**
Suggested learning methods: Video lectures about the basic of ASP.Net Objects and Writing Simple Programs using ASP. Net			
		Total Hours	**75**

Text Books	1. Andrew Troelsen**"Pro VB 2008 and the .NET 3.5 Platform"**
	2. Dave Mercer, **"ASP.Net: A Beginner's Guide"**, Tata McGraw Hill, Fifth Reprint 2008.
Reference Books	MridulaParihar, **"ASP.Net Bible"**, Wiley India Edition, Reprint 2007.
Web. URLs	https://www.javatpoint.com/vb-net-dot-net-framework-introduction

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Mini Project	Total
4	4	5	2	2	3	**20**

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	L	M	H	L	M	H	H	H	H	M	M
CO2	H	H	L	M	H	L	M	H	H	H	H	M	M
CO3	H	H	L	M	H	L	M	H	H	H	H	H	H
CO4	H	H	L	M	H	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. A. Kalaivani	Dr. K. Selvavinayaki

Course Code	Title		
23U3CAC509	Core Paper XV : PHP Programming		
Semester: V	Credits: 3	CIA: 20 Marks	ESE: 55 Marks

Course Objective	To acquire fundamental knowledge for web development using PHP.
Course Category	Employability/Skill Development
Development Needs	Global/National /Local/Regional
Course Description	To understand the conceptsof PHP Programming and develop webpage.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Recognize the basic development concepts of PHP	Lecture / Flipped Classroom	Group Discussion
CO 2	Write a simple program using conditional statements	Lecture/ Demonstration	Quiz
CO 3	Apply the concepts of functions and arrays to solve the given problem.	Flipped Classroom	Seminar
CO 4	Use of Functions, Classes and files to develop PHP Programs.	Lecture/ Demonstration	Seminar
CO 5	Construct a simple database program for adding and modifying records	Lecture/ Demonstration	Assignment

Offered by	**Computer Applications**

Course Content	Instructional Hours / Week : 5

Unit	Description	Text Book	Chapters
I	Introducing PHP – Basic development Concepts-Creating first PHP Scripts. Using Variable and Operators - Storing Data in variable –Understanding Data types –Setting and checking variables Data types.	**1**	1,2
		Instructional Hours	**15 Hrs**
Suggested Learning Methods: Code Review			
II	Using Constants-Manipulating variables with operators. **Controlling Program Flow:** Writing Simple Programs. Conditional Statements-Writing more complex Conditional Statements – Repeating Action with Loops	1	2,3
		Instructional Hours	**15 Hrs**
Suggested Learning Methods: Write Simple Programs with conditional Statements			
III	Working with String and Numeric Functions - **Working with Arrays:**Storing Data in Arrays - Processing Arrays with Loops and Iterations –Using Arrays with Forms – Working with Array Functions-Working with Dates and Times.	1	4
		Instructional Hours	**15 Hrs**
Suggested Learning Methods :Write Simple Programs using Arrays			

IV	**Using Functions and Classes:** Creating User-Defined Functions-Creating Classes. **Working with Files and Directories:** Reading Files –Writing Files.	1	5, 6
		Instructional Hours	**15Hrs**
Suggested Learning Methods : Write Simple Programs using Functions			
V	**Working with Database and SQL:** Introducing Database and SQL - Using MySQL - Adding and modifying Data - Handling Errors. cookies –working with sessions. Working with XML	1	7,28
		Instructional Hours	**15Hrs**
Suggested Learning Methods : Write Applications using Database and XML			
		Total Hours	**75 Hrs**

Text Books	1. VikramVaswani,**PHP A Beginner's Guide**, Tata McGraw-Hill Publishing Company Limited, 1st Edition, New Delhi, 2010. 2. Julie C.Meloni, **PHP, MYSQL and Apache**, Pearson Education,2009
Reference Books	1. Steven Holzner, **The PHP Complete Reference**, Tata McGraw-Hill Publishing Company Limited, 1st edition New Delhi, 2010. 2. Steven Holzer, **Spring in to PHP5**, Tata McGraw-Hill Publishing Company Limited,1st edition New Delhi, 2010.
Web. URLs	**1. https://www.w3schools.com/php/php_intro.asp** **2. https://www.tutorialspoint.com/php/index.htm**

Tools for Assessment (20 Marks)

CIA I	CIA II	CIA III	Quiz	Assignment	Web Page Creation	Total
4	4	5	2	2	3	**20**

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	H	M	M	H	M	H	M	H	M	M	H
CO2	M	M	H	H	H	H	M	H	M	H	H	H	H
CO3	M	H	H	H	H	H	H	H	H	H	H	H	H
CO4	M	H	H	H	H	S	H	H	H	H	H	H	S
CO5	H	H	H	M	H	S	H	H	H	H	M	H	S

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. K. Selvavinayaki	Dr. K. Selvavinayaki

Course Code	Title		
23U3CAP510	Core Paper XVI: Practical in .Net Programming		
Semester: V	Credits: 3	CIA: 30 Marks	ESE: 45 Marks

Course Objective	To inculcate the programming algorithm, process, and structure of VB.Net and ASP.Net.
Course Category	Employability
Development Needs	Global
Course Description	To development skill set in .Net programming and apply the concepts to develop applications using GUI controls

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Apply the structure to design window based and Web Base Applications.	Demonstration	Application of Logic
CO 2	Ability to work with menus and dialog boxes in VB.NET	Demonstration	Program Creativity
CO 3	Develop single form based .simple Net applications using basic and advanced control	Demonstration	Application of Logic
CO 4	Develop small ADO.net based database driven .Net application	Demonstration	Program Debugging
CO 5	Create user interactive web pages using ASP.Net	Demonstration	Program Development

Offered by	**Computer Applications**

Course Content	Instructional Hours / Week: 5

Program	List of Practical
1	Write VB.Net program to develop a calculator with basic operations.
2	Write VB.Net program to create menus in a form using menu editor.
3	Design a form in VB.Net using common dialog control to display the save and open dialog box.
4	Develop a VB.NET Program by implementing Concept of Inheritance.
5	Write VB.Net program for a various font application
6	Write VB.Net program to use a tool bar to set editor properties.
7	Write VB.Net program to create and reading text file.
8	Write VB.Net program to implement a binary search using collection class.
9	Design College Website using ASP.Net.
10	Write ASP.Net Program to create online examination system.
11	Write ASP.Net Program to develop website for online mobile shop.

12	Design Online Registration Form using ASP.Net

Suggested Learning Methods: Solving Case studies, Program Development, Code Review and Peer Coding	
Total Hours	**75 Hrs**

Tools for Assessment (30 Marks)

Application of Logic	Program Creativity	Program Debugging	Test 1	Test 2	Observation Note Book	Total
4	4	4	7	7	4	**30**

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	L	M	H	L	M	H	H	H	H	M	M
CO2	H	H	L	M	H	L	M	H	H	H	H	M	M
CO3	H	H	L	M	H	L	M	H	H	H	H	H	H
CO4	H	H	L	M	H	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. A. Kalaivani	Dr. K. Selvavinayaki

Course Code	Title		
23U3CKE501	**Discipline Specific** **Elective Paper I : Blockchain Technology**		
Semester: V	**Credits: 4**	**CIA: 25 Marks**	**ESE: 75 Marks**
(Common to B. Sc. CS / IT / BCA)			
Course Objective	Understanding of blockchain technology, encompassing fundamental principles, consensus mechanisms, cryptocurrency, smart contracts, and practical applications in permissioned models and distributed consensus algorithms.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	Explore the foundational aspects of blockchain technology, encompassing public ledgers, cryptocurrency, consensus mechanisms, smart contracts, and permissioned models, with a focus on practical applications and implementation.		

Course Outcomes		**Teaching Methods**	**Assessment Methods**
CO 1	Understand the basics of blockchain, including public ledgers, Bitcoin, Blockchain 2.0, smart contracts, distributed consensus.	Lecture	Group Discussion
CO 2	Analyze Bitcoin and cryptocurrency fundamentals, examining coin creation, payments, block mining, and consensus in open environments.	Lecture/ Tutorial	Group Discussion
CO 3	Assess Bitcoin consensus mechanisms, examining Proof of Work, Proof of Stake, mining, permissioned models, and design challenges.	Lecture/ Flipped Classroom	Assignment
CO 4	Explore distributed consensus, covering RAFT Consensus, Byzantine fault-tolerant systems, Agreement Protocol, Lamport - and Practical Byzantine Fault Tolerance in asynchronous systems.	Lecture/ Tutorial	Seminar
CO 5	Examine real-world applications of blockchain in IoT, Medical Record Management, Government, Security, and practical implementations.	Lecture/ Tutorial	Seminar

Offered by	**Computer Science**

Course Content	**Instructional Hours / Week : 6**

Unit	Description	Text Book	Chapters
I	**INTRODUCTION TO BLOCKCHAIN:** Blockchain- Public Ledgers, Blockchain as Public Ledgers -Bitcoin, Blockchain 2.0, Smart Contracts, Block in a Blockchain, Transactions-Distributed Consensus, The Chain and the Longest Chain -Cryptocurrency to Blockchain 2.0 - Permissioned Model of Block chain, Cryptographic -Hash Function, Properties of a hash function-Hash pointer and Merkle tree.	1	1
	Instructional Hours		18 Hrs
Suggested Learning Methods: Video Lectures on Introduction to blockchain			
II	**BITCOIN AND CRYPTO CURRENCY:** Basic crypto currency, Creation of coins, Payments and double spending, FORTH - the precursor for Bitcoin scripting, Bitcoin Scripts , Bitcoin P2P Network, Transaction in Bitcoin Network, Block Mining, Block propagation and block relay,	1	2

	Consensus introduction, Distributed consensus in open environments- Consensus in a Bitcoin network.		
		Instructional Hours	18 Hrs
Suggested Learning Methods: Video Lectures on Introduction to bitcoin scripting			
III	**BITCOIN CONSENSUS:** Bitcoin Consensus, Proof of Work (PoW)- Hashcash PoW , Bitcoin PoW, Attacks on PoW ,monopoly problem- Proof of Stake- Proof of Burn - Proof of Elapsed Time - Bitcoin Miner, Mining Difficulty, Mining Pool-Permissioned model and use cases, Design issues for Permissioned Blockchains, Execute contracts- Consensus models for permissioned block chain- Distributed consensus in closed environment Paxos.	1	3
		Instructional Hours	18 Hrs
Suggested Learning Methods: Group Discussion			
IV	**DISTRIBUTED CONSENSUS RAFT:** Consensus-Byzantine general problem, Byzantine fault tolerant system - Agreement Protocol, Lamport – Shostak - Pease BFT Algorithm-BFT over Asynchronous systems, Practical Byzantine Fault Tolerance.	1	5
		Instructional Hours	18 Hrs
Suggested Learning Methods: Group Discussion			
V	**BLOCK CHAIN APPLICATIONS:** Internet of Things-Medical Record Management System-Blockchain in Government and Blockchain Security-Blockchain Use Cases – Finance.	1	7
		Instructional Hours	18 Hrs
Suggested Learning Methods : Apply the techniques with real time data			
		Total Hours	**90 Hrs**

Text Books	**1.** Bashir, Imran **, Mastering Blockchain: Deeper insights into decentralization, cryptography, Bitcoin, and popular Blockchain frameworks**,2017.
Reference Books	1. Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, and Steven Goldfeder. **Bitcoin and cryptocurrency technologies: A comprehensive introduction**. Princeton University Press, 2016. 2. Joseph Bonneau et al, **SoK: Research perspectives and challenges for Bitcoin and cryptocurrency**, IEEE Symposium on security and Privacy, 2015.
Web. URLs	**https://www.coursera.org/learn/introduction-blockchain-technologies**

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Class Participation	Assignment	Seminar	Total
5	5	6	3	3	3	**25**

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	M	M	M	M	M	M	M	M	M	M
CO2	M	M	M	M	M	M	M	M	M	M	M	M	M
CO3	M	H	H	H	H	M	H	H	M	H	H	H	H
CO4	M	H	H	H	H	M	H	H	M	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by
R. Anitha	Dr. N. Kavitha

Course Code	Title		
23U3CKE502	Discipline Specific Elective Paper I: Next Generation Networks		
Semester: V	Credits: 4	CIA: 25 Marks	ESE: 75 Marks
(Common to B. Sc. CS / B. Sc. IT / BCA)			
Course Objective	To learn the technical, economic and service advantages of next generation networks. Analyse the evolution of technologies of 4G and beyond, to explore the NGN framework catering services of end user with QoS provisioning.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	Description about Course category and Development Needs		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Describe the issues and challenges of wireless domain in future generation network design	Lecture	Assignment
CO 2	Understand the evolution of technologies of 4G and beyond	Lecture/ Tutorial	Seminar
CO 3	Explore the LTE concepts and technologies	Lecture/ Tutorial	Seminar
CO 4	Analyse the process of integrating SDN with LTE	Tutorial	Quiz
CO 5	Evaluate the NGN architectures, management and standardizations	Lecture / Flipped Classroom	Assignment

Offered by	Computer Applications

Course Content	Instructional Hours / Week : 6

Unit	Description	Text Book	Chapters
I	**INTRODUCTION:** Evolution of public mobile services -motivations for IP based services, Wireless IP network architecture –3GPP packet data network architecture. Introduction to next generation networks - Changes, Opportunities and Challenges, Technologies, Next Generation Society, future Trends.	3 2	1, 2 1
	Instructional Hours		**18 Hrs**
Suggested Learning Methods: Report Presentation			
II	**LTE - Introduction:** Architectural Review of UMTS and GSM, History of Mobile Telecommunication Systems, Need for LTE. **Architecture of LTE Air Interface:** Air Interface Protocol Stack, Logical, Transport and Physical Channels, The Resource Grid, Multiple Antenna Transmission, Resource Element Mapping, downlink/uplink data transfer.	5	1, 6
	Instructional Hours		**18 Hrs**
Suggested Learning Methods: Video Lectures			
III	**SDMN-LTE INTEGRATION:** SDN paradigm and applications, SDN for wireless-challenges, Leveraging SDN for 5G network Ubiquitous connectivity-mobile cloud-cooperative cellular network-restructuring mobile networks to SDN-SDN/LTE integration benefits.	4	3, 4, 5, 6
	Instructional Hours		**18 Hrs**
Suggested Learning Methods: Video Lectures and Report Presentation			

IV	**NGN ARCHITECTURE**: Evolution towards NGN-Technology requirements, NGN functional architecture- Transport stratum, service stratum, service/ content layer and customer terminal equipment function. NGN entities, Network and Service evolution -fixed, mobile, cable and internet evolution towards NGN.	1	1, 3, 4, 6
		Instructional Hours	**18 Hrs**
Suggested Learning Methods: Video Lecture			
V	**NGN MANAGEMENT AND STANDARDIZATION**: NGN requirements on Management-Customer, third party, Configuration, Accounting, performance, device and information management. Service and control management- End-toEndQoS and security. ITU and GSI-NGN releases, ETSI-NGN concept and releases, NGMN alliance and NGMN.	1 2	3,7,8 4
		Instructional Hours	**18 Hrs**
Suggested Learning Methods: Report & Video Presentation			
		Total Hours	**90 Hrs**

Text Books	**1.**Jingming Li Salina, Pascal Salina "**Next Generation Networks-perspectives and potentials"** Wiley, January 2008. **2.**Thomas Plavyk, **—Next generation Telecommunication Networks, Services and Management**, Wiley & IEEE Press Publications, 2010. **3.** Jyh-Cheng Chen, National Tsing Hua University, Tao Zhang,Telcordia Technologies - **"IP-Based Next-Generation Wireless Networks",** Systems, Architectures and Protocols. **4.**MadhusangaLiyanage, Andrei Gurtov, Mika Ylianttila, **"Software Defined Mobile Networks beyond LTE Network Architecture",** Wiley, June 2015. **5.** Christopher Cox Director, Chris Cox Communications Ltd, UK, **"An Introduction to LTE, LTE-Advanced, Sae, Volte and 4G Mobile Communications".**
Reference Books	**1. "Next-Generation Wireless Technologies",** Naveen Chilamkurti Sherali Zeadally Hakima Chaouchi.
Web. URLs	https://www.academia.edu/38394302/_ebook_4G_LTE_LTE_Advanced_for_Mobile_Broadband_pdf

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	**25**

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	M	M	M	L	M	H	H	H	H	M	M
CO2	H	H	M	M	M	L	M	H	H	H	H	M	M
CO3	H	H	M	M	M	L	M	H	H	H	H	H	H
CO4	H	H	M	M	M	L	M	H	H	H	H	H	H
CO5	H	H	M	M	M	L	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Mrs. Raynukaazhakarsamy	Dr. K. Selvavinayaki

Course Code	Title		
23U3CKE503	**Discipline Specific Elective Paper - I : Internet of Things**		
Semester: V	**Credits: 4**	**CIA: 25 Marks**	**ESE: 75 Marks**

(Common to B. Sc. CS / IT / BCA)

Course Objective	To understand the Data and Knowledge Management and use of Devices in IoT Technology, Understand State of the Art – IoT Architecture and Real World IoT Design.
Course Category	Employability
Development Needs	Global
Course Description	This Course focuses on hands-on IoT concepts such as sensing, actuation and communication. It covers the development of Internet of Things (IoT) prototypes—including devices for sensing, actuation, processing, and communication—to help you develop skills and experiences.

Course Outcomes		**Teaching Methods**	**Assessment Methods**
CO 1	Remembering IoT from the global context.	Social Media	Assignment
CO 2	Understand the Market perspective and Architectural Overview of IoT.	Brainstorming	Assignment
CO 3	Examine the fundamentals of IoT technology	Video Lectures	Seminar
CO 4	Implement IoT in Industrial and Commercial Building Automation and Real World Design Constraints.	Demonstration	Seminar
CO 5	Analyse state of the art and architecture in IoT.	Discussion	Hands on Activity

Offered by **Information Technology**

Course Content **Instructional Hours / Week : 6**

Unit	Description	Text Book	Chapters
I	**M2M to IoT**-The Vision-Introduction, From M2M to IoT, M2M towards IoT-the global context, A use case example, Differing Characteristics.	1	2
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : Group Discussion			
II	**M2M to IoT – A Market Perspective**– Introduction, Some Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies. **M2M to IoT-An Architectural Overview**– Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations.	1	3-4
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : Quiz			
III	**M2M and IoT Technology Fundamentals-** Devices and gateways, Local and wide area networking, Data management.	1	5
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : Assignment			

IV	Business processes in IoT, Everything as a Service(XaaS), M2M and IoT Analytics, Knowledge Management.	1	5
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : Assignment			
V	**IoT Architecture-State of the Art –** Introduction, State of the art. **Architecture Reference Model-** Introduction, Reference Model and architecture, IoT Reference Model.	1	6-7
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : Seminar			
		Total Hours	**90 Hrs**

Text Books	1. Jan Holler, VlasiosTsiatsis, Catherine Mulligan, Stefan Avesand, StamatisKarnouskos, David Boyle, **"From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence",** Academic Press, 2014.
Reference Books	1. Vijay Madisetti and ArshdeepBahga, **"Internet of Things (A Hands-on-Approach)",** VPT, 2014. 2. Francis daCosta, **"Rethinking the Internet of Things: A Scalable Approach to Connecting Everything",** Apress Publications, 2013
Web. URLs	**1.** https://www.tutorialspoint.com/internet_of_things/index.html

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Hands on Activity	Total
5	5	6	3	3	3	**25**

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO 2	PSO3	PSO 4	PSO 5
CO1	M	M	M	M	M	M	M	M	M	M	M	M	M
CO2	M	M	M	M	M	M	M	M	M	M	M	M	M
CO3	M	H	H	H	H	M	H	H	M	H	H	H	H
CO4	M	H	H	H	H	M	H	H	M	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. Sathishkumar	Dr. J. Maria Shyla

Course Code	Title		
23U3CKE504	**Discipline Specific Elective Paper I : Big Data Analytics**		
Semester: V	**Credits: 4**	**CIA: 25 Marks**	**ESE: 75 Marks**
(Common to B. Sc. CS / IT / BCA / AIML)			
Course Objective	To provide an overview of an exciting growing field of big data analytics, analyse big data like Hadoop, NoSql Map-Reduce and learn fundamental techniques and principles in achieving big data analytics.		
Course Category	Employability		
Development Needs	Global		
Course Description	To understand the concepts of Big Data and analysis of these data entails along with ethical and conceptual challenges		

Course Outcomes		**Teaching Methods**	**Assessment Methods**
CO 1	Remembering big data terminologies	Lecture	Group Discussion
CO 2	Understanding Hadoop framework and its application.	Demonstration	Quiz
CO 3	Apply NoSQL Data Model in real time	Demonstration	Assignment
CO 4	Implement Map Reduce Programming	Lecture	Assignment
CO 5	Develop Hadoop streaming with R	Flipped Classrooms	Seminar

Offered by	**Information Technology**

Course Content	**Instructional Hours / Week : 6**

Unit	**Description**	**Text Book**	**Chapters**
I	**INTRODUCTION TO BIG DATA**: Introduction to Big Data, Big Data characteristics, types of Big Data, Traditional vs. Big Data business approach, Bigdata Challenges, Case Study of Big Data Solutions.	1	1
	Instructional Hours		**18 Hrs**
Suggested Learning Methods : Lecture			
II	**HADOOP:** Introducing Hadoop – Why Hadoop – Why not RDBMS – RDBMS versus Hadoop – History of Hadoop – Hadoop Overview – Hadoop Distributed File System (HDFS) – Processing Data with Hadoop – Managing Resources and Applications with Hadoop YARN – Interacting with Hadoop Ecosystem	2	2
	Instructional Hours		**18 Hrs**
Suggested Learning Methods : Quiz			
III	**NoSQL DATA MODEL:** Introduction to NoSQL – NoSQL Business Drivers – NoSQL Data Architectural Patterns – Variations of NoSQL Architectural Patterns – Using NoSQL to Manage Big data – Case study of NoSQL	1	3
	Instructional Hours		**18 Hrs**
Suggested Learning Methods : Assignment			

IV	**MAP REDUCE Programming:** Introduction to MapReduce – Mapper – Reducer – Combiner – Partitioner – Searching – Sorting – Compression	2	4
		Instructional Hours	**18 Hrs**
Suggested Learning Methods: Assignment			
V	**Hadoop streaming with R:** Understanding the basics of Hadoop streaming – How to run Hadoop streaming with R – Understanding a MapReduce application – Understanding how to code and run a Map-Reduce application – how to explore the output of Map Reduce application	3	4
		Instructional Hours	**18 Hrs**
Suggested Learning Methods: Seminar			
		Total Hours	**90 Hrs**

Text Books	1. Radha Shankarmani, M Vijayalakshmi, **"Big Data Analytics",**WileyPublications,first Edition 2016 2. Seema Acharya, Subhashini Chellappan**,** "**Big Data and Analytics",** Wiley Publication, first edition. Reprint in 2016 3. Vignesh Prajapati, **"Data analytics with R and Hadoop"** , Copyright © 2013, Packt Publishing.
Reference Books	1. Michael Minelli, Michelle Chambers, and AmbigaDhiraj, **"Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses"**, Wiley, 2013 2. Bill Franks, Taming,**"The Big Data Tidal Wave: Finding Opportunities In Huge Data Streams With Advanced Analytics"**, Wiley
Web. URLs	1. https://www.guru99.com/what-is-big-data.html 2. https://techtarget.com/searchbusinessanalytics/definition/big-data-analytics

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Hands on Activity	Total
5	5	6	3	3	3	**25**

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	M	M	M	M	M	M	M	M	M	M	M	M
CO2	M	M	H	H	H	M	M	H	H	H	H	H	H
CO3	H	M	H	H	H	H	M	H	H	H	H	H	H
CO4	H	H	H	H	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. T. Ramaprabha	Dr. J. Maria Shyla

Course Code	Title		
23U4CAZ503	Skill Based Paper III: Practical in Internet of Things		
Semester: V	Credits: 3	CIA: 30 Marks	ESE: 45 Marks
(Bachelor of Computer Applications)			
Course Objective	On the successful completion of the course the students will able to design IoT applications		
Course Category	Skill Development /Employability/Entrepreneurship		
Development Needs	Global		
Course Description	To make the students to understand Arduino, digital meter, various sensors for IoT applications.		

Course Outcomes		Teaching Methods	Assessment Methods
CO1	Familiar with Arduino board working	Demonstration	Debugging
CO2	Implement the design of digital meter	Demonstration	Program Development
CO3	Interfacing with various sensors	Demonstration	Program Development
CO4	Design with Tinkercad	Demonstration	Program Development
CO5	Develop IoT applications	Demonstration	Program Development

Offered by	Electronics
Course Content	Instructional Hours / Week: 4

Unit	List of Practical
1	Demonstrate the working of Arduino
2	Blinking LED
3	Design of digital dc voltmeter
4	Measure the air humidity using sensor
5	Measure the temperature using sensor
6	Simulate motor control on Tinkercad
7	Measure the distance of an object using sensor
8	Smart Home Automation system
9	Sense the available network
10	Sense a finger when it is placed on board

Suggested Learning Methods: Solving Case studies and Create Applications	
Total Hours	60

Tools for Assessment (30 Marks)

Logical Thinking	Program Execution	Problem Solving	Test I	Test II	Observation	Total
4	4	4	7	7	4	30

Mapping													
CO / PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	H	H	L	M	H	L	M	H	H	H	H	M	M
CO2	H	H	L	M	H	L	M	H	H	H	H	M	M
CO3	H	H	L	M	H	L	M	H	H	H	H	H	H
CO4	H	H	L	M	H	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H
H-High; M-Medium; L-Low													

Course designed by	**Verified by Chairman**
Dr. K. Selvavinayaki	Dr. K. Selvavinayaki

Course Code	Title		
23U3CJC607	Core Paper XVII : Data Mining		
Semester: VI	Credits: 4	CIA: 25 Marks	ESE: 75 Marks
(Common to B. Sc. IT / BCA)			
Course Objective	To enable the students to explore data using data mining techniques to solve the business problems.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	Data mining is the process of sorting through large data sets to identify patterns and relationships that can help solve business problems through data analysis. Data mining can be used to identify telecommunication fraud, improve marketing effectiveness, and identify network faults etc.		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Know the basic concept of Data Mining and Association Rules	Lecture	Open book Test
CO 2	Understand the concepts of Classification and decision tree	Video Lecture	Assignment
CO 3	Apply the concept of splitting the data into various clusters	Video Lecture	Group Discussion
CO 4	Analyse various type of Mining like Web Mining and Text Mining	Demonstration	Quiz
CO 5	Assess Information Privacy and Data Mining	Tutorial	Seminar

Offered by	Computer Applications

Course Content	Instructional Hours / Week : 6

Unit	Description	Text Book	Chapters
I	**Data Mining:** Introduction to Data Mining – Importance of Data Mining – The Data Mining Process – Data Mining Applications – Data Mining Techniques – Some Data Mining Case Studies. Association Rules Mining: Introduction – Basics – Apriori Algorithm	1	1,2
		Instructional Hours	**18 Hrs**
Suggested Learning Methods: Video lectures			
II	Classification – Introduction – Decision Tree – Building a decision tree – The tree induction Algorithm – Split Algorithm based on Information Theory – Split Algorithm based on the Gini Index – Overfitting and Pruning –Decision Tree Rules.	1	3
		Instructional Hours	**18 Hrs**
Suggested Learning Methods: Online Tutorial			
III	Cluster Analysis: Introduction to Cluster Analysis – Desired Features of Cluster Analysis – Types of Data – Computing Distance – Types of Cluster Analysis Methods – Partitional Method – The k-Means Method – Hierarchical Methods – Density-Based Methods.	1	4
		Instructional Hours	**18 Hrs**
Suggested Learning Methods: Case studies			
IV	Web Data Mining – Introduction – Web Terminology and Characteristics –Locality and Hierarchy in the Web – Web Content Mining – Web Usage Mining – Web Structure Mining – Web Mining Software.	1	5
		Instructional Hours	**18 Hrs**

Suggested Learning Methods: Video Lectures			
V	Information Privacy and Data Mining: Introduction to information Privacy – Basic Principles to product Information Privacy – Uses and Misuses of Data Mining – Primary aims of data mining - Pitfalls of Data Mining –Technological solutions.	1	9
		Instructional Hours	**18 Hrs**
Suggested Learning Methods: Case Studies			
		Total Hours	**90 Hrs**

Text Books	1. Introduction to Data Mining and Case Studies by G. K. Gupta, Published by Prentice Hall of India Private Limited, New Delhi.
Reference Books	1. Data Mining Techniques by Arun K Purari , Published by University Press India Private Limited. 2. Data Mining – A Tutorial-based Primer by Richard J. Roiger& Michael W. GeatzPublished by Pearson Education.
Web. URLs	https://www.tutorialspoint.com/data_mining/index.htm

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Class Participation	Total
5	5	6	3	3	3	25

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	L	M	M	-	-	M	H	H	M	M
CO2	M	M	M	M	H	M	-	-	H	H	H	M	H
CO3	H	L	M	H	M	M	-	-	M	H	H	M	M
CO4	M	H	L	M	L	L	-	-	H	M	H	H	M
CO5	M	M	H	H	M	H	-	-	H	H	M	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Mr. P. Boopathi	Dr. K. Selvavinayaki

Course Code	Title		
23U3CAV611	Project and Viva-Voce		
Semester: VI	Credits: 4	CIA: 40 Marks	ESE: 60 Marks

Course Objective:

To give project based learning which makes the students to apply practically what they learned.

Course Outcomes (CO):

CO1	Remember the fundamental concepts of algorithm and designs
CO2	Understand the optimal methods and Software Engineering concepts to be applied
CO3	Apply the knowledge and what they learned
CO4	Analyze the Economical and Technical feasibility
CO5	Develop software based applications and Deployment of software

Offered by: Computer Applications

Course Content **Instructional Hours/Week: 6**

Project Work and Viva-Voce

Project Guidelines

Project shall be Application / System Oriented/ Web enabled online applications

Individual project is permissible. There should be no team project.

Report should be in the following sequence

- Declaration
- Certificate from the company/organization
- Bonafide Certificate

Guidelines to prepare documentation:

- The cover should be in the silver gray colour and hard binding
- Font type : Times New Roman
- Font size : 12
- Sub heading size :14
- Heading size :16
- Margin : top,bottom,right-2.5 cm, left -3 cm
- Line spacing between two lines - 1.5
- Every paragraph should start with one tab space.

Sample Templates

Title of the Project

A project report submitted to the Bharathiar University in the partial fulfillment of the requirements for the award of the degree of

BACHELOR OF COMPUTER APPLICATIONS

Submitted by

Name of the Student

(Reg. No.)

Under the Guidance of

Guide Name (Designation)

NEHRU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

(Affiliated to Bharathiar University Accredited with "A+" Grade by NAAC,
ISO 9001:2015 (QMS) Certified, Recognized by UGC with 2(f) &12(B),
Under Star College Scheme by DBT, Govt. of India)
Nehru Gardens, Thirumalayampalayam, Coimbatore - 641 105.

Month & year

TABLE OF CONTENTS

B. Reports

Declaration

I, (*Student Name , Reg.No.*) hereby declare that the project entitled (*Title Of The Project*) submitted to Bharathiar University in partial fulfillment for the award of the Bachelor Degree of Computer Applications is an independent project report done by me during the project duration of the period of study in Nehru Arts and Science College, Coimbatore (Recognized by UGC &Affiliated to Bharathiar University)under the guidance of (*Name Of The Guide*) during the academic year 2023-24.

PLACE: Signature of the student
DATE:

DEPARTMENT OF COMPUTER APPLICATIONS

NEHRU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)

(Affiliated to Bharathiar University Accredited with "A+" Grade by NAAC,
ISO 9001:2015 (QMS) Certified, Recognized by UGC with 2(f) &12(B),
Under Star College Scheme by DBT, Govt. of India)
Nehru Gardens, Thirumalayampalayam, Coimbatore - 641 105.

CERTIFICATE

This is to certify that the project report entitled (*Title Of The Project*), is a bonafied work done by (*Student Name, Reg. No.*) in partial fulfillment of the requirement of the award of the degree of Bachelor of Computer Applications, Bharathiar University, Coimbatore during the academic year (Academic Year).

Internal Guide Head of the Department

Certify that we examined the Candidate in the Project Work / Viva-Voce Examination held at NEHRU ARTS AND SCIENCE COLLEGE on _____

Internal Examiner External Examiner

Total Hours: 90 Hrs

Tools for Assessment (50 Marks)

Review I	Review II	Review III	Document Preparation	Total
10	10	10	10	40

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	L	M	H	L	M	H	H	H	H	M	M
CO2	H	H	L	M	H	L	M	H	H	H	H	M	M
CO3	H	H	L	M	H	L	M	H	H	H	H	H	H
CO4	H	H	L	M	H	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Mr. P. Boopathi	Dr. K. Selvavinayaki

Course Code	Title		
23U3CKE605	**Discipline Specific** **Elective Paper II - Software Quality Assurance**		
Semester: VI	**Credits: 4**	**CIA: 25 Marks**	**ESE: 75 Marks**
(Common to B. Sc. CS / IT / BCA)			
Course Objective	To equip students with the knowledge and skills to ensure the delivery of high-quality software through effective testing and quality control processes.		
Course Category	Employability		
Development Needs	Global		
Course Description	Focuses on principles and practices for ensuring the reliability and excellence of software systems through comprehensive testing methodologies and quality management techniques.		

Course Outcomes		**Teaching Methods**	**Assessment Methods**
CO 1	Understand software errors, causes, and quality principles, emphasizing the role of quality assurance and the need for comprehensive requirements in product operation, revision, and transition.	Video Lecture	Assignment
CO 2	Analyze software testing strategies, covering white and black box testing, and explore the testing process, test-case design, automation, and alpha-beta site testing.	Case Based	Group Discussion
CO 3	Assess software testing strategies, categorize methods like white and black box testing, design test cases, automate processes, and execute alpha-beta site testing programs.	Lectures	Seminar
CO 4	Evaluate Software Quality metrics, categorizing objectives, applying process and product metrics, and analyzing costs using the Classical model of Software Quality.	Tutorial	Quiz
CO 5	Examine Quality Management standards, including ISO 9000-3, certification processes, Capability Maturity model principles, and the Bootstrap methodology.	Lecture	Quiz

Offered by	**Computer Science**

Course Content	**Instructional Hours / Week : 6**

Unit	**Description**	**Text Book**	**Chapters**
I	**Software Quality:** Define Software-Software error, faults and failures-Classification of the causes of software errors-Software Quality Definition and objectives – software quality assurance and software engineering. **Software Quality factors:** Need for comprehensive software quality requirements – classification of software requirements into software quality factors – product operation software quality factors- product revision software quality factors – product transition software quality factors.	1	2,3
		Instructional Hours	**18**
Suggested Learning Methods: Assignment			

II	**Components of SQA system :** SQA system and architecture – Pre-project components – software project life cycle components – Infrastructure components for error prevention and improvement – Management SQA components – SQA standards, system certification and assessment components – Organizing for SQA – the human components.	1	4
		Instructional Hours	18
Suggested Learning Methods: Group Discussion			
III	**Software testing – strategies:** Definition and objectives- software testing strategies – software test classifications – White box testing – Black box testing. **Software testing – implementation:** Testing process – Test-case Design – Automated testing – Alpha – beta site testing programs.	1	9,10
		Instructional Hours	**18**
Suggested Learning Methods : Seminar			
IV	**Software Quality metrics:** Objectives of quality measurement – Classification of software quality metrics – Process metrics- Product metrics- Implementation of Software Quality metrics – Cost of Software Quality metrics-Classical model of Software Quality.	1	21,22
		Instructional Hours	18
Suggested Learning Methods : Quiz			
V	**Quality management standards:** Scope –Main standards of software quality management - ISO 9000-3 – certification according to ISO 9000-3 standard – Capability Maturity model principles, structure and processes area – Bootsrap methodology.	1 2	23 4
		Instructional Hours	18
Suggested Learning Methods : Quiz			
		Total Hours	90 Hrs

Text Books	1. Daniel Galin, **"Software Quality AssuranceFrom Theory to Implementation"**, Pearson education Ltd.,2004. 2. Claude Y. Laporte and Alain April, **"Software Quality Assurance"**, IEEE Press wiley, 2018.
Reference Books	1. Stephen H. Kan, **"Metrics and Models in Software Quality Engineering"**, 2nd Edition,Pearson, 2003. 2.KshirasagarNaik and PriyadarshiTripathy (Eds), **"Software Testing and Quality Assurance: Theory and Practice"**, John Wiley, 2008
Web. URLs	Software Quality Assurance (SQA) - TAE (tutorialandexample.com)

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	L	M	M	L	M	M	H	H	M	M
CO2	M	M	M	M	H	M	M	M	H	H	H	M	H
CO3	H	L	M	H	M	M	L	H	M	H	H	M	M
CO4	M	H	L	M	L	L	H	M	H	M	H	H	M
CO5	M	M	H	H	M	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
R. Anitha	Dr. N. Kavitha

Course Code	Title		
23U3CKE606	**Discipline Specific** **Elective Paper II : Information Security**		
Semester: VI	**Credits: 4**	**CIA:25 Marks**	**ESE: 75 Marks**
(Common to B. Sc. CS / IT / BCA)			
Course Objective	To enable the students to understand various aspects of Information Security in the local and Global scenarios.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	Develop Problem Solving Skills to solve the computer based problems at Global needs.		

Course Outcomes		**Teaching Methods**	**Assessment Methods**
CO 1	Remember the history and basics of information security, describe key features, and evaluate security models and measures in information systems, especially in the System Development Life Cycle.	Flipped Classroom	Assignment
CO 2	Evaluate business security needs, identify threats, and explore legal, ethical, and professional aspects of information security, encompassing laws, ethics, and international regulations.	Tutorial	Seminar
CO 3	Apply risk management in information security by identifying and assessing risks, proposing effective control strategies, and selecting appropriate risk mitigation measures.	Video Lessons	Group Discussion
CO 4	Develop security plans by crafting policies, designing a security blueprint, implementing education and training, and ensuring business continuity, with a focus on risk preferences and result documentation	Tutorial	Quiz
CO 5	Apply information security through project management, considering technical and non-technical aspects.	Lecture	Poster Presentation

Offered by	**Computer Applications**

Course Content	**Instructional Hours / Week : 6**

Unit	Description	Text Book	Chapters
I	**Introduction to Information security:** History-Introduction to Information Security-Critical Characteristics of Information, NSTISSC Security Model-Components of an Information System, Securing the Components-Balancing Security and Access-The SDLC-The Security SDLC.	1	1
		Instructional Hours	18
Suggested Learning Methods: Assignment			
II	**Need for Security:** Introduction- Business Needs-Threats-Attacks.**Legal, Ethical and Professional Issues:** Introduction-Laws and ethics-types of law-international laws and legal bodies-Ethics and information security.	1	2,3
		Instructional Hours	18
Suggested Learning Methods: Seminar			

III	**Risk Management:** Introduction-overview-Identifying and Assessing Risk- Assessing- Control strategies- selecting strategy.	1	4
		Instructional Hours	18
Suggested Learning Methods : Group Discussion			
IV	**Planning for Security:** Introduction-Information Security Policy-Blueprint for Security-Security education-training and awareness-Continuity strategies, Risk appetite, Management discussion points, documenting results.	1	5
		Instructional Hours	18
Suggested Learning Methods : Quiz			
V	**Implementing Information Security: Introduction-** Project management for information security-Technical and non-technical aspects of implementation. **Information Security Maintenance:** Introduction- Security management models-Maintenance model.	1	10,12
		Instructional Hours	18
Suggested Learning Methods : Poster Presentation			
		Total Hours	**90 Hrs**

Text Books	**1.** Michael E. Whitman and Herbert J. Mattord, **"Principles of Information Security",**Second Edition, Thomson Publishers.
Reference Books	1. ***Surya Prakash Tripathi and RitendraGoel,*** *"Introduction to Information Security and Cyber Laws",**2014, Dream Tech Press.*** 2. V.K. Pachghare, **"Cryptography and Information Security"**, 2nd Revised edition, Prentice-Hall of India Pvt.Ltd. 3. Mark S. Merkow, **"Information Security: Principles and Practices"**, Second Edition,Pearson Education.
Web. URLs	https://www.exabeam.com/explainers/information-security/information-security-goals-types-and-applications/

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO 5
CO1	H	H	H	L	M	M	L	M	M	H	H	M	M
CO2	M	M	M	M	H	M	M	M	H	H	H	M	H
CO3	H	L	M	H	M	M	L	H	M	H	H	M	M
CO4	M	H	L	M	L	L	H	M	H	M	H	H	M
CO5	M	M	H	H	M	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Raynukaazhakarsamy	Dr. K. Selvavinayaki

Course Code	Title		
23U3CKE607	Discipline Specific Elective Paper - II : Cloud Computing		
Semester: VI	Credits: 4	CIA: 25 Marks	ESE: 75 Marks
(Common to B. Sc. CS / IT / BCA)			
Course Objective	This course aims to provide students with the fundamentals and essentials concepts of Cloud Computing and their varied services.		
Course Category	Skill Development		
Development Needs	Global		
Course Description	This course gives students an insight into the basics of cloud computing along with virtualization, cloud computing is one of the fastest growing domain from a while now. It will provide the students basic understanding about cloud and virtualization along with it how one can migrate over it.		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Remember the basic concepts of Cloud Computing	Interactive Lecture	Poster Presentation
CO 2	Understand the cloud architecture and its services	Tutorial	Assignment
CO 3	Explore virtualization technologies and Platform as a Service	Lecture	Seminar
CO 4	Apply the concept of various web services.	Tutorial	Case Study
CO 5	Analyse the cloud services in real time	Lecture	Case Study

Offered by Information Technology

Course Content — **Instructional Hours / Week : 6**

Unit	Description	Text Book	Chapters
I	**Defining Cloud Computing:** Defining Cloud Computing - Cloud Types - Examining the Characteristics of Cloud Computing - Disadvantages of cloud computing - Assessing the Role of Open Standards. **Assessing the Value Proposition:** Measuring the Cloud's Value: The laws of cloudonomics - Cloud computing obstacles - Behavioral factors relating to cloud adoption.	1	1,2
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : **Video lectures about the basics of Cloud Computing**			
II	**Understanding Cloud Architecture:** Exploring the Cloud Computing Stack - Connecting to the Cloud. **Understanding Services and Applications by Type:** Defining Infrastructure as a Service (IaaS) - Defining Platform as a Service (PaaS) - Defining Software as a Service (SaaS) - Defining Identity as a Service (IDaaS) - Defining Compliance as a Service (CaaS).	1	3,4
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : Practice using Models			

III	**Understanding Abstraction and Virtualization:** Using Virtualization Technologies - Load Balancing and Virtualization - Understanding Hypervisors - Understanding Machine Imaging - Porting Applications. **Exploring Platform as a Service:** Defining Services - Using PaaS Application Frameworks.	1	5,7
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : Develop small programmes using visualization tools			
IV	**Using Google Web Services:** Exploring Google Applications - Surveying the Google Application Portfolio - Exploring the Google Toolkit - Working with the Google App Engine. **Using Amazon Web Services:** Understanding Amazon Web Services - Amazon Web Service Components and Services - Working with the Elastic Compute Cloud (EC2) - Working with Amazon Storage Systems - Understanding Amazon Database Services.	1	8,9
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : Apply the concept of web services			
V	**Using Microsoft:** Cloud Services - Exploring Microsoft Cloud Services - Defining the Windows Azure Platform - Using Windows Live. **Understanding Cloud:** Security - Securing the Cloud - Securing Data - Establishing Identity and Presence**.**	1	10,12
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : Case study			
		Total Hours	**90 Hrs**

Text Books	1. Barrie Sosinsky, **"Cloud Computing Bible"**, Wiley Publishing, Inc.,2011.
Reference Books	1. Ray J Rafaels, **"Cloud Computing: From Beginning to End"**,2015. 2. Arshdeep, Bahga and Vijai Madisetti, **"Cloud Computing: A Hands- on Approach"**, 2014.
Web URLs	https://www.coursera.org/learn/introduction-to-cloud

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	**25**

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	L	M	M	L	M	M	H	H	M	M
CO2	M	M	M	M	H	M	M	M	H	H	H	M	H
CO3	H	L	M	H	M	M	L	H	M	H	H	M	M
CO4	M	H	L	M	L	L	H	M	H	M	H	H	M
CO5	M	M	H	H	M	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. T. Ramaprabha	Dr. J. MariaShyla

Course Code	Title		
23U3CKE608	Discipline Specific Elective Paper II – Cyber Security		
Semester: VI	Credits: 4	CIA: 25 Marks	ESE: 75 Marks
(Common to B. Sc. CS / IT / BCA)			

Course Objective	To make the students to understand Cryptography, Cyber crime and its significance in current scenario of IT and information security.
Course Category	Employability
Development Needs	Global
Course Description	This course helps to identify the different cryptographic techniques, to recognise digital exploitation and also to prevent damage such as loss of data through threats.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Remember the information and its various representation	Lecture	Just – A – Minute Presentation
CO 2	Understand the concept of computer networks and overview of internet	Tutorial	Poster Presentation
CO 3	Interpret the file organization, data communication and data modulation techniques	Flipped Classroom	Assignment
CO 4	Apply the Cryptographic techniques in real time	Tutorial	Seminar
CO 5	Analyse information security framework and authentication technologies	Lecture	Quiz

Offered by | **Information Technology**

Course Content | **Instructional Hours / Week : 6**

Unit	Description	Text Book	Chapters
I	**Information and its Representation:** Introduction to information – Quality - of Information - Value of Information - Information Processing - Information Processing cycle in computers - information - Representation and codes - Number Representation - Binary - Representation of Positive integers - Signed Binary Integers - Positive Binary Fractions - signed Binary Fractions - Representing Fractions in Binary - Representation of Alphanumeric - Data - Current Trends in Information Technology – semiconductor - Technology - Information storage - Networking - Applications of - IT - IT Applications in Business - Modeling and simulation	1	1
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : Video lectures about the basics of Cyber Security			
II	**Computer Networks and Internet:** An overview of computer Network – Basic networking components - what is Internet - Internet Protocols - Internet protocol types - OSI Reference versus TCP/IP Model - OSI model layers - TCP/IP	1	2
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : Practice using Flow Charts			

III	**Information storage and communication:** Information storage - purpose of storage - Types of storage Devices - File organization - Internal file structure - External file structure and file extension - Data communication - an overview - what is data communication - signals - Basic - Data Communication Model - Modulation Techniques.	1	3
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : Develop small programmes on internal file structure			
IV	**Cryptography Systems**: Introduction - Cryptography Systems Types-Symmetric Cryptography - Asymmetric or Public Key, Cryptography-Hash Functions-Why three Encryption Techniques? – Public key Algorithms – RSA Public Key Algorithm – Digital Signature – Diffie – Hellman - ElGamal-EDCSA-XTR. **Cyber Law and Ethics**: Introduction to cybercrime - Prevention - preventive steps for Individuals - preventive steps for organizations and government - How to protect the computer against threats.	1	5 & 6
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : Apply the Cryptographic techniques in models			
V	**Information security Framework** - Information security and privacy - security Framework - Information systems security Framework – Framework for Network security access. Access control Techniques- Computer Security and Access Control-Access control Techniques-Biometric Authentication-Authentication Tokens-Token types and usage-Digital signature-Embodiments and vendors-Related Authentication Technologies.	1	8 & 9
		Instructional Hours	**18 Hrs**
Suggested Learning Methods : Case Study			
		Total Hours	**90 Hrs**

Text Books	1. Pankaj Agarwal, **"Information Security & Cyber Laws"**, Acme Learning Private Limited, First Edition,2010
Reference Books	1. Amy Rose, Deborah Arrand, Kristin E. Ohlim, Malloy, Michael G. Solomon, Mik Chapple, **"Information Security Illuminated"**, Jones & Barlett Publishers, 2005. 2. Lawrence C. Miller, **"Cyber Security for Dummies"**, John Wiley & Sons, Inc
Web. URLs	https://www.techtarget.com/searchsecurity/definition/cybersecurity

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	**25**

Mapping

CO \ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	L	M	M	L	M	M	H	H	M	M
CO2	M	M	M	M	H	M	M	M	H	H	H	M	H
CO3	H	L	M	H	M	M	L	H	M	H	H	M	M
CO4	M	H	L	M	L	L	H	M	H	M	H	H	M
CO5	M	M	H	H	M	H	M	H	H	H	M	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by
Dr. T. Ramaprabha	Dr. J. Mari Shyla

Course Code	Title		
23U3CAE609	Discipline Specific Elective Paper III: Artificial Intelligence		
Semester: VI	Credits: 4	CIA: 25 Marks	ESE: 75 Marks
Course Objective	To understand of the main abstractions and reasoning for intelligent systems and the basic principles of Artificial Intelligence in various applications.		
Course Category	Employability		
Development Needs	Global		
Course Description	The primary objective of this course is to introduce the basic principles, techniques, and applications of Artificial Intelligence		

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Overview of Artificial Intelligence	Lecture / Demonstration / Flipped Classroom	Assignment
CO 2	Knowledge about Problem Solving methods and search strategies	Demonstration / Constructivist Approach/ Tutorial	Seminar
CO 3	Apply basic principles of AI in solutions that require knowledge representation.	Lectures / Demonstration / Video Lessons	Quiz
CO 4	Apply AI techniques to real-world problems to develop intelligent systems.	Tutorial / Demonstration / Case Studies	Program Execution
CO 5	Understand the various applications of AI techniques in intelligent agents and expert systems	Lecture / Demonstration / Class Projects	Program Execution

Offered by	Computer Applications

Course Content	Instructional Hours / Week : 6

Unit	Description	Text Book	Chapters
I	**Introduction:** What is AI?- The foundation of AI- AI Problems. Intelligent Agent: Introduction-How Agent should act-Structure of Intelligent Agent	1 2	1,2 1
		Instructional Hours	**18 Hrs**
Suggested learning methods: Video lectures about the basic of models			
II	**Problem Solving by searching:** Problem Solving Agents- Formulating Problems- Examples: 8 queens problem. Search Strategies- Game Playing: Minim ax-Alpha-Beta Pruning.	1	3,5
		Instructional Hours	**18 Hrs**
Suggested learning methods: Video lectures about the basic of models			
III	**Knowledge and Reasoning:** A Knowledge based agent- Representation, Reasoning and Logic. Propositional Logic-Very simple Logic- Introduction to First Order Logic.	1	6,7
		Instructional Hours	**18 Hrs**
Suggested learning methods: Video lectures about the basic of models			
IV	**Planning:** A simple planning agent – From Problem solving to Planning – Basic Representation of Planning – A partial Order	1	11

	Planning Algorithm- Example**. Learning:** A General model of Learning Agent – Inductive Learning – Learning from Decision Trees.		
		Instructional Hours	**18 Hrs**
Suggested learning methods: Video lectures about the basic of models			
V	Expert Systems- Definition – Features of an expert system – Organization – Characteristics – Prospector – Knowledge Representation in expert systems – Expert system tools – MYCIN – EMYCIN.	3	1,2
		Instructional Hours	**18 Hrs**
Suggested learning methods: Video lectures about the basic of models			
		Total Hours	**90 Hrs**

Text Books	1. Stuart J.Russell, Peter Norvig, **"Artificial Intelligence – A Modern Approach"**, Prentice Hall Incorporation.
	2. Elaine Rich, Kevin Knight, Shivasankar B.Nair, **"Artificial Intellignence", Third Edition**, Tata-McGraw, 2009.
	3. Donald A.Waterman, 'A Guide to Expert Systems', Pearson Education
Reference Books	1. Deepak Khemani, **"A First course in Artificial Intelligence"**, McGraw Hill Education Pvt Ltd, 2013.
Web. URLs	https://www.newtondesk.com/artificial-intelligence-tutorial-and-study-notes-pdf/

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Class Participation	Seminar	Assignment	Total
5	5	6	3	3	3	25

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	L	M	H	L	M	H	H	H	H	M	M
CO2	H	H	L	M	H	L	M	H	H	H	H	M	M
CO3	H	H	L	M	H	L	M	H	H	H	H	H	H
CO4	H	H	L	M	H	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. A. Kalaivani	Dr. K. Selvavinayaki

Course Code	Title		
23U3CAE610	**Discipline Specific** **Elective Paper III: Agile Project Management**		
Semester: VI	**Credits: 4**	**CIA: 25 Marks**	**ESE: 75 Marks**

Course Objective	To provide students with a theoretical as well as practical understanding of Agile software development practices and how small teams can apply them to creating high-quality software.
Course Category	Skill Development
Development Needs	Global
Course Description	Agile Project Management course is designed to teach you the principles and practices of Agile in real world settings, including Scrum, XP and Lean.

Course Outcomes		**Teaching Methods**	**Assessment Methods**
CO 1	Understanding of the Agile manifesto and its advantages over other SDLC paradigms	Lecture / Demonstration	Class Participation
CO 2	Apply Agile approaches to various UseCase given.	Demonstration	Quiz
CO 3	Prepare the product for development	Lecture	Seminar
CO 4	Analyse the agile cost management and risk management concepts applicable for the real time projects.	Lecture	Seminar
CO 5	Identify a team and design a project plan.	Problem-based Teaching	Assignment

Offered by	**Computer Applications**

Course Content	**Instructional Hours / Week: 6**

Unit	Description	Text Book	Chapters
I	**Introduction: Modernizing Project Management:** Project Management Needed a Makeover – Introducing Agile Project Management. **Applying the Agile Manifesto and Principles:** Understanding the Agile manifesto – Outlining the four values of the Agile manifesto – Defining the 12 Agile Principles – Adding the Platinum Principles – Changes as a result of Agile Values – The Agile litmus test. **Why Being Agile Works Better:** Evaluating Agile benefits – How Agile approaches beat historical approaches – Why people like being Agile.	1	1,2 & 3
	Instructional Hours		**18**
	Suggested Learning Methods: Code Debugging		
II	**Being Agile:Agile Approaches:** Diving under the umbrella of Agile approaches – Reviewing the Big Three: Lean, Scrum, Extreme Programming - Summary **Agile Environments in Action:** Creating the physical environment – Low-tech communicating – High-tech communicating – Choosing tools. **Agile Behaviours in Action:** Establishing Agile roles – Establishing new values – Changing team philosophy.	1	5,6 & 7
	Instructional Hours		**18**
	Suggested Learning Methods: Code Debugging		

III	**Agile Planning and Execution** Defining the Product Vision and Roadmap: Agile planning – Defining the product vision – Creating a product roadmap – Completing the product backlog. **Planning Releases and Sprints:** Refining requirements and estimates – Release planning – Sprint planning. **Working Throughout the Day**: Planning your day – Tracking progress – Agile roles in the sprint – Creating shippable functionality – The end of the day.Showcasing Work, Inspecting and Adapting: The sprint review – The sprint retrospective. **Preparing for Release:** Preparing the product for deployment (the release sprint) – Preparing the operational support – Preparing the organization for product deployment - Preparing the marketplace for product deployment	1	9,10,11 & 12
		Instructional Hours	**18**
	Suggested Learning Methods: Simple Application Development		
IV	**Agile ManagementManaging Scope and Procurement:** What's different about Agile scope management – Managing Agile scope – What's different about Agile procurement – Managing Agile procurement. **Managing Time and Cost:** What's different about Agile time management – Managing Agile schedules – What's different about Agile cost management – Managing Agile budgets. Managing Team Dynamics and Communication: What's different about Agile team dynamics – Managing Agile team dynamics – What's different about Agile communication – Managing Agile communication. **Managing Quality and Risk:** What's different about Agile quality – Managing Agile quality – What's different about Agile risk management – Managing Agile risk.	**2**	13, 14,15,16 & 17
		Instructional Hours	**18**
	Suggested Learning Methods: Simple Application Development		
V	**Implementing Agile Building a Foundation:** Organizational and individual commitment – Choosing the right pilot team members – Creating and environment that enables Agility – Support Agility initially and over time. **Being a Change Agent:** Becoming Agile requires change – why change doesn't happen on its own – Platinum Edge's Change Roadmap – Avoiding pitfalls – Signs your changes are slipping. Benefits, Factors for Success and Metrics: Ten key benefits of Agile project management – Ten key factors for project success – Ten metrics for Agile Organizations.	2	18,20, 21,22, & 23
		Instructional Hours	**18**
	Suggested Learning Methods: Simple Application Development		
		Total Hours	**90 Hrs**

Text Books	1. Mark C. Layton, Steven J. Ostermiller, *Agile Project Management for Dummies*, 2nd Edition, Wiley India Pvt. Ltd., 2018. 2. Jeff Sutherland, Scrum – The Art of Doing Twice the Work in Half the Time, Penguin, 2014.
Reference Books	1. Mark C. Layton, David Morrow, *Scrum for Dummies*, 2nd Edition, Wiley India Pvt. Ltd., 2018. 2. Mike Cohn, Succeeding with Agile – Software Development using Scrum, Addison-Wesley Signature Series, 2010.

	3. Alex Moore, Agile Project Management, 2020. 4. Alex Moore, *Scrum*, 2020. 5. Andrew Stellman and Jennifer Greene, *Learning Agile: Understanding Scrum, XP, Lean, and Kanban*, Shroff/O'Reilly, First Edition, 2014.
Web. URLs	**1.** www.agilealliance.org/resources

Tools for Assessment (25 Marks)

CIA I	CIA II	CIA III	Assignment	Seminar	Quiz	Total
5	5	6	3	3	3	25

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	H	-	M	H	M	M	H	H	H	H	M	M
CO2	M	H	-	M	H	M	M	H	H	H	H	M	M
CO3	M	H	-	M	H	M	M	H	H	H	H	H	H
CO4	H	H	-	M	H	H	M	H	H	H	H	H	H
CO5	H	H	-	M	H	H	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. K. Selvavinayaki	Dr. K. Selvavinayaki

Course Code	Title		
23U3CAE611	Discipline Specific Elective Paper III: Bioinformatics		
Semester: VI	Credits: 4	CIA: 25 Marks	ESE: 75 Marks

Course Objective	To explore the functional areas of Bioinformatics and to be familiarized with Biological Databases.
Course Category	Employability
Development Needs	Global
Course Description	The student will be able to apply basic principles of biology, computer science and mathematics to address complex biological problems

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Understand the basic concepts of Bioinformatics and its applications.	Lecture / Demonstration / Flipped Classroom	Assignment
CO 2	To interpret various Biological Databases.	Demonstration / Constructivist Approach/ Tutorial	Seminar
CO 3	To learn about the various file formats and data representation standards	Lectures / Demonstration / Video Lessons	Quiz
CO 4	To Illustrate about Database Similarity Searching	Tutorial / Demonstration / Case Studies	Program Execution
CO 5	To demonstrate the working nature of sequence alignment	Lecture / Demonstration / Class Projects	Program Execution

Offered by	**Computer Applications**

Course Content	Instructional Hours / Week : 6

Unit	Description	Text Book	Chapters
I	**Bioinformatics:** Introduction to Bioinformatics – Goal – Scope – Applications – Limitations –DNA Sequence Analysis: Why analyses DNA? – Gene Structure & DNA Sequence – Features of DNA Sequence Analysis. Examples of related tools and software. Data generation; Generation of large scale molecular biology data.	**1&2**	1 & 5
	Instructional Hours		**18 Hrs**
Suggested learning methods : Video lectures about the basic of models			
II	**Introduction to data types and Source:** Population and sample, Classification and Presentation of Data. Quality of data, private and public data sources. Introduction to Biological Databases: Types of Database – Biological Database – Pitfalls of Biological Database – Information retrieval from Biological databases. Nucleic acid databases ,Protein databases (Primary, Composite, and Secondary). Specialized Genome databases: Structure databases	1	2
	Instructional Hours		**18 Hrs**
Suggested learning methods : Video lectures about the basic of models			

III	**Format and Annotation:** Conventions for databases indexing and specification of search terms; Common sequence file formats; Files for multiple sequence alignment; Files for structural data; Flat files, relational, object oriented databases and controlled vocabularies. File Format (Genbank, DDBJ, FASTA, PDB, SwissProt). Introduction to Metadata and search; Indices, Boolean, Fuzzy, Neighboring search. The challenges of data exchange and integration. Ontologies, interchange languages and standardization efforts.	2	6
		Instructional Hours	**18 Hrs**
Suggested learning methods : Video lectures about the basic of models			
IV	**Database Similarity Searching:** Unique Requirements of database searching – Heuristic database searching – Basic local alignment search tool (BLAST) – FASTA – Comparison of FASTA & BLAST – Database searching with smith – Waterman method.	1	4
		Instructional Hours	**18 Hrs**
Suggested learning methods : Video lectures about the basic of models			
V	**Introduction to Sequences, alignments and Dynamic Programming**; Local alignment and Global alignment (algorithm and example), Pairwise alignment (BLAST and FASTA Algorithm) and multiple sequence alignment (Clustal W algorithm). Methods for presenting large quantities of biological data: sequence viewers (Artemis, SeqVISTA), 3D structure viewers (Rasmol, SPDBv, Chime, Cn3D, PyMol), Anatomical visualization. Representation of patterns and relationship: Regular Expression, Hierarchies, and Graphical models.	1	2,3 & 5
		Instructional Hours	**18 Hrs**
Suggested learning methods : Video lectures about the basic of models			
		Total Hours	**90 Hrs**

Text Books	1. JinXiong **"Essential Bioinformatics",** Cambridge University Press 2016
	2. T K Attwood & D J Parry Smith, **"Introduction to Bioinformatics",** Pearson Education 2007.
Reference Books	Jean-Michel Claverie , Cedric Notredame **Bioinformatics – A Beginner's Guide** Wiley Computer Publishing 2009..
Web. URLs	https://thebiologynotes.com/category/bioinformatics

Tools for Assessment (25 Marks)

Program Debugging	Problem solving	Mini Project	Test 1	Test 2	Observation Note Book	Total
5	5	6	3	3	3	25

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	L	M	H	L	M	H	H	H	H	M	M
CO2	H	H	L	M	H	L	M	H	H	H	H	M	M
CO3	H	H	L	M	H	L	M	H	H	H	H	H	H
CO4	H	H	L	M	H	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course Designed by	Verified by Chairman
Dr. K. Prathapchandran	Dr. K. Selvavinayaki

Course Code	Title		
23U3CAE612	Discipline Specific Elective Paper III: Mobile Application Development		
Semester: VI	Credits: 4	CIA: 25 Marks	ESE: 75 Marks

Course Objective	Gain a basic understanding of Android application development
Course Category	Employability
Development Needs	Global
Course Description	This course introduces students to programming technologies, design and development related to mobile applications.

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Remember the .Net Controls and statements	Lecture / Demonstration / Flipped Classroom	Assignment
CO 2	Understand the Structures and OOPs Concepts	Demonstration / Constructivist Approach/ Tutorial	Seminar
CO 3	Develop and implement windows, console and web-based application	Lectures / Demonstration / Video Lessons	Quiz
CO 4	Examine webpage, file management, ADO.Net for Database Connection	Tutorial / Demonstration / Case Studies	Program Execution
CO 5	Develop a Android mobile applications	Lecture / Demonstration / Class Projects	Program Execution

Offered by	**Computer Applications**

Course Content	Instructional Hours / Week : 6

Unit	Description	Text Book	Chapters
I	Introduction to Mobile Computing, Introduction to Android Development Environment, Factors in Developing Mobile Applications, Mobile Software Engineering, Frameworks and Tools, Generic UI Development, Android User, Basic User Interface Screen elements, Designing User Interfaces with Layouts.	1	1-2
	Instructional Hours		**18 Hrs**
Suggested learning methods :Video lectures about the basic of models			
II	Intents and Services: Android Intents and Services, Characteristics of Mobile Applications, Successful Mobile Development. Storing and Retrieving Data: Synchronization and Replication of Mobile Data, Getting the Model Right, Android Storing and Retrieving Data, Working with a Content Provider. Communications Via Network and the Web: State Machine, Correct Communications Model, Android Networking and Web.	1	3-5
	Instructional Hours		**18 Hrs**
Suggested learning methods :Video lectures about the basic of models			
III	Gallery, drawing 2D and 3D Graphics and Multimedia, Drawing and Working with Animation. Networking, Telephony and Location, Android Networking, Web and Telephony API. Search, Location and Mapping, Communication, Identity, Sync and social media.	1	6-8

	Sensor and Hardware Programming.		
		Instructional Hours	**18 Hrs**
Suggested learning methods :Video lectures about the basic of models			
IV	Sensor and Hardware Programming, Create ―Hello World‖ application. That will display ―Hello World‖ in the middle of the screen in the emulator. Create an application with login module. (Check username and password), Create a menu with 5 options and and selected option should appear in text box. Create a list of all courses in your college and on selecting a particular course teacher-in-charge of that course should appear at the bottom of the screen.	1	9-13
		Instructional Hours	**18 Hrs**
Suggested learning methods :Video lectures about the basic of models			
V	Connecting Databases with android, Create an application with three option buttons, on selecting a button colour of the screen will change. Create and Login application as above. On successful login, pop up the message. Create an application to Create, Insert, update, Delete and retrieve operation on the database.	1	14-18
		Instructional Hours	**18 Hrs**
Suggested learning methods :Video lectures about the basic of models			
		Total Hours	**90 Hrs**

Text Books	1. Budi Kurniawan,**A Beginner's Tutorial, Android Application Development** ,Brainy Software, 2015
Reference Books	1. Charlie Collins, Michael Galpin, Matthias Kappler, **Android in Practice** ,Manning,2011 2. AnubhavPradhan, Anil V. Deshpande, **Composing Mobile Apps: Learn,Explore, Apply using Android,**Wiley,Publications,2014. 3. Jeff Mcwherter, Scott Gowell, **Professional Mobile Application Development** ,Wrox Publisher,2012
Web. URLs	https://www.javatpoint.com/android-tutorial

Tools for Assessment (25 Marks)

Program Debugging	Problem solving	Mini Project	Test 1	Test 2	Observation Note Book	Total
5	5	6	3	3	3	25

Mapping

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	L	M	H	L	M	H	H	H	H	M	M
CO2	H	H	L	M	H	L	M	H	H	H	H	M	M
CO3	H	H	L	M	H	L	M	H	H	H	H	H	H
CO4	H	H	L	M	H	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H

H-High; M-Medium; L-Low

Course designed by	Verified by Chairman
Dr. A. Kalaivani	Dr. K. Selvavinayaki

Course Code	Title		
23U4CAZ604	Skill Based Paper IV: Practical in R Programming		
Semester: VI	Credits: 3	CIA: 30 Marks	ESE: 45 Marks

Course Objective	To enable the students to gain an in-depth understanding of data structure used in R and learn to import/export data using R.
Course Category	Skill Development
Development Needs	Global
Course Description	To make the students to understand the fundamentals of R Programming

Course Outcomes		Teaching Methods	Assessment Methods
CO 1	Remember various data types, conditional and looping statements	Demonstration	Program Creativity
CO 2	Understand about R-studio, workspace setup and the various R packages	Demonstration	Debugging
CO3	Apply data Structures: Vectors, Lists, Matrices and Arrays and Factors and Data Frame in R language and manipulate	Demonstration	Program Creativity
CO4	Analyze the feasible logics	Demonstration	Program Creativity
CO5	Evaluate the optimal solution of the problem	Demonstration	Program Creativity

Offered by	**Computer Applications**

Course Content **Instructional Hours / Week: 6**

Unit	List of Practical
1	Write a R Program to take input from the user (name and age) and display the values. Also print version of R installation.
2	Write a R Program to create a sequence of number from 20 to 50 and find the mean of numbers from 20 to 60 and sum of numbers from 51 to 91.
3	Write a Program to check whether the given number is Armstrong Number or not.
4	Write a R Program to create a simple bar plot of five subjects mark.
5	Write a R Program to create a list and to append, modify and delete the elements in the list.
6	Write a R Program to find the sum of 'n' natural numbers
7	Write a R Program to multiply two vectors of integers type and length 3.
8	Write a Program to create a matrix addition and subtraction.
9	Write a Program to check whether the given number is palindrome or not using function.
10	Write a Program to create the Data Frame and extract the value.
11	Write a Program to Find Sum, Mean and Product of Vector
12	Write a Program to Sample from a Population

Suggested Learning Methods: Solving Case studies, Peer tutoring and pair programming

												Total Hours	**90 Hrs**
Tools for Assessment (30 Marks)													
Application of Logic		**Program Creativity**		**Program Debugging**		**Test 1**		**Test 2**		**Observation Note Book**		**Total**	
4		4		4		7		7		4		**30**	
Mapping													
CO / PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	M	M	-	M	M	-	-	H	M	H	H	M	M
CO2	M	H	-	M	M	-	-	H	M	H	M	H	M
CO3	H	H	-	M	H	-	-	H	H	H	H	H	H
CO4	H	H	-	M	H	-	-	H	H	H	H	H	H
CO5	H	H	-	M	H	-	-	H	H	H	H	H	H
H-High; M-Medium; L-Low													
Course designed by								**Verified by Chairman**					
Mr. P. Boopathi								Dr. K. Selvavinayaki					

Course Code	Title	
23UCASS01	Self-Study Paper: Problem Solving and Programming	
Semester: II - V	Credits: 1	ESE: 50 Marks

Course Objective

To understand the basic concepts of problem-solving approaches and develop optimal program structure using conditional and iterative control structures and functions.

Course Outcomes

CO1	To understand the basic logics for coding a program
CO2	To design a computational solution for a given problem
CO3	To break a problem into logical modules that can be solved (programmed)
CO4	To transform a problem solution into programs involving programming constructs
CO5	To write programs using structures, strings, arrays, pointers and files for solving complex computational problem

Offered by: Computer Applications

Course Content

Unit	Description	Text Book	Chapter
I	**Introduction to Computer Problem Solving:** Introduction – The Problem Solving aspect – Top down design – Implementation of algorithm – Program Verification – The efficiency of algorithm – The analysis of algorithm.	1	1
II	**Algorithms and Flow Chart:** Introduction: The Role of Algorithms in Computing, Algorithms as a technology, Analyzing algorithms, Designing algorithms, Growth of Functions, Asymptotic notation, Standard notations and common functions. Fundamental Algorithms- Flow Charts-Introduction-Definition-Types-Uses of Flowchart-Flow Chart Symbols. Exchanging the values of two variables, Counting, Summation of a set of numbers, Factorial Computation- Generating of the Fibonacci sequence, Reversing the digits of an integer, Character to number conversion.	2	1
III	**Factoring Methods:** Finding the square root of a number, the smallest Divisor of an integer, the greatest common divisor of two integers, computing the prime factors of an integer, generation of pseudo random numbers, raising a number to a large power.	3	2-6
IV	**Array Techniques:** Array order Reversal, Array counting or Histogramming, Finding the maximum number in a set, removal of duplicates from an ordered array, partitioning an array, Finding the k^{th} smallest element, multiplication of two matrices.	3	7-10

V	**Merging & Sorting:** Two-way merge sort, Sorting by selection, sorting by exchange, sorting by insertion, sorting by diminishing increment, sorting by partitioning. **Searching:** Binary search, hash search, **Text processing and Pattern searching:** Text line length adjustment, keyword searching in text, text line editing, linear pattern search.	3	13-14

Text Books:

1. R. G. Dromey, How To Solve It By Computer , Pearson education , fifth edition, 2007.
2. Pradip Dey, Manas Ghosh, Fundamentals of Computing and Programming in C, First Edition, Oxford University Press, 2009.
3. Kamthane, A.N., Programming with ANSI and Turbo C, Pearson Education, Delhi,2006

Reference Books:

1. Ashok N Kamthane , Programming with ANSI and Turbo C, Pearson Edition Publ, 2002.
2. Henry Mullish & Huubert L.Coope, The Sprit of C, Jaico Pub. House, 1996.

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	L	M	H	L	M	H	H	H	H	M	M
CO2	H	H	L	M	H	L	M	H	H	H	H	M	M
CO3	H	H	L	M	H	L	M	H	H	H	H	H	H
CO4	H	H	L	M	H	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H

H-High; M-Medium; L-Low.

Course Designed by	Verified by
Dr. A. Kalaivani	Dr. K. Selvavinayaki

Course Code	Title	
23UCASS02	Self-Study Paper: Web Design Using HTML	
Semester: II - V	Credits: 1	ESE: 50 Marks

Course Objective:

To offer students the fundamental knowledge of application development for the internet using HTML.

Course Outcomes:

CO1	Create an HTML Documents and establish adequate formatting for presentation purposes
CO2	Import, insert and modify images and tables
CO3	Establish and maintain internal and external link to available resources
CO4	Use special effect to make the expressive, evocative documents
CO5	Manager forms (Create forms, call programs)

Offered by: Computer Applications

Course Content:

Unit	Description	Text Book	Chapter
I	**Introduction to HTML:** History of HTML, HTML Generations, HTML Documents, Hyper Links.	1	4,5
II	**Head and Body:** Header Section, Title, Prologue, Links, Comment lines. **Designing the Body Section:** Heading Printing, Aligning the Headings, Horizontal Rule, Paragraph, Tab Setting, Images and Pictures.	1	6
III	**Ordered and Unordered Listing:** Lists, Unordered Lists, Headings in a List, Ordered Lists, Nested Lists. **Table Handling:** Tables, Table Creation in HTML, Width of the tables and cells, Column Specification, some sample tables.	1	7,8
IV	**DHTML and Style Sheets:** Defining Styles, Elements of Styles, Linking a style sheet to a HTML Document, In-line Styles, External Style Sheets, Internal Style Sheets, Multiple Styles. **Frames:** Frameset Definition, Frame definition, Nested framesets.	1	9,10
V	**A Web Page Design Project:** Frameset definition, Animals, Birds, Fish. **Forms:** Action attribute, Method attribute, Enctype attribute, Drop Down List, Sample Forms.	1	11,12

Text Book:

1. C. Xavier , **World Wide Web Design With Html**, Tata McGraw Hill Education Private Limited, New Delhi.

Reference Books:

1. Special Edition **Using Intranet HTML** / Mark Surfas, Mark Brown and John Juge

2. **Dynamic HTML Web Magic** / JefDou*yer – Hayden development group*

Mapping

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	L	M	H	L	M	H	H	H	H	M	M
CO2	H	H	L	M	H	L	M	H	H	H	H	M	M
CO3	H	H	L	M	H	L	M	H	H	H	H	H	H
CO4	H	H	L	M	H	L	M	H	H	H	H	H	H
CO5	H	H	L	M	H	L	M	H	H	H	H	H	H

H-High; M-Medium; L-Low.

Course Designed by	Verified by Chairman
Ms. P. Jijitha	Dr. K. Selvavinayaki