KOVAI KALAIMAGAL COLLEGE OF ARTS AND SCIENCE

(An Autonomous Institute Affiliated to Bharathiar University)
Re - accredited with "A+" grade by NAAC
Regulations for Undergraduate Programmes
(Under Choice Based Credit System)
(Effective for 2024 – 2027 Batch)

1. REGULATIONS

This regulation is effective for the batch 2024 – 2027.

1.1. Eligibility for Admission

S.No	Name of the Course	Eligibility Condition
1	B.Com	HSc Passed
2	B.Com (CA)	
3	B.Com (PA)	
4	BBA (CA)	
5	B.Com Business Analytics	
5	B.Sc. (CS)	HSc Passed, and wherever the students have not studied Mathematics knowledge be imparted through Residential / Bridge Course
6	B.Sc (IT)	
7	BCA	
8	BSc Artificial Intelligence and Machine Learning	

1.2. Duration and Course of Study

Three Academic years with six semesters, the duration of the first, third and fifth Semesters from June to November and the second, fourth and sixth Semesters from December to April. The duration of each semester is 90 working days.

1.3. The Medium of Instruction and Examinations

The medium of instruction and examinations shall be English.

1.4. Requirements for Attendance

- A candidate will be permitted to take the examination for any semester, if he/she secures not less than 75% of attendance out of the 90 working days during the semester.
- A candidate who has secured attendance less than 75% but 65% and above shall apply with the prescribed fee for the condonation of lack of attendance. On the recommendation of the Principal, he/she will be permitted to take up the examination.
- A candidate who has secured attendance less than 65% but 55% and above in any semester, will be permitted to continue the course but will not be permitted to appear for the examination in the current papers. However he/she will be permitted to appear for the examination in the papers in which he/she has arrears. He/she will have to compensate the shortage of attendance in the subsequent semester and take the examination in the papers of

both the semester together.

A candidate who has secured less than 55% of attendance in any semester will not be permitted to take the regular examinations and to continue the study in the subsequent semester. He/she has to re-do the course by rejoining in the semester in which the attendance is less than 55%.

A candidate who has secured less than 65% of attendance in the final semester has to compensate his / her attendance shortage in a manner to be decided by the Head of the Department concerned after rejoining the course.

1.5 Restriction to take the Examinations

- ✓ Any candidate having arrear paper(s) shall have the option to take the examinations in any arrear paper(s) along with the subsequent regular semester papers.
- ✓ Candidates who fail in any of the papers shall pass the paper(s) concerned within five years from the date of admission to the said course. If they fail to do so, they shall take the examination in the revised text / syllabus, if any, prescribed for the immediate next batch of candidates. If there is no change in the text / syllabus they shall take the examination in that paper with the syllabus in vogue, until there is a change in the text or syllabus.

In the event of removal of that paper consequent to the change of regulations and / or curriculum after a five year period, the candidates shall have to take up an equivalent paper in the revised syllabus as suggested by the chairman and fulfill the requirements as per regulations/curriculum for the award of the degree.

1.6 The Evaluation System

The major objective of the institution's evaluation system is to motivate all students to excel in their performance. The students' performance is continually assessed through Continuous Internal Assessment (CIA) and End Assessment Examinations (EAE). The CIA, EAE break up for theory papers is 25:75 and practical is 40:60.

1.6.1. Break Up of Continuous Internal Assessment (CIA) Marks

Theory (Languages, English, Core, Allied and Elective)

Content	Marks Awarded
Best out of Continuous Internal Assessment Test – I and II	5
Model Examination	10
Assignment (2 Numbers)	5
Seminar	5
Total	**25**

Practical

Content	Marks Awarded (Max Marks:100)	Marks Awarded (Max Marks:50)
Minimum ten Experiments / Practical Paper / Semester	20	5
Continuous Internal Assessment Test	5	5
Model Exam	10	5
Record Note Book	5	5
Total	**40**	**20**

Project

Content	Marks Awarded
Review and content Presentation (3 Reviews)	60
Project Report	20
Total	**80**

1.6.2. End Assessment Examinations (EAE)

a) Semester examination will be conducted at the end of each semester after completing a minimum of 90 working days.

b) End Assessment Examination for the odd semester will generally be held during November and even semester during April.

c) The question papers for Part I, Part II and Part III courses will be set by the external examiners and Part IV and Extra Credit Courses may be set by the internal or external examiners.

d) The exams for Languages, English, Core, Allied and Elective will be conducted for a maximum of 70 marks for three hours. The passing minimum for CIA and EAE is 40% (30 out of 75 Marks) and overall passing minimum putting the CIA and EAE marks together will be 40 % (40 out of 100).

e) Question Paper Pattern: **(Languages, English, Core, Allied and Elective)**

Part A	10*1=10Marks	10 Questions – 1 Marks each – MCQ Type
Part B	5*5 = 25 Marks	5 Questions - 5 Marks each – either or type.
Part C	5*8 = 40Marks	5 Questions - 8 Marks each – either or type.
Total	75 Marks	

f) The exams for Value Based Education, Non Major Elective, Skill based Subjects and Self study course will be conducted for a maximum of 50 marks for three hours. The passing minimum is 40% (20 out of 50 marks).

g) Question Paper Pattern: **(Value Based Education, Non Major Elective & Self study course)**

Part A	5*10=50 Marks	5 Questions - 10 Marks each – either or type
Total	**50 Marks**	

h) Question paper pattern: **(Extra Credit Courses)**

Part A	5*8=40 Marks	5 Questions- 8 Marks each – either or type
Part B	5*12=60 Marks	5 Questions- 12 Marks each – either or type
Total	100 Marks	

i) The marks secured in the extra credit course will get reflected in the mark sheet only if the candidate has secured 40% marks and above.

j) The students will be allowed to choose only two papers per semester under the extra credit courses from third semester onwards.

k) Job oriented Courses

Every student should complete one job oriented course of minimum 20hrs duration .The student may register either in PMKVY (supported by the central government) or other external agency. They should submit a certificate for the successful completion of the training programme from the agency concerned at the end of the third semester.

l) Online Course

Students have to register online courses in NPTEL /SWAYAM /MOOC / COURSERA /EDX / Spoken Tutorial etc… others can appear for the exam in same web portal and submit the certificate during the sixth semester or can appear through End Assessment Examinations in our course.

Question paper pattern: (Online Course)

Part A	100*1=100 Marks	Multiple Choice Questions (Online)
Total	50 Marks	

m) Question paper pattern: (Employability Skills)

Part A	50*1=50 Marks	50 Multiple Choice Questions
Total	50 Marks	

n) Practical

Content	**Marks Awarded (Max Marks: 100)**	**Marks Awarded (Max Marks: 100)**
Program - 1	20	10

Program - 2	20	10
Viva voce	10	5
Record	10	5
Total	**60**	**30**

o**) Extra-Curricular Activities**

The first year students can enroll themselves for NSS / RRC /YRC / Sports & Games / Clubs and earn the credit allotted. Participation in any one of these activities during the first four semesters is mandatory. A report regarding satisfactory participation in the activity issued by the faculty in charge of the activity and approved by the Head of the Department has to be submitted to the CoE at the end of the fifth semester.

p) Internship

The students have the option to select any organisation – Government / Private like industry, bank, Research & Development organisations, Scientific Companies; IT related service providers etc., in consultation with the staff Co-ordinator & Head of the Department. The students should undergo training for a period of two weeks. The students must maintain a work diary and prepare a report of the training undergone and submit the same to the HoD on a stipulated date.

q) Project

The evaluation for the End semester examination should be as per the norms given below:

Content	**Marks Awarded**
Viva Voce	20
Total	**20**

r) Volunteering Programme

1. Use Self-reflective worksheets to assess their understanding.

2. Submit the worksheets to internal audit/ external audit.

3. Each student should submit a Handwritten Summary of their Learning & Action Plan for thefuture.

4. Every student's activities report should be documented and the same have to be assessed by the Physical Director with the mentor. The evaluation should be for 50 marks.

No examination is required.

5.Scheme of Evaluation

Part	**Description**	**Marks**
A	Report	20

B	Attendance	10
C	Activities (Observation During Practice)	20
Total		50

s) The students who have opted for the languages other than Tamil in part-I should undergo Basic Tami / Advanced Tamil Course during the 2nd year of the study for which there would be only Internal Evaluation.(Basic Tamil means basic orientation in Tamil language for those students who have not studied Tamil up to 12th standard and Advanced Tamil means, the subject for students who have studied Tamil language up to 12th standard and chosen other language in college but would like to advance their Tamil language skills.

t) For all the non-credit courses result would be indicated as "Pass" or "Re-Appearance" and not by / marks or grades secured in the grade sheet.

u) There will be one independent valuation for all theory papers of UG courses by external examiner, except for self study subjects, value based subjects, Non-major Electives, Skill Based subject and Extra Credit Courses.

v) A candidate may request for re-totalling / revaluation of his/her answer script by submitting an application addressing to the Controller of Examination through the Principal, paying the prescribed fee. This provision is available for all theory papers taken in the EAE. However there is no provision for revaluation of Practical papers.

w) Candidates desirous of improving the marks awarded in a passed subject in their first attempt shall reappear once within a period of subsequent two semesters. 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.

x) Supplementary examination will be conducted for the benefit of final year students after 15 days of the declaration of the final semester results. Candidate who has arrears in any semester subject to a maximum of one paper can appear for the supplementary exam conducted after the final semester.

1.7 Grading

The following table gives the marks grade points, letter grades and classification to indicate the performance of the candidate.

Conversion of Marks to Grade Points and Letter Grade

Range of Marks	Grade Points	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	U	Re – Appear
ABSENT	0.0	AB	Absent

C_i = Credits earned for course i in any semester

G_i = Grade Point obtained for course i in any semester

n = refers to the semester in which such course were credited

For a Semester:

GRADE POINT AVERAGE [GPA] = $\sum_i C_i G_i / \sum_i C_i$

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

For the Entire Programme:

CUMULATIVE GRADE POINT AVERAGE [CGPA] = $\sum_n \sum_i C_{ni} G_{ni} / \sum_n \sum_i C_{ni}$

$$CGPA = \frac{\text{Sum of the multiplication of grade points by the credits of the entire programme}}{\text{Sum of the credits of the courses of the entire programme}}$$

Classification of Successful Candidates

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

CGPA	Grade	Classification of Final Result
9.5 and above up to 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	
0.0 and above but below 5.0	U	Re - Appearance

*** The candidates who have passed in the first appearance and within the prescribed semester of the Programme (Major and Elective Course alone) are eligible.**

1.8 Course Completion

Students shall complete the programme within a period not exceeding three years for UG courses from the date of admission.

SCHEME OF EXAMINATION AND PROGRAMME STRUCTURE
Under CBCS Pattern and Outcome Based Education
B.Sc (Computer Science) (2024 – 2027)

Part	Course Code	Title of the Course	Hours per week	CIA	Exam	Total	Credits
	SEMESTER – I						
I		Language 1 : Paper I	4	25	75	100	3
II	24U1ENLT01	Language 2: Functional English I	4	25	75	100	3
III	24U1CSCT01	Core 1: C Programming	5	25	75	100	4
III	24U1CSCT02	Core 2: Digital Fundamentals and Architecture	5	25	75	100	4
III	24U1CSCP03	Core 3: C Programming-Practical	5	40	60	100	3
III	24U1CSAT01	Allied 1: Numerical Methods and Statistics	5	25	75	100	4
IV	24U1VBET01	Value Based Education 1: Environmental Science*	2	-	50	50	1
V	24U1ESKT01	Employability Skills -I	4	-	-	-	-
	-	Sports	2	-	-	-	-
		Total	**36**			**650**	**22**
	SEMESTER – II						
I		Language 1 : Paper II	4	25	75	100	3
II	24U2ENLT02	Language 2: Functional English II	4	25	75	100	3
III	24U2CSCT04	Core 4: C++ Programming	5	25	75	100	4
III	24U2CSCT05	Core 5: Data Structures	5	25	75	100	4
III	24U2CSCP06	Core 6: C++ Programming with Data structures- Practical	5	40	60	100	3
III	24U2CSAT02	Allied 2:Discrete Mathematics	5	25	75	100	4
IV	24U2VBET2A 24U2VBET2B	Value Based Education 2: Human Rights/ Women Rights*	2	-	50	50	1
V	24U2ESKT02	Employability Skills -II	4	-	-	-	-
	-	Sports	2	-	-	-	-
		Total	**36**			**650**	**22**
	SEMESTER – III						
I		Language 1 : Paper III	4	25	75	100	3
II	24U3ENLT03	Language 2 : Functional English III	4	25	75	100	3
III	24U3CSCT07	Core 7: Operating Systems	5	25	75	100	4
III	24U3CSCT08	Core 8: Python Programming	5	25	75	100	4
III	24U3CSCP09	Core 9: Python Programming -Practical	4	40	60	100	4
III	24U3CSAT03	Allied 3: Operations Research	5	25	75	100	4
IV	24U3CSST01	Skill Based Subject 1: JAVA Progamming	3	25	75	100	1
IV	24U3VHWP01	Volunteering Programme: Health and Wellness	2	50	-	50	1
V	24U3ESKT03	Employability Skills -III	4	-	-	-	-
V	24U3BTLT01/ 24U3ATLT01	BasicTamil-I / Advanced Tamil I #	-	-	-	-	-
V	24U3INTR01	InternshipTraining (15 Days)	-	-	-	-	-
V	24U3YYET01	Certificate Course : Yoga for Youth Empowerment	-	-	-	-	-
			36			**750**	**24**
	SEMESTER – IV						

I		Language 1 : Paper IV	4	25	75	100	3
II	24U4ENLT04	Language 2 : Functional English IV	4	25	75	100	3
III	24U4CSCT10	Core 10: Relational Database Management System	4	25	75	100	4
III	24U4CSCT11	Core 11: Data Communications and Networks	4	25	75	100	4
III	24U4CSCP12	Core 12: Relational Database Management System -Practical	4	40	60	100	4
III	24U4CSAT04	Allied 4: Business Accounting	5	25	75	100	4
IV	24U4CSSP02	Skill Based Subject 2: JAVA Progamming - Practical	3	40	60	100	1
IV		Non Major Elective :	2	-	50	50	1
V	24U4ESKT04	Employability Skills -IV	4	-	-	-	-
V	24U4BTLT02/ 24U4ATLT02	Basic Tamil-II / Advanced Tamil II #	-	-	-	-	-
V	24U4OLCT01	Online Course (SWAYAM/NPTEL/SPOKEN TUTORIAL)	-	-	-	-	-
	-	Sports	2	-	-	-	-
		Total	**36**			**750**	**24**
	SEMESTER – V						
III	24U5CSCT13	Core 13: PHP and MySQL	5	25	75	100	4
III	24U5CSCP14	Core 14: PHP and MySQL - Practical	5	40	60	100	4
III	24U5CSCT15	Core 15: Software Engineering and Testing	5	25	75	100	4
III	24U5CSCT16	Core 16: Cyber Security	5	25	75	100	4
III		Elective 1	5	25	75	100	4
III		Elective 2	5	25	75	100	4
V	24U5ESKT05	Employability Skills -V	4	-	-	-	-
	-	Library Work	2	-	-	-	-
		Total	**36**			**600**	**24**
	SEMESTER – VI						
III	24U6CSCT17	Core 17: Machine Learning Techniques	5	25	75	100	4
III	24U6CSCP18	Core 18: Machine Learning -Practical	5	40	60	100	4
III	24U6CSCT19	Core 19: R Programming	5	25	75	100	4
III	24U6CSCV20	Core 20:Project Viva voce	5	80	20	100	4
III		Elective 3	5	25	75	100	4
III		Elective 4	5	25	75	100	4
V	24U6ESKT06	Employability Skills -VI	4	-	-	-	-
V	24U6EXAY01	Extenstion Activity	-	-	-	-	-
	-	Library Work	2	-	-	-	-
		Total	**36**			**600**	**24**
		Overall Total	**216**			**4000**	**140**

* Answer to the question may be given in Tamil/English.

The students who have not studied Tamil in Higher Secondary course and not opted for Tamil under Language I in the degree programme have necessarily to study Basic Tamil for 2 hours / week during III and IV semesters after their regular college working hours.

CURRICULUM STRUCTURE

S.No.	Courses	No.of.Papers	Credits
1	Language 1: Tamil/Hindi/Malayalam/French/Telugu/Kannada	04	12
2	Language 2: Functional English	04	12
3	Core	20	78
4	Allied	04	16
5	Elective	04	16
6	Value Based Education	02	02
7	Skill Based Subject	02	02
8	Non Major Elective	01	01
9	Volunteering Programme	01	01
10	Certificate Course	01	-
11	Online Course	01	-
12	Internship (15 Days)	01	-
13	Extension Activity	01	-
14	Employability Skills	06	-
15	Basic Tamil/Advanced Tamil	02	-
	Total	**54**	**140**

Semester - I		
List of Languages		
S.No	**Course Code**	**Name of the Course**
1.	24U1TALT01/24U1HILT01/24U1FRLT01/ 24U1MLLT01/24U1KALT01/24U1TELT01	Tamil I /Hindi I /French I /Malayalam I/ Kannada I/ Telugu I
Semester - II		
List of Languages		
S.No	**Course Code**	**Name of the Course**
1.	24U2TALT02/24U2HILT02/24U2FRLT02/ 24U2MLLT02/24U2KALT02/24U2TELT02	Tamil II /Hindi II / French II / Malayalam II /Kannada II/Telugu II
Semester - III		
List of Languages		
S.No	**Course Code**	**Name of the Course**
1.	24U3TALT03/24U3HILT03/24U3FRLT03/ 24U3MLLT03/24U3KALT03/24U3TELT03	Tamil III/Hindi III /French III / Malayalam III/Kannada III /Telugu III
Semester - IV		
List of Languages		
1.	24U4TALT04/24U4HILT04/24U4FRLT04/ 24U4MLLT04/24U4KALT04/24U4TELT04	Tamil IV/Hindi IV /French IV / Malayalam IV/Kannada IV/Telugu IV

Semester - IV		
List of Non Major Elective		
S.No	**Course Code**	**Name of the Course**
1.	24U4NMET1A	Food Science and Nutrition
2.	24U4NMET1B	Naattu Maruthuvamum muligai Chedigalum
3.	24U4NMET1C	Floriculture
4	24U4NMET1D	Organic Farming and Mushroom Cultivation

Semester – V (Elective I)		
List of Elective Courses		
S.No	**Course Code**	**Name of the Course**
1.	24U5CSET1A	Foundation of Data Science
2.	24U5CSET1B	Cognitive Analytics
3.	24U5CSET1C	Internet of Things
4.	24U5CSET1D	Block Chain Technology
Semester – V (Elective II)		
List of Elective Courses		
S.No	**Course Code**	**Name of the Course**
1.	24U5CSET2A	E-Commerce
2.	24U5CSET2B	Software Project Management
3.	24U5CSET2C	Data Science
4.	24U5CSET2D	Bio Informatics
Semester – VI (Elective III)		
List of Elective Courses		
S.No	**Course Code**	**Name of the Course**
1.	24U6CSET3A	Open Source System
2.	24U6CSET3B	Virtual Reality and Augmented Reality
3.	24U6CSET3C	Natural Language Processing
4.	24U6CSET3D	Cloud Computing and Azure
Semester – VI (Elective IV)		
List of Elective Courses		
S.No	**Course Code**	**Name of the Course**
1.	24U6CSET4A	Mobile and Pervasive Computing
2.	24U6CSET4B	Computational Intelligence
3.	24U6CSET4C	Pattern Recognition and Analogy Detection
4.	24U6CSET4D	Wireless Networks

EXTRA CREDIT COURSES		
Course Code	**Subjects**	**Credits**
2024ECC001	சுற்றுலா வளர்ச்சி	2
2024ECC002	இதழியல் கலை	2
2024ECC003	நாட்டுப்புறவியல்	2
2024ECC004	கணிப்பொறியில் தமிழ்	2
2024ECC005	தமிழக வரலாறும் மக்கள் பண்பாடும்	2
2024ECC006	தமிழ் இலக்கிய வரலாறு	2
2024ECC007	New Media	2
2024ECC008	Proof reading And Copyediting	2
2024ECC009	Personality Development	2
2024ECC010	Technical Writing	2
2024ECC011	An Introduction To Psychology	2
2024ECC012	Astronomy	2
2024ECC013	Fuzzy Mathematics	2
2024ECC014	Operation Research	2
2024ECC015	Mathematics For Professional Courses	2
2024ECC016	Multimedia And Its Applications	2
2024ECC017	Management Information System	2
2024ECC018	Theory Of Computation	2
2024ECC019	Oops With Java Programming	2
2024ECC020	Programming in C	2
2024ECC021	Internet of Things	2
2024ECC022	Web Technology And Its Applications	2
2024ECC023	Network Security	2
2024ECC024	Mobile And Wireless Technology	2
2024ECC025	Cloud Computing	2
2024ECC026	Cross Culture Management	2
2024ECC027	Indian Economy And Trade Dependencies	2
2024ECC028	Export Marketing	2
2024ECC029	International Trade & Forex	2
2024ECC030	Brand Management	2
2024ECC031	Stress Management	2
2024ECC032	Risk And Insurance In International Trade	2
2024ECC033	Retail Marketing	2
2024ECC034	Export And Import Procedures	2

2024ECC035	Logistics And Supplychain Management	2
2024ECC036	Quality Management	2
2024ECC037	Management of Small And New Enterprises	2
2024ECC038	Tourism Management	2
2024ECC039	Event Management	2
2024ECC040	Hospitality Management	2
2024ECC041	Consumer Behaviour	2
2024ECC042	Human Resource Management	2
2024ECC043	Principles And Practice Of Marketing Services	2
2024ECC044	Consumer Marketing	2
2024ECC045	Marketing of Health Services	2
2024ECC046	International Banking	2
2024ECC047	E-Commerce	2
2024ECC048	International Accounting	2
2024ECC049	Corporate Social Responsibility And Governance	2
2024ECC050	Enterprise Resource Planning	2
2024ECC051	***கல்வியும் சமுதாயமும்***	2
2024ECC052	அறிவியல் தமிழ்	2
2024ECC053	***பெண்ணியம்***	2
2024ECC054	தமிழக வரலாறு - 1	2
2024ECC055	தமிழகவரலாறு -2	2
2024ECC056	Manitha Vaalkaiyum Gandhiadigalum	2
2024ECC057	V.O.Chidambarathin Vaalkai Varalaaru	2
2024ECC058	Nethaji Subash Chandrabosin Vaalkai Varalaaru	2
2024ECC059	A.P.J.Abdul Kalamin Vaalkai Varalaaru	2
2024ECC060	E.V.R Periyarin Vaalkai Varalaaru	2
2024ECC061	Kamarajarin Vaalkai Varalaaru	2
2024ECC062	Vallabai batel Vaalkai Varalaaru	2
2024ECC063	Dr.Muthulakshmi Reddy-in Vaalkai Varalaaru	2
2024ECC064	Bharathiyarin Vaalkai Varalaaru	2
2024ECC065	An Introduction to Constitution of India	2
2024ECC066	Consumer Affair	2
2024ECC067	Personal and Family Ethics	2
2024ECC068	Professional and Social Ethics	2
2024ECC069	National and Global Ethics	2

SEMESTER I

SEMESTER I

Programme Code :	B.Sc CS	Programme Title	Bachelor of Science (Computer Science)	
			Batch:	2024-2027
Course Code :	24U1TALT01	Title : Tamil - I	Semester	1
Hrs/week	4		Credits	3

நோக்கம்

1. சமூகம் பற்றிய சிந்தனைகளை, விழிப்புணர்வுகளைத் தமிழ்ப் படைப்பிலக்கியங்கள் மூலம் ஏற்படுத்துதல்.
2. தற்கால இலக்கியங்களின் பாடுபொருள், மக்களின் வாழ்க்கை, நெறிமுறைகள் பற்றி மாணவர்களை உணரச் செய்தல்.
3. மாணவர்களின் வாசிக்கும் ஆற்றலை மேம்படுத்துதல், இன்றைய சமுதாய நிகழ்வுகளைப் பிரதிபலிக்கும் பல்வேறு வகையான நூல்களைக் கற்றுணர்தல்.
4. மாணவர்கள் பிழையில்லாமல் எழுதுவதற்கும், பேசுவதற்கும், கருத்துப்பரிமாற்றத்திற்கும் எவ்வாறு இலக்கணம் உதவுகின்றன என்பதை அறியச் செய்தல்.
5. தமிழ் இலக்கிய வரலாற்றில் புதுக்கவிதை, மரபுக் கவிதை மற்றும் உரைநடையின் வளர்ச்சி நிலைகளை அறியச் செய்தல்.

பாடப்பகுதி கற்றலின் வெளிப்பாடு - Course Outcome (CO)

CO Number	CO Statement
CO1	தமிழ் கவிதைகளில் வாழ்க்கை முறை, சமூக சிந்தனைகள் பற்றிய கருத்துக்களை மாணவர்கள் அறிந்து கொள்ளல்.
CO2	மனிதநேயம், சமுதாயத்தை நேசித்தல், உயரிய குறிக்கோளுடன் வாழ மாணவர்கள் கற்றுணர்தல்.
CO3	இன்றைய சமுதாய நிகழ்வுகளைப் பிரதிபலிக்கும் தற்கால இலக்கிய வகைகளான உரைநடை நூல்களை மாணவர்கள் அறிந்து கொள்ளல்
CO4	கருத்து பரிமாற்றத் திறனுக்கு அடிப்படையாக உள்ள இலக்கணத்தைத் தெரிந்து கொள்ளல். பிழைபட்ட சொற்கள்,தொடர்களை மாணவர்கள் அறிந்து கொள்ளல்.
CO5	புதுக்கவிதை, மரபுக் கவிதை, உரைநடை போன்றவற்றின் தோற்றம் வளர்ச்சி நிலைகளை மாணவர்கள் அறிந்து கொள்ளல்.

நிரல் விளைவுகளைக் கொண்ட வரைபடம்

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

பாடத்திட்டம்

அலகு : 1 செய்யுள் திரட்டு : கவிதைகள் -1 (10 மணிநேரம்)

1. பாரதியார் - வேண்டுவன, மஹாசக்திக்கு விண்ணப்பம்(பாரதியார் கவிதைகள்)
2. பாரதிதாசன் - வாழ்வில் உயர்வுகொள்(பாரதிதாசன் கவிதைகள்)
3. கவிமணி - வாழ்க்கைத் தத்துவங்கள், ஒற்றுமை (மலரும் மாலையும்)
4. சிற்பி பாலசுப்பிரமணியம் - என் எழுத்துக்கள் (கவிதை வானம்)
5. புவியரசு - ஒரு முக்கிய அறிவிப்பு (ஒரு முக்கிய அறிவிப்பு)

அலகு : 2 செய்யுள் திரட்டு : புதுக் கவிதைகள் -2 (10 மணிநேரம்)

1. அப்துல் ரகுமான் - மாதிரி (ஆலாபனை)
2. வைரமுத்து - மரங்களைப் பாடுவேன் (வைரமுத்து கவிதைகள்)
3. தாமரை - ஒட்டடை (ஒரு கதவும் கொஞ்சம் கள்ளிப்பாலும்)
4. முத்துக்குமார் - வெட்கத்தை நிரப்பி ஒரு கடிதம் (பட்டாம்பூச்சி விற்பவன்)
5. ஆண்டாள் பிரியதர்ஷினி - வேர்வையைச் சாப்பிடுங்க (கடவுளின் கடைசி நாள்)
6. திலிப் குமார் - எனது மௌனங்கள் (ஒத்திகை)

அலகு 3 உரைநடை (12 மணி நேரம்)

1. நு.சித்ரா - அறநெறி முதற்றே அரசின் கொற்றம் (சங்க இலக்கிய ஆய்வு நெறிகள்)

2. வெ. இன்சுவை - பெண்ணின் பெருந்தக்க (சிந்தனைச் சிதறல்கள்)
3. வெ.இறையன்பு - ஆதார நாதம் (வாழ்க்கையே ஒரு வழிபாடு)
4. சு.கி.சிவம் - கம்பனின் தனிச்சிறப்பு (கம்பன் நேற்று இன்று நாளை)
5. ஆ.புனிதா - இன்றைய நடைமுறை வாழ்க்கையில் பெண்ணியச் சிந்தனைகள்(பெண்ணியம்)

அலகு 4 இலக்கணம், பயன்பாட்டுத்தமிழ் **(08 மணி நேரம்)**

1.தமிழ் மரபும், பிற மரபும் (நல்ல தமிழ்)
2.பிழைபட்ட சொல்லாட்சி, தொடரமைப்பு (நல்ல தமிழ்)
3.நன்னூல் - மாணாக்கர் இலக்கணம் ((முதல், இடை, கடை)

அலகு 5 இலக்கிய வரலாறு **(08 மணி நேரம்)**

1. மரபுக் கவிதையின் தோற்றமும் வளர்ச்சியும். (தமிழ் இலக்கிய வரலாறு)
2. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும். (தமிழ் இலக்கிய வரலாறு)
3. உரைநடையின் தோற்றமும் வளர்ச்சியும். (தமிழ் இலக்கிய வரலாறு)

பாடநூல்:

வ. எண்	ஆசிரியர் பெயர்	நூலின் பெயர்	வெளியீடு	ஆண்டு / பதிப்பு
1	தமிழ்த்துறை	பொதுத்தமிழ் - I	கோவை கலைமகள் கலை அறிவியல் கல்லூரி	2023

பார்வை நூல்கள்

வ.எண்	ஆசிரியர் பெயர்	நூலின் பெயர்	வெளியீடு	ஆண்டு - பதிப்பு
1	புலவர் வெற்றியழகன்(தொ. ஆ),	பாரதியார் கவிதைகள்	ராமையா பதிப்பகம், சென்னை.	முதற் பதிப்பு: ஏப்ரல் - 2008
2	தொ.பரமசிவன் (ப.ஆ)	பாரதிதாசன் கவிதைகள்	நியூ செஞ்சுரி புக் ஹவுஸ், சென்னை.	மூன்றாம் பதிப்பு: டிசம்பர் - 1998
3	வித்துவான் சிவ கன்னியப்பன்	மலரும் மாலையும்	பூம்புகார் பதிப்பகம், சென்னை.	முதற் பதிப்பு: செப்டம்பர் - 2002
4	சிற்பி பாலசுப்ரமணியம்	கவிதை வானம்(தொகுப்பு)	மணிவாசகர் பதிப்பகம்,சென்னை.	முதற் பதிப்பு: பிப்ரவரி - 2013
5	புவியரசு	ஒரு முக்கிய அறிவிப்பு	விஜயா பதிப்பகம், கோவை.	இரண்டாம் பதிப்பு: டிசம்பர் - 2005.
6	அப்துல் ரகுமான்	ஆலாபனை	நேசனல் பப்ளிஷர்ஸ், சென்னை.	நான்காம் பதிப்பு: ஏப்ரல் - 2003
7	வைரமுத்து	வைரமுத்து கவிதைகள்(தொகுப்பு)	சூர்யா வெளியீடு, சென்னை.	பனிரெண்டாம் பதிப்பு: நவம்பர் - 2000
8	தாமரை	ஒரு கதவும் கொஞ்சம் கள்ளிப்பாலும்	குமரன் பதிப்பகம், சென்னை.	மூன்றாம் பதிப்பு: செப்டம்பர்- 2002
9	முத்துக்குமார்	பட்டாம்பூச்சி விற்பவன்	வம்சி கிராபிக்ஸ் சென்னை.	4 ம் பதிப்பு திசம்பர் 2007
10	ஆண்டாள் பிரியதர்ஷினி	கடவுளின் கடைசி நாள்	குமரன் பதிப்பகம், சென்னை.	முதற் பதிப்பு -2013
11	திலிப்குமார்	ஓத்திகை	நியூ சென்சுரி புக் ஹவுஸ், சென்னை	--
12	டாக்டர் க.வெள்ளிமலை	நல்ல தமிழ்	விஜயா பதிப்பகம். கோவை.	முதல் பதிப்பு: 2006
13	பவநந்தி முனைவர்	நன்னூல்	சைவ சிந்தாந்த நூற்பதிப்பு.	
14	மு.பரமசிவம்	நற்றமிழ் இலக்கணம்	சைவசித்தாந்த பதிப்பகம், திருநெல்வேலி.	முதற் பதிப்பு: 1995.
15	முனைவர் சித்ரா	சங்க இலக்கிய ஆய்வு நெறிகள்	பாரதியார் பல்கலைக்கழகம் கோவை.	முதல் பதிப்பு: ஜனவரி 2018.
16	வெ.இன்சுவை	சிந்தனைச் சிதறல்கள்	விஜயா பதிப்பகம். கோவை.	முதல் பதிப்பு: ஏப்ரல்-2011

17	வெ.இறையன்பு	வாழ்க்கையே ஒரு வழிபாடு	விஜயா பதிப்பகம். கோவை.	முதல் பதிப்பு: டிசம்பர்-2005
18	சுகி.சிவம்	கம்பன் நேற்று இன்று நாளை	வானதி பதிப்பகம். சென்னை.	மூன்றாம் பதிப்பு: ஆகஸ்டு 2003
19	முனைவர்அ.புனிதா	பெண்ணியம்	கலைஞன் பதிப்பகம். சென்னை	முதற் பதிப்பு 2011
20	வல்லிக்கண்ணன்	புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும்	அகரம் பதிப்பகம்,, கும்பகோணம்.	நான்காம் பதிப்பு: ஜூலை - 1999.
21	கா.கோ.வெங்கட்ராமன்	தமிழ் இலக்கிய வரலாறு	கலையக வெளியீடு, திண்டுக்கல்.	இரண்டாம் பதிப்பு: ஜூன் - 2002.
22	மது.ச.விமலானந்தம்	தமிழ் இலக்கிய வரலாறு	முல்லை நிலையம், சென்னை.	2014.

SEMESTER I

Programme Code :	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
			Batch 2024- 2027	
Course Code :	24U1HILT01	Title : Hindi I	**Semester**	1
Hrs/week	4		**Credits**	3

COURSE OBJECTIVE:

- Improves grammatical knowledge
- Will continue to read and learn about articles and think about them
- It is possible to read and understand short stories and understand the thoughts and life of the people of this state
- Translation knowledge and the ability to read and analyze a message are also available

MAPPING WITH PROGRAMME OUTCOMES

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

Syllabus

PART I HINDI PAPER I		
Unit No.		**HOURS**
I	**PROSE : NUTHAN GADYA SANGRAH** Lesson 1 – Bharathiya Sanskurthi - Dr.Rajendra Prsad Lesson 3 – Razia - Ramaviksha Benipuri Lesson 4 – Makreal -Yespal Lesson 5 – Bahtha Pani Nirmala -'AGEYA' Lesson 6 – Rashtrapitha Mahathma Gandhi - Mukthibodh Lesson 9 – Ninda Ras - Harishankar Parsayi.	**15**
II	**NON DETAILED TEXT SHORT STORIES: KAHANI KUNJ** 1. Pareksha – Premchand 2. Mamtha - Jayashankar Prasad 3. Apna paraya - Jaynendrakumar 4. Admi ka bachcha - Yespal 5. Bolaram ka jeev - Harishankar Parsayi 6. Vapasi - Mannu Bhandari	**15**
III	**GRAMMAR : SHABDHA VICHAR ONLY** (NOUN, PRONOUN, ADJECTIVE, VERB, TENSE, CASE ENDINGS) Theoretical & Applied.	**10**
IV	**TRANSLATION : English – Hindi only.** ANUVADH ABHYAS – III (1-15 lessons only)	**10**
V	**COMPREHENSION:** 1 Passage from ANUVADH ABHYAS–III (16-30)	**10**
	TOTAL	**60**

TEXT BOOKS

S. No	Author Name	Title of the Book	Publisher	Year / Edition
1	Editor : Jayaprakash	Nuthan gadya sangrah	Sumitra prakashan sumitravas	2009
2	Editor :V.P. Amithab	Kahani kunj	Govind Prakashan Sadhar Bagaar	2011

Reference Books:NAVEEN HINDI Vyakaran, 2002, Dakshin Bharat Hindi Prachar Sabha, Chennai – 600 017

Web Link: https://hi.wikipedia.org/wiki/
https://en.wikipedia.org/wiki/Premchand
http://hindigrammar.in/

Means of Curriculum Delivery : Chalk & Talk, Lecture, Group Discussion, Seminar, Assignment, Google classroom.

SEMESTER I

Programme Code :	B.SC CS	**Programme Title**	Bachelor of Science (Computer Science)	
			Batch – 2024 - 2027	
Course Code :	24U1FRLT01	**PART 1 - FRENCH 1**	**Semester**	1
Hrs/week	4		**Credits**	3

Course Objectives

To understand, speak, read and write simple, standard speech which is very slow and is carefully articulated and can recognize familiar words and very basic phrases concerning themselves, their family and immediate concrete surroundings when people speak slowly and clearly

Course Outcome

S.No	Course Outcome	Blooms Level
CO1	Comprehend basic vocabulary	K1
CO2	Understand basic syntax and grammar patterns	K2
CO3	Converse slowly in known situations	K3
CO4	Translate small basic sentences	K4

Mapping with Programme Outcomes:

CO /PO	PO 1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

SYLLABUS

Unit No.	Topics
1	Etape 0
	Etape 1 (Lecons 1 - 3)
2	Etape 2 (Lecons 1 - 3)
3	Etape 3 - Leçons 1 - 2
4	Etape 3 – Leçon 3
5	Etape 4 – Leçon 1
	Etape 4 – Leçons 2 - 3
Etapes 0 to 4, Pages 11 to 62	

TEXT BOOKS

S. No	Author Name	Title of the Book	Publisher	Year / Edition
1	Céline Himber, Corina Brillant, Sophie Erlich	**Adomania 1 – Methode de francais**	HACHETTE FLE	-

Reference: Latitudes 1
Author: Yves Loiseau, Régine Merieux
Publisher: French and European Publications Inc
Available at: GOYAL publishers and distributors Pvt Ltd, New Delhi (9810322459)

SWAYAM : https://swayam.gov.in/nd2_cec19_lg04/preview by Prof. NirupamaRastogi (Retd) English and Foreign Languages University, Hyderabad

Means of Curriculum Delivery : Chalk & Talk, Lecture, Group Discussion, Seminar, Assignment, Google classroom.

SEMESTER I

Programme Code :	B.SC CS	**Programme Title**	Bachelor of Science (Computer Science)	
			Batch 2024 - 2027	
Course Code :	24U1MLLT01	**Title :MALAYALAM PAPER I**	**Semester**	I
Hrs/week	4		**Credits**	3

COURSE OBJECTIVE:

- Improves grammatical knowledge
- Will continue to read and learn about articles and think about them
- It is possible to read and understand short stories and understand the thoughts and life of the
- people of this state
- Translation knowledge and the ability to read and analyze a message are also available
- Translation knowledge and the ability to read and analyze a message are also

COURSE OUTCOME

S.No	COURSE OUTCOME	
CO1	Understand the text styles and grammatical elements	K1
CO2	Discuss the content of a reading passage	K1
CO3	Develop an interest in the appreciation of short stories	K2
CO4	Comprehend the grammatical structures and sentence making	K3
CO5	Understand the language and developing English to Malayalam translation skill	K4

Mapping with Programme Outcomes

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

SYLLABUS:

Unit No.		HOURS
I	Novel - PathummayudeAadu - Vaikam Muhammed Basheerr	**15**
II	Novel- - PathummayudeAadu - Vaikam Muhammed Basheerr	**15**
III	Short Story - EntePriyappetaKadhakal – Akbar Kakkattil)	**10**
IV	Short Story - EntePriyappetaKadhakal – Akbar Kakkattil)	**10**
V	Composition &Translation(English to Malayalam)	**10**

TOTAL	**60**

TEXT BOOKS

S. No	Author Name	Title of the Book	Publisher	Year / Edition
1	PathummayudeAadu	Novel	Vaikam Muhammed Basheer	-
2	EntePriyappetaKadhakal	Short Story	Akbar Kakkattil	-

Reference Books:

1.Malayala Novel SahithyaCharitram-K.M.Tharakan (N.B.S.Kottayam)
2.Cherukatha Innale Innu-M.Achuyuthan (D.C Books, Kottayam)
3.Sahithya CharitramPrasthanangalilude- Dr.K.M George, (D.C.Books Kottayam)
4. MalayalaSahithyavimarsam-Sukumar Azheekode (D.C.books)

Means of Curriculum Delivery : Chalk & Talk, Lecture, Group Discussion, Seminar, Assignment, Google classroom.

SEMESTER I

Programme Code :	B.SC CS	**Programme Title**	Bachelor of Science (Computer Science)	
			Batch – 2024 – 2027	
Course Code :	24U1TELT01	Title : Telugu I	**Semester**	I
Hrs/week	4		**Credits**	3

PAPER – I CLASSICAL & MODERN POETRY

Course Objectives:

To enable the students to learn and understand the Ancient and Medieval TeluguLiterature and Language and to make the student acquire knowledge of the development of Ancient and Medieval stages of Telugu Literature

Mapping with Programme Outcomes

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

SYLLABUS

1. Udankopakhyanamu, Sri Madandhra Maha Bharathamu Adi parvamu, Prathamaswasamu
2. Siriyaluni Katha, Basava Puranamu
3. Vamana Charithamu, Sri Madandhra Maha Bhagavathau Astama Skandamu
4. Pravaruni Vritthanthamu, Manu Charithra Prathamaswasamu
5. Purnamma, Muthyalasaralu by Gurajada Apparao
6. Desacharithralu, Mahaprasthanamu, by Sri sri

Reference:

1. verses 94-120 by Nannaya
2. Pages 100-102 by Palkuriki Somanatha
3. verses 570 – 630, by Pothana
4. verses 49 – 79 by Peddana
5. Purnamma, Muthyalasaralu by Gurajada Apparao
6. Desacharithralu, Mahaprasthanamu, by Sri sri.

Means of Curriculum Delivery : Chalk & Talk, Lecture, Group Discussion, Seminar, Assignment, Google classroom

SEMESTER I

Programme Code :	B.SC CS	**Programme Title**	Bachelor of Science (Computer Science)	
			Batch : 2024- 2027	
Course Code :	24U1KALT01	Title : Kannada I	**Semester**	1
Hrs/week	4		**Credits**	3

Title of the Course: Paper-I, Ancient and Medieval Poetry

COURSE OBJECTIVES:

- To expose students to the Ancient and Medieval Kannada Literature. They learn about the Literary Heritage, Culture, Religic developments etc. Also to make them to understand and appreciate Old Literature a representative collection of Ancient and Medieval poetry of about 100 pages is prescribed. General understanding, appreciation of poetry, poetical beauty, the language of the poetry etc., are to be taught.

COURSE OUTCOME

- To understand ancient literary text & Medieval Poetry in Kannada
- To describe text and context of ancient literature and Medieval Texts in Kannada
- To evaluate the difference between the ancient style of writing.
- To describe about the style of the authors.
- To narrate the poetry and improve in understanding the poetry

Mapping with Programme Outcomes:

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

SYLLABUS

Units	
I	Introduction to Ancient Kannada Literature
II	Prescribed text Lessons 1,2,3,4
III	Prescribed text Lessons 5,6,7,8
IV	Prescribed text Lessons 9,10,11 and 12
V	Critical appreciation of Ancient and Medieval Poetry-their contents and expression

Reading List (Print and Online)

1. Parakrama dhavalana Parakramam –Pampa
2. Bheema Dhuryodhaniyam-Ranna
3. Vachanagalu
4. Bedara Kannappana ragale-Harihara
5. Sudugadu Hageyayte-Raghavankha
6. Haydudu tale nabha stalake-Kumaravyasa
7. Maaniniyariche-Kumaravyasa
8. Maye meredalu baala leeleyali-Chamarasa.

9. Ragi vreehi samvada-Kanakadaasa
10.Karubariddoorinde kaadollithu-Lakshmisha
11.Garathiya Haadugalu-Jaanapad geethegalu
12. Govina haadu

Recommended Texts :

Pracheena Kavya Marga-3, H. Nagarajaih & Others (Ed), 1995, Prasaranga, Bangalore University, Bangalore-56

Means of Curriculum Delivery : Chalk & Talk, Lecture, Group Discussion, Seminar, Assignment, Google classroom

SEMESTER-I

Programme Code	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code:	24U1ENLT01	Language II-Functional English – I	**Batch**	2024-2027
			Semester	I
Hrs/ Week	4 Hrs		**Credits**	3

COURSE OBJECTIVES:

- To enable the students to understand the basic grammar in English.
- To acquaint students with the structure and strategies of conversation
- To make the students appreciate the significant works and style of prose
- To develop the skills of speaking and writing without flaws.
- T develop an interest in the minds of the students to enjoy and appreciate the literary works in English.

COURSE OUTCOMES (CO):

On Successful Completion of the course the students will be able to

CO Number	**CO Statement**
CO1	Speak and Write without committing grammatical errors.
CO2	Read and appreciate simple literary works.
CO3	Deal with various conversational situations with confidence.
CO4	Recognize the nuances of English language and attempt creative writing.
CO5	Enumerate in flawless English their understanding of societal concerns.

MAPPING WITH PROGRAMME OUTCOMES

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	M	M	L	M	H	H	M	H	M	H	H	H
CO2	H	M	M	M	M	H	M	M	M	M	M	H
CO3	H	L	M	L	H	M	H	H	H	H	M	M
CO4	H	L	M	L	H	M	H	H	H	H	M	M
CO5	H	M	H	H	M	H	M	H	L	M	H	L

SYLLABUS

UNIT –I: POETRY **(Hours-10)**

1. The Lotus Eaters - Alfred Lord Tennyson
2. Menelaus and Helen - Rupert Brooke
3. Night of the Scorpion - Nizzim Ezekiel

UNIT- II: PROSE **(Hours-10)**

1. My Vision for India - Dr. A. P. J. Abdul Kalam
2. A Speech by N. R. Narayana Murthy - N. R. Narayana Murthy
3. On Travel by Train- J.B.Priestley

UNIT- III: SHORT STORY **(Hours-10)**

1. The Happy Prince - Oscar Wilde
2. An Astrologer's Day - R. K. Narayan
3. The Blue Bouquet - Octavio Paz

UNIT-IV-Grammar and Vocabulary **(Hours-10)**

1. Creating antonyms using Prefixes
2. Changing words using suffixes
3. Framing simple sentences
4. Modals

5. Phrasal Verbs

UNIT- V- Composition **(Hours-10)**

Gap filling exercises, Note making, Email Writing. Essay Writing Comprehension Passages.

TEXT BOOKS:

Recent editions of the following books only are recommended

S. No	Name of the Author	Title of the Book	Publisher	Year /Edition
1	A.G.Xavier	An Anthology of Popular Essays and Poems	Macmillan Indian Limited	2001
2	Prof. A.E.Subramanian	Gifts to Posterity- An Anthology of Modern Short Stories	Chitra Publications, Chennai	2016

REFERENCE BOOKS:

S. No	Name of the Author	Title of the Book	Publisher	Year /Edition
1	N.Krishnaswamy	Modern English- A Book of Grammar Usage and Composition	Macmillan Indian Limited	2009
2	Prof.K.Ramappa, Retd.	Essential English Grammar Usage & Composition	M. I. Publications	2017
3.	Adibah Amin, Rosemary Eravelly, Farida J Ibrahim	Grammar Builder Level Volume 1	Cambridge University Press	2005

Means of Curriculam Delivery : Lecture, Group Learning, Seminar, Assignement, Google Class Room

SEMESTER-I

Programme Code	B.Sc CS	**Programme Title**	Bachelor of Computer Science	
Course Code	24U1CSCT01	**Core 1:** C Programming	**Batch**	2024-2027
			Semester	I
Hrs/week	5 Hrs		**Credits**	4

COURSE OBJECTIVES

- To enable the Students to provide the knowledge on problem solving techniques and algorithm
- Fundamentals and skills that can be applied to the problems in other areas.
- To clearly understand decision making and branching concepts with various statements.
- To know about the concept of arrays, strings and functions with its various operations.
- To learn about the concept of structure, pointers and file management.
- To know about the Basic Flow Chart design and represents algorithm workflow.

COURSE OUTCOMES (CO)

On the successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Define the basic concepts of Problem solving and algorithms
CO2	Explain the loops and decision making statements to solve the problem
CO3	Apply different operations on arrays
CO4	Use functions to solve the given problem
CO5	Discuss about file system and operations on files

MAPPING WITH PROGRAMME OUTCOMES

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

SYLLABUS

UNIT - I **(Hours : 12)**

Introduction to Computer Problem Solving: Problem Solving aspects-Top down design-Implementation of Algorithms- Program verification - Efficiency-Analysis of Algorithm. Flow Chart: Building Blocks – Common symbols- Diagramming.

UNIT - II **(Hours : 12)**

Overview of C - Introduction – Structure of C - Character set - C tokens - Keyword & Identifiers - Constants - Variables - Data types - Declaration of variables - Assigning values to variables - Defining Symbolic Constants - Operators – Arithmetic Expressions: - Evaluation of expression - Type conversion in expression - operator precedence & associative.

Decision Making and Branching - Decision making with IF statement - simple IF statement - The IF ELSE Statement - Nesting of IF ...ELSE statements - The ELSE IF ladder - The switch statement – The GOTO statement -- Decision Making and Looping - The WHILE statement - The DO statement - The FOR statement – Jumps in Loop.

UNIT - III **(Hours : 12)**

Arrays - One Dimensional - Two Dimensional - Multidimensional arrays - Character string Handling - Declaring and initializing string variables - String: Introduction- Standard Functions. Functions: User - defined Functions - Need for user Defined functions - A multi function program - - Return values and their types - Calling a function . Types of Functions :No Arguments and no return values - Arguments but no return values - Arguments with return values - Handling of non-integer functions – Recursion

UNIT - IV **(Hours : 12)**

Structure : Structure definition - Giving values to members – Structure initialization - comparison of structure variables - Arrays of structures - Structures within structures- size of structures-Pointers to structures. Pointers – Introduction-Features of Pointers - Declaring and initializing pointers - Accessing a variable through its pointers - pointers and arrays - pointers and character strings.

UNIT - V **(Hours : 12)**

File management in C – Concept of files - Defining and opening a file - closing file - I/O operations on files – Predefined streams – Stream manipulation- Error handling during I/0 operations - Random access to files - Command line arguments - The Pre-processor.

TEXT BOOKS

S.No	Author Name	Title of the Book	Publisher
1.	E. Balagurusamy	Programming in ANSI C	Tata Mc. Graw Hill, Fifth Edition (reprint),
2.	R.G.Dromey	How to Solve it by Computer	Prentice Hall of India, Delhi

WEBSITE REFERENCES

- http://www.cprogramming.com/tutorial.html
- http://www.eskimo.com/~scs/cclass/notes/top.html
- http://computer.howstuffworks.com/c.htm
- http://www.iu.hio.no/~mark/CTutorial/CTutorial.html
- http://www.di-mgt.com.au/cprog.html
- https://www.lucidchart.com/pages/landing/flowchart_software

ONLINE COURSE LINK

- https://archive.nptel.ac.in/courses/106/105/106105234/
- https://onlinecourses.nptel.ac.in/noc21_cs02/preview
- https://nptel.ac.in/courses/106105085

SEMESTER I

Programme Code	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code :	24U1CSCT02	**Core 2:** Digital Fundamentals and Architecture	**Batch**	2024-2027
			Semester	I
Hrs/week	5		**Credits**	4

COURSE OBJECTIVES

- To provide a knowledge about the concepts of Computer Fundamentals and enable the students to understand Digital Logic Circuits and Gates.
- To know about number system and binary codes.
- To understand the basics of combinational logic circuits and its operations.
- To know about the sequential circuits and its designing architecture.
- To know about the input -output and memory organizations.

COURSE OUTCOMES (CO):

On the successful completion of the course, students should be able to achieve the following outcomes

CO Number	**CO Statement**
CO1	Apply the principles of number system, binary codes and Boolean algebra to minimize logic expressions
CO2	Acquire knowledge about various logic gates and logic families and analyze basic circuits of these families
CO3	Develop K-maps to minimize and optimize logic functions up to 5 variables
CO4	Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os.
CO5	Evaluate various design alternatives in processor organization

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	L	S	S	S	M	S	M	S	L	L	L	S
CO2	L	S	S	S	M	S	M	S	L	L	L	S
CO3	L	S	S	S	M	S	M	S	L	L	L	S
CO4	L	S	S	S	M	S	M	S	L	L	L	S
CO5	L	S	S	S	M	S	M	S	L	L	L	S

S- Strong M-Medium L-Low

SYLLABUS

UNIT - I **(Hours: 12)**

Introduction to Number System – Binary Codes- Binary, Decimal, Octal and Hexadecimal- Conversions – Binary to Decimal, Binary to Octal, Binary to Hexadecimal (Vice-Versa) – Binary Addition, Multiplication, Division- 1's, 2's, 9's and 10's Complements.

UNIT - II **(Hours: 12)**

BCD Code- Excess3 Code- Gray Code- Arithmetic Circuits: Half Adder, Full Adder,, Half Subtractor- Full Subtractor- Digital Logic: Basic Gates- AND,OR,NAND,NOR, XOR and NOT.

UNIT - III **(Hours: 12)**

Combinational Logic Circuits: Boolean Algebra- Karnaugh Map- Canonical Form- Implicants- Don't Care Combinations- Product Of Sum and Sum Of Product- Sequential Circuits: Flip-Flops, RS, D, JK and T Flip Flops - Multiplexers.

UNIT - IV **(Hours: 12)**

Input-Output Organization: Input- Output Interface, I/O Bus-Interface- I/O Bus Versus Memory Bus - Isolated versus Memory- Mapped I/O- Asynchronous Data Transfer: Strobe Control and Handshaking.

UNIT - V **(Hours: 12)**

Direct Memory Access: DMA Controller, DMA Transfer, Input-Output Processor- CPU-IOP Communication- Memory Hierarchy- Main Memory-Associative Memory- Cache Memory- Hardware Organization- Read and Write Operation.

Recent editions of the following books only are recommended

TEXT BOOKS

S. No	Author Name	Title of the Book	Publisher
1.	V.K. Puri	Digital Electronics Circuits and Systems	Tata Mc. Graw Hill
2.	M.Morris Mano	Digital Electronics Circuits and Systems	Tata Mc. Graw Hill

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publisher
1.	Albert Paul Malvino, Donald P Leach, Goutam Saha	Digital principles and applications	Tata Mc. Graw Hill
2.	S.Salivahanan, S. Arivazhagan	Digital Circuits and Design	Vikas Publishing House Pvt,.Ltd.,
3.	Thomas C.Bartee	Computer Architecture & Logic Design	Tata Mc. Graw Hill

WEBSITE REFERENCES

1. https://www.tutorialspoint.com/computer_fundamentals/computernumbersystem.htm
2. http://www.csd.nutn.edu.tw/Digital%20Fundamentals/ch04.pdf
3. https://www.geeksforgeeks.org/flip-flop-types
4. https://www.allaboutcircuits.com/textbook/digital

SEMESTER I

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	24U1CSCP03	**Core 3:** C Programming - Practical	**Batch** **Semester**	2024-2027 I
Hrs/week	5		**Credits**	3

COURSE OBJECTIVES:

- To enable the students to gain knowledge in developing C Programs for certain specified problems.
- To develop the applications using C Programming language. To apply the concepts like looping, functions, pointers and file types.

COURSE OUTCOMES (CO)

At the end of the practical session, students should be well-versed in

CO Number	**CO Statement**
CO1	Write programs using various data types in C.
CO2	Use various operators and expressions.
CO3	Apply the concept of Arrays, Pointers and strings
CO4	Apply the concept of loops and functional programming
CO5	Use the file handling concepts for maintaining record.

MAPPING WITH PROGRAMME OUTCOMES

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	L	S	S	S	S	S	M	S	L	S	L	S
CO2	L	S	S	S	S	S	M	S	L	S	L	S
CO3	L	S	S	S	S	S	M	S	L	S	L	S
CO4	L	S	S	S	S	S	M	S	L	S	L	S
CO5	L	S	S	S	S	S	M	S	L	S	L	S

S- Strong M-Medium L-Low

SYLLABUS

- Write a C program to explain various data types in C.
- Write a C program using various operators using switch case.
- Write a C program to illustrate the concept of expressions
- Write a C program using Loop & nested loop Statements (for, while, do-while)
- Write a C program to using different dimensions of Array.
- Write a C program to illustrate the concept of Strings.
- Write a C Program to illustrate the concept of functions.
- Write a C Program to store and display data using Structure.
- Write a C Program to demonstrate the concept of Pointers.
- Write a C program to illustrate the concept of file operations.

WEB REFERENCES

1.http://computer.howstuffworks.com/c.html
2.http://www.le.ac.uk/cc/tutorials/c/
3.http://www.cprogramming.com/tutorial.html
4.www.programiz.com/c-programming
5.https://www.coursera.org/course/cprogramming

Means of Curriculum Delivery : Power point presentation, Lab Assignments, Observation

SEMESTER I

Programme Code :	B.Sc. (CS)	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	24U1CSAT01	Allied 1: Numerical Methods and Statistics	**Batch**	2024-2027
			Semester	I
Hrs/week	5 Hours		**Credits**	4

COURSE OBJECTIVES

To enable the Students

- To understand the different Methods of solving numerical, algebraic and Transcendental Equations.
- To find derivatives of various formulae and Integration using numerical differentiation and integrate various functions using numerical integration.
- To have a knowledge of finding numerical solutions of ordinary differential Equations.
- To learn how to calculate various statistical constants.

COURSE OUTCOMES (CO)

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

CO Number	CO Statement
CO1	Find Numerical Solution of Algebraic and Transcendental Equations.
CO2	Solve Simultaneous Linear Algebraic Equations by using different methods.
CO3	Explain the methods of Numerical Differentiation, Integration of various functions and finding Numerical Solution of Ordinary Differential Equation using different methods.
CO4	Calculate the Statistical Constants.
CO5	Explain the concepts of Correlation and Regression and their applications in practical situations

MAPPING WITH PROGRAMME OUTCOMES

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	M	M	S	M	S	L	L	L	M	L	M
CO2	L	M	M	S	M	S	L	L	L	M	L	M
CO3	L	M	M	S	M	S	L	L	L	M	L	M
CO4	L	M	M	S	M	S	L	L	M	S	M	S
CO5	L	M	M	S	M	S	L	L	M	S	M	S

SYLLABUS

UNIT I	**(12 Hrs)** The Numerical Solution of Algebraic and Transcendental Equations –The Bisection method- The method of false position - Newton Raphson method.
UNIT II	**(12 Hrs)** Solution of Simultaneous Linear Algebraic Equations – Gauss Elimination method- Gauss Jordan method- Gauss – Jacobi method- Gauss – Seidel method- Interpolation (For Equal Intervals) Newton's Forward interpolation- Newton's Backward interpolation.

UNIT III	**(12 Hrs)** Numerical Differentiation – Newton's Forward formula, Newton's Backward Formula- Numerical Integration – Trapezoidal Rule- Simpson's one third rule- Numerical solution of Ordinary differential equations – Taylor Method (first order)– Runge-Kutta method (fourth order)
UNIT IV	**(12 Hrs)** Measure of Central Tendency – Mean, Median, Mode - Measure of Dispersion – Range -Quartile Deviation- Standard Deviation and Mean Deviation -problems.
UNIT V	**(12 Hrs)** Correlation Analysis: Concept- Type of correlation - Measure of simple correlation Regression Analysis: concept- Line of regression X on Y- Line of regression Y on X-Relation between correlation and regression No derivation required.

*** Questions in problems carry 100% marks.**

TEXT BOOKS

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publisher
1	P.Kandasamy, K.Thilagavathy, K.Gunavathi	Numerical methods	S.Chand & Company
2	P.A. Navanitham	Business Mathematics and Statistics	Jai publishers

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publisher
1	Dr.M.K. Venkataraman	Engineering MathematicsVolume II	National publishing company
2	R.S.N. Pillai and V. Bhagavathi	Saltatistic Methods	Sultan chand and Sons company
3	P.R.Vittal	Business Mathematics	Margham Publications
4	A.Singaravelu	Numerical Methods	Meenakshi Publications

WEBSITE REFERENCE

1. https://arxiv.org/pdf/0809.0465
2. www.cfm.brown.edu/people/sg/AM35odes.pdf
3. www.maths.manchester.ac.uk/cds/internal/tables/numerical.pdf
4. https://www3.nd.edu/~zxu2/acms40390F12/Lec-7.3.pdf

Means of Curriculum Delivery: Chalk & Talk, Lecture, Group Discussion, Seminar, Assignment, Google classroom.

SEMESTER I

Programme Code :	BSc CS	Programme Title	Bachelor of Computer Science	
Course Code:	24U1VBET01	**மதிப்பு அடிப்படையிலான கல்வி** 1: சுற்றுப்புறச் சூழல் அறிவியல் Value Based Education 1: Environmental Science	**Batch**	2024-2027
			Semester	I
Hrs/ Week	2 Hrs		**Credits**	1

நோக்கம்

- மாணவர்கள் பல்வேறுவகையான இயற்கை வளங்களை புரிந்துகொண்டு அதை பாதுகாப்பது தங்கள் பொறுப்பு என உணரச்செய்தல்
- சூழ்நிலை மண்டலக் கோட்பாடுகள், வகைகள், அதனை சிதைப்போர், சூழ்நிலை மண்டலத்தின் ஆற்றல், அமைப்பு, செயல்பாடுகள் உணவு சங்கிலிகள், சூழ்நிலை கோபுரங்கள் போன்ற பல்வேறு நிலைகளையும், அவற்றின் பாதுகாப்பினையும் மாணவர்களைப் புரிந்துகொள்ளச் செய்தல்.
- பல்லுயிர் பெருக்கம், விளக்கம், மரபியல் வகைப்பாடு, சமுக மேம்பாடு, பல்லுயிர் வேறுபாட்டின் அழிவு, மனிதனுக்கும் வனவிலங்களுக்கும் உள்ள முரண்பாடு, பல்லுயிர் உள் மற்றும் வெளிப்புற பராமரிப்பு ஆகியவற்றை மாணவர்களுக்கு உணரச்செய்தல்.
- சுற்றுச் சூழல் மாசுபாடு, காற்று, நீர், ஒலி மற்றும் வெப்ப மாசுபாடு, வரையரை, காரணங்கள், விளைவுகள், நகர்புற மற்றும் தொழில் துறை கழிவுகள், காரணங்கள, விளைவுகள், கட்டுப்பாட்டு நடவடிக்கைகள், மாசுகளைத் தடுப்பதில் தனி நபர் பங்களிப்பு பற்றி மாணவர்கள் அறிதல்.
- சமுதாயப் பிரச்சனைகளும் சுற்றுச்சூழலும், நீர்பராமரிப்பு முறை, சுற்றுச்சூழல் நெறிமுறைகள், சிக்கல்களும் தீர்வுகளும், சுற்றுப்புறச் சூழல் பாதுபாப்பு சட்டங்கள், மக்கள் விழிப்புணர்வு, களப்பணி அதற்கான வரையறைகளை மாணவர்கள் அறிதல்.

பாடப்பகுதி கற்றலின் வெளிப்பாடு - Course Outcome (CO)

CO Number	CO Statement
CO1	சுற்றுப்புறச்சூழலில் உள்ள பல்வேறு வகையான இயற்கை வளங்களையும் அவற்றைப் பாதுகாப்பதும் தங்கள் பொறுப்பு என உணரச்செய்தல்.
CO2	சூழ்நிலை மண்டலக் கோட்பாடுகள், வகைகள், அதனை சிதைப்போர், சூழ்நிலை மண்டலத்தின் ஆற்றல், அமைப்பு, செயல்பாடுகள் உணவு சங்கிலிகள், சூழ்நிலை கோபுரங்கள் போன்ற பல்வேறு நிலைகளையும், அவற்றின் பாதுகாப்பினையும் மாணவர்கள் உணர்ந்து கொள்ளுதல்.
CO3	பல்லுயிர் பெருக்கம், விளக்கம், மரபியல், சமுக மேம்பாடு, பல்லுயிர் வேறுபாட்டின் அழிவு, மனிதனுக்கும் வனவிலங்களுக்கும் உள்ள முரண்பாடு, பல்லுயிர் உள் மற்றும் வெளிப்புற பராமரிப்பு ஆகியவற்றை மாணவர்களுக்கு உணந்து கொள்ளல்.
CO4	சுற்றுச் சூழல் மாசுபாடு, காற்று, நீர், ஒலி மற்றும் வெப்ப மாசுபாடு, வரையரை, காரணங்கள், விளைவுகள், நகர்புற மற்றும் தொழில் துறை கழிவுகள், காரணங்கள, விளைவுகள், கட்டுப்பாட்டு நடவடிக்கைகள், மாசுகளைத் தடுப்பதில் தனி நபர் பங்களிப்பு பற்றி மாணவர்கள் அறிதல்.
CO5	சமுதாயப் பிரச்சனைகளும் சுற்றுச்சூழலும், நீர்பராமரிப்பு முறை, சுற்றுச்சூழல் நெறிமுறைகள், சிக்கல்களும் தீர்வுகளும், சுற்றுப்புறச் சூழல் பாதுபாப்பு சட்டங்கள், மக்கள் விழிப்புணர்வு, களப்பணி அதற்கான வரையறைகளை மாணவர்கள் அறிந்து கொள்ளச் செய்தல்.

MAPPING WITH PROGRAMME OUTCOMES

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	M	M
CO4	L	S	L	S	L	S	L	M	M	M	S	M
CO 5	S	S	M	M	S	M	L	L	L	L	M	L

Syllabus

Unit	Content
Unit-I	**(6 Hours)** **The Multidisciplinary Nature of Environmental Studies** - Definition, Scope and Importance; Need for public awareness, Natural resources - Forest resources, Mineral resources, Food resources, Energy resources and Land resources. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable life style. சுற்றுச்சூழல் ஆய்வுகளின் பன்முகத் தன்மை - வரையறை, நோக்கம் மற்றும் முக்கியத்துவம் மற்றும் மக்களிடம் விழிப்புணர்வு.இயற்கை வளங்கள் - வன வளங்கள், கனிம வளங்கள், உணவு வளங்கள், ஆற்றல் வளங்கள் மற்றும் நில வளங்கள். இயற்கை வளங்களைப் பாதுகாப்பதில் தனிநபரின் பங்கு. நிலையான வாழ்க்கை முறைக்கு வளங்களை சமமாகப் பயன்படுத்துதல்.
Unit-II	**(6 Hours)** **Ecosystems -** Concept of ecosystem, Structure and Functions of an ecosystem. Producer, Consumer, Decomposers, Energy flow in ecosystem, Ecological succession, food chain, food webs and ecological pyramids. Introduction, types, characteristics, features, structure and functions of forest ecosystem, grass land, desert and Aquatic Ecosystems (ponds, streams, lakes, rivers, oceans and estuaries). **சுற்றுச்சூழல் அமைப்புகள்** - சுற்றுச்சூழல் அமைப்பின் கருத்து, கட்டமைப்பு மற்றும் சுற்றுச்சூழல அமைப்பின் செயல்பாடுகள். உற்பத்தியாளர், நுகர்வோர், சிதைப்பவர்கள், சுற்றுச்சூழல் அமைப்பில் ஆற்றல் ஓட்டம், சுற்றுச்சூழல் தொடர்ச்சி, உணவுச் சங்கிலி, உணவு வலைகள் மற்றும் சுற்றுச்சூழல் பிரமிடுகள். வன சுற்றுச்சூழல், புல் நிலம், பாலைவனம் மற்றும் நீர்வாழ் சுற்றுச்சூழல் அமைப்புகளின் குளங்கள், நீரோடைகள், ஏரிகள், ஆறுகள், பெருங்கடல்கள் மற்றும் முகத்துவாரங்கள்) அறிமுகம், வகைகள் பண்புகள் அம்சங்கள், கட்டமைப்பு மற்றும் செயல்பாடுகள்.
Unit-III	**(6 Hours)** **Biodiversity and its Conservation –** Introduction - Definitions: Genetic, Species and ecosystem diversity. Bio geographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values, Biodiversity at Global, National and local levels. India as a mega-biodiversity nation. Hot spots of biodiversity. Threads of biodiversity: habitat loss, poaching of wild life. Man wild life conflicts. Endangered and endemic species of India. Conservation of biodiversity-insitu and Exsitu conservation of biodiversity. **பல்லுயிர் மற்றும் அதன் பாதுகாப்பு** - அறிமுகம் - வரையறைகள்: மரபணு,இனங்கள் மற்றும் சுற்றுச்சூழல் அமைப்பு பன்முகத்தன்மை. இந்தியாவின் புவியியல் வகைப்பாடு. பல்லுயிர் மதிப்பு நுகர்வு பயன்பாடு, உற்பத்தி பயன்பாடு, சமூக, நெறிமுறை, அழகியல் மற்றும் விருப்ப

	மதிப்புகள்,உலகளாவிய, தேசிய,மாநில மற்றும் ஓரிட அளவில் - இந்தியா - மிக அதிக பல்லுயிர் பெருக்கம் கொண்ட நாடு, பல்லுயிர் பெருக்கத்தின் வேறுபாடு கொண்ட முக்கிய இடங்கள். பல்லுயிர்களின் அழிவு, வாழ்விட இழப்புகள், வனவிலங்குகளை வேட்டையாடுதல், மனிதனுக்கும் வனவிலங்குகளுக்கும் இடையேயான முரண்பாடுகள் - பல்லுயிரின் வேறுபாட்டைப் பராமரித்தல்,பல்லுயிரின உள் மற்றும் வெளிப்புற பராமரிப்பு
Unit-IV	**(6 Hours)** **Environmental Pollution -** Definitions, causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution and Thermal pollution. Solid waste management: causes, effects and control measures of Urban and Industrial wastes. Role of an individual in prevention of pollution. Pollutions case studies. Disaster management: Foods, Earthquake, Cyclone and Landslides. **சுற்றுச்சூழல் மாசுபாடு:** காற்று மாசுபாடு, நீர் மாசுபாடு, மண் மாசுபாடு, ஒலி மாசுபாடு மற்றும் வெப்ப மாசுபாடு ஆகியவற்றின் வரையறைகள், காரணங்கள், விளைவுகள் மற்றும் கட்டுப்பாட்டு நடவடிக்கைகள திடக்கழிவு மேலாண்மை: நகர்ப்புற மற்றும் தொழில்துறை கழிவுகளின் காரணங்கள், விளைவுகள் மற்றும் கட்டுப்பாட்டு நடவடிக்கைகள். மாசுபாட்டைத் தடுப்பதில் தனிநபரின் பங்கு. மாசு வழக்கு ஆய்வுகள். பேரிடர் மேலாண்மை: உணவுகள், பூகம்பம், சூறாவளி மற்றும் நிலச்சரிவுகள் போன்றவை.
Unit-V	**(6 Hours)** **Social issues and the Environment -** Sustainable development, urban problems related to energy, water conservation, rain water harvesting, water shed management. Resettlement and rehabilitation of people. Environmental ethics: issues and possible solution. Climate change, global warming, ocean layer depletion, acid rain, nuclear accident and holocaust, case studies. Consumerism and waste product. Environmental protection Act. Air (prevention and control of pollution) Act. Wild life protection act. Forest conservation Act. Issues involved in enforcement of environmental legislation. Public awareness. Human population and the environment. **சமூக பிரச்சனைகள் மற்றும் சுற்றுச்சூழல்** - நிலையான வளர்ச்சிஇ ஆற்றல் தொடர்பான நகர்ப்புற பிரச்சனைகள், நீர் சேமிப்பு, மழை நீர் சேகரிப்பு, நீர் கொட்டகை மேலாண்மை. மக்களின் மீள்குடியேற்றம் மற்றும் மறுவாழ்வு. சுற்றுச்சூழல் நெறிமுறைகள்: சிக்கல்கள் மற்றும் சாத்தியமான தீர்வு. காலநிலை மாற்றம், புவி வெப்பமடைதல், கடல் அடுக்கு சிதைவு, அமில மழை, அணு விபத்து,நுகர்வோர் மற்றும் கழிவு பொருட்கள். சுற்றுச்சூழல் பாதுகாப்பு சட்டம். காற்று (மாசு தடுப்பு மற்றும் கட்டுப்பாடு) சட்டம். வனவிலங்கு பாதுகாப்பு சட்டம். வன பாதுகாப்பு சட்டம். சுற்றுச்சூழல் சட்டத்தை அமல்படுத்துவதில் உள்ள சிக்கல்கள். பொது விழிப்புணர்வு. **மனித மக்கள்தொகை மற்றும் சுற்றுச்சூழல்** - மக்கள்தொகை வளர்ச்சி, நாடுகளிடையே மாறுபாடு,மக்கள்தொகை வெடிப்பு - குடும்ப நலத் திட்டம், சுற்றுச்சூழல் மற்றும் மனித ஆரோக்கியம், மனித உரிமைகள், மதிப்புக் கல்வி, எச்ஐவி.்.எய்ட்ஸ், பெண்கள் மற்றும் குழந்தைகள் நலன், சுற்றுச்சூழல் மற்றும் மனித ஆரோக்கியத்தில் தகவல் தொழில்நுட்பத்தின் பங்கு, வழக்கு ஆய்வுகள். **களப்பணி** - சுற்றுச்சூழல் சொத்துக்களை ஆவணப்படுத்த உள்;ர் பகுதிக்கு வருகை - ஆறு.்.காடு புல்வெளி, மலை, உள்;ர் மாசுபட்ட தளத்திற்கு வருகை - நகர்ப்புற, கிராமப்புற, தொழில், விவசாயம், பொதுவான தாவரங்கள், பூச்சிகள், பறவைகள் பற்றிய ஆய்வு, எளிய சுற்றுச்சூழல்அமைப்புகளின் ஆய்வு - குளம், ஆறு, மலை சரிவுகள் போன்றவை

பார்வை நூல்

வரிசை. எண்	ஆசிரியரின் பெயர்	நூலின் பெயர்	பதிப்பகம்	பதிப்பு.். ஆண்டு
1	பேரா. ஜே. தர்மராஜ்	சுற்றுச்சூழல் கல்வி	டென்சி பப்ளிகேஷன்ஸ் - சிவகாசி	2004
2	முனைவர் ம. சிவராமன்	அறிவியல் நோக்கில் சுற்றுச்சூழல் கல்வி	புதுச்சேரி கூட்டுறவுப் புத்தகச் சங்கம், புதுச்சேரி	ஏப்ரல் - 2008
3	முனைவர் மலையமான்	சுற்றுச் சூழல்	அன்பு பதிப்பகம் - சென்னை	2008

4	லாயிக் ∴பதே அலி மொழிபெயர்ப்பு எஸ் விநாயகம்	நமது சுற்றுப்புறச் சூழல்	நேஷனல் புக் டிரஸ்ட் - புதுடெல்லி	1994
5	ப. சந்திரசேகரன்	சுற்றுச்சூழல் மாசுபாடு	டி.கே பதிப்பகம், புதுக்கோட்டை	1996
6	Ritu Bir	Environmental Studies	Vayu Education of India, New Delhi	2009
7	Erach Bharucha	Environmental Studies	University Press India Pvt. Ltd	2006
8	Anubha Kaushik & C.P.Kaushik	Perspectives in Environmental Studies	New Age International Publishers, New Delhi	2006
9	Dr. Sivam Varadarajan	Environment (Its Importance and the Imperative)	Pratheepa Publishers, Coimbatore.	2004
10	S.Ranganathan	Environmental Science	Bharathiar University Publication, Coimbatore	2009
11	Joseph C. Daniel	Principles of Environmental Science	Brichisun Publication, Chennai	2004
12	Dr Vishal Rajput	Environmental Science	Vayu Education of India, New Delhi	2011
13	Anil Kuamar De, Arnab Kumar De	Environmental Studies	New Age International Publishers, New Delhi	2004
14	K. Kumaraswamy, A. Alagappa Moses, M.Vasanthy	Environmental Studies	Bharathidasan University, Thiruchirappalli.	2004

SEMESTER-I

Programme Code:	BSc CS	Programme Title	**Bachelor of Computer Science**	
Course Code:	24U1ESKT01	Skill Based Subject 1: Employability Skills - I	**Batch**	2024-2027
			Semester	I
Hrs/ Week	4 Hours		**Credits**	-

COURSE OBJECTIVES:

1. To focus on grammar, mathematical operations, and problem-solving.
2. To understand homophones, homonyms, age-related problems, percentages, profit and loss, and calendar concepts.
3. To enhance self-awareness in conversations, master email writing, error identification, and picture description.

COURSE OUTCOMES (CO):

On successful completion of the course, students will be able to achieve the following outcomes.

CO Number	**CO Statement**
CO1	To enhances communication and problem-solving skills through grammar and fundamental mathematical operations.
CO2	To strengthen understanding of singular/plural forms, prefixes/suffixes, calculating averages, and solving numerical problems efficiently.
CO3	Students delve into the intricacies of homophones and homonyms, along with mastering age-related problem-solving and percentage calculations.
CO4	Apply self-awareness in conversations, email writing skills, and enhance understanding of roots, ratios, and proportions.
CO5	To identify errors, describe pictures effectively, understand profit and loss, and master calendar-related problems

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	H	L	H	M	H	H	M	H	H	M	L	H
CO2	M	L	H	M	H	M	M	H	M	H	H	H
CO3	H	M	H	M	M	H	M	L	H	H	H	M
CO4	M	H	M	H	L	L	H	M	L	M	M	L
CO5	M	L	M	L	H	M	H	H	M	L	M	L

SYLLABUS

UNIT-I

Parts of Speech-Tenses-Simplification-HCF and LCM of Numbers-Square Roots and Cube

UNIT- II

Singular and Plural-Prefix and Suffix- Average-Problems on Numbers

UNIT- III

Homophones-Homonyms- Problems on Ages-Percentage-

UNIT- IV

Self-Awareness in Conversation-E-mail writing- Roots-Ratio and Proportion

UNIT V

Spot the Error-Describe the picture- Profit and loss-Calendar

TEXT BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year/ Edition
1	Meenakshi Raman	Communication Skills	Oxford University Press: India	2011
2	Konar, Nira	Communication Skills for Professionals	PHI Learning Private Limited	2013
3	Alex Dr.K	Soft Skills	S.Chand Competition	2012
4	R. S. Agarwal	Quantitative Aptitude (for Competitive Examinations)	S. Chand and Company Limited	2017
5	R.Gupta's	Logical and Analytical Reasoning	Ramesh Publishing House New Delhi	2018

REFERENCE BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year / Edition
1	Course team, Bharathiar University	Communication Skills a multi-skill course	Macmillan Publishers India LTD.	2009
2	Krishna Mohan	Developing Communication Skills	Trinity Press, Laxmi Publication Pvt. Ltd., New Delhi.	2018
3	Joyce Pereire	Technical English -II	Vijay Nicole Imprints Pvt.Ltd.	2017
4	Arun	Questions on GENERAL MENTAL ABILITY TESTS	YOUNG MAN & CO.	2018
5	R.V. Praveen	Quantitative Aptitude and Reasoning	PHI Learning Private Limited,Delhi	2018

Means of Curriculum Delivery : Lecture, Group Discussion, Seminar, Assignment, Google Class Room.

WEBSITE REFERENCE

1.http://www.indiabix.com

2.http://placement.freshersworld.com

SEMESTER II

SEMESTER II

Programme Code :	B.Sc CS	Programme Title	Bachelor of Science (Computer Science)	
Course Code :	24U2TALT02	Title : Tamil - II	Batch:2024-2027	
			Semester	II
Hrs/week	4		Credits	3

நோக்கம்

- நீதி இலக்கியங்களின வழி வாழ்வியல் அறக்கருத்துக்கள், வாழ்க்கை நெறிகள் ஆகியவற்றை அறிந்து கொள்ளுதல்.
- பக்தி இலக்கியங்களின் வழி பின்பற்றப்படும் ஒழுகலாறுகள், பக்தி முறை, அன்பின் வெளிப்பாடு சிற்றிலக்கியங்களின் வழி வாழ்வியல் சமுதாயம், பற்றிய கருத்துக்களை அறிந்து கொள்ளுதல்.
- சிறுகதையின் வாயிலாக சமகால நிகழ்வுகளை, சமுதாய மாற்றங்களை அறிந்து கொள்ளுதல்.
- சொல் வகைகள், சொற்களின் மாற்றங்கள், வளர்ச்சி பற்றி அறிதல். விண்ணப்பம், மடல்கள் எழுதும் முறைகளையும், மொழிப்பெயர்ப்பின் அவசியத்தையும் அறிதல்.
- தமிழ் இலக்கிய வரலாற்றின் மூலம் இலக்கியங்களின் வளர்ச்சிபடிநிலை, வடிவம் பற்றி அறிதல்.

Course Outcome (CO)

CO Number	CO Statement
CO1	நீதி இலக்கியங்கள் வலியுறுத்தும் அறக்கருத்துக்களை அறிந்து கொள்ளல்.
CO2	பரணி இலக்கியம், பக்தி நெறிமுறைகள், பக்தி வெளிப்பாடு பற்றி அறிந்து கொள்ளல்.
CO3	சிறுகதைகளின் மூலம் சமுதாயத்தின் மாற்றங்களை உணர்தல்.
CO4	சொற்களின் வகைப்பாடு, வளர்ச்சி நிலை, கருத்து பரிமாற்றத்திற்கு உதவும் முறைகளை அறிதல்.
CO5	இலக்கிய வகைகளின் மாற்றங்கள், இலக்கியங்களின் வளர்ச்சிநிலை பற்றி அறிதல்

நிரல் விளைவுகளைக் கொண்ட வரைபடம்

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

பாடத்திட்டம்

அலகு – 1 நீதி நூல்கள் **(12 மணிநேரம்)**

1. திருக்குறள் - இன்னா செய்யாமை
   - பொறையுடைமை
   - விருந்தோம்பல் (3அதிகாரம்)
2. நாலடியார் - ஈகை
3. பழமொழி நானூறு- 21 முதல் 30 வரை (10 பாடல்கள்)
4. நீதிநெறி விளக்கம்- 1 முதல் 10 வரை (10 பாடல்கள்)

அலகு – 2 பக்தி இலக்கியங்கள், சிற்றிலக்கியங்கள் **(12 மணிநேரம்)**

1. கலிங்கத்துப்பரணி - கோயில் பாடியது (52-63)
2. தேவாரம் - திருநெடுங்களம் (திருஞானசம்பந்தர் தேவாரம்)
3. நாலாயிரத்திவ்ய பிரபந்தம் - ஊனேறு - செல்வத்துடன்(குலசேகர ஆழ்வார்)

4. திருவருட்பா - மரணமில்லா பெருவாழ்வு

அலகு – 3 சிறுகதைத் தொகுப்பு (10 மணிநேரம்)

1. புதுமைப்பித்தன் - காஞ்சனை. (புதுமைப்பித்தன் கதைகள்)
2. ராஜம்கிருஷ்ணன் - சூரியக்கதிர்கள். (பெண்மையச் சிறுகதைகள்)
3. பிரபஞ்சன் - எனக்கும் தெரியும் (நேற்று மனிதர்கள்).
4. என். நாகராசு - தரை இறங்கிய விமானம் (தனிமையில் ஒரு கோயில்)
5. தாமரை - பசுத்தோல் (சந்திரக் கதிர்கள்)

அலகு – 4 இலக்கணமும் பயன்பாட்டுத் தமிழும் (06 மணிநேரம்)

1.சொல் வகைகள் - பெயர், வினை, இடை, உரி
2.நன்னூல் - ஐயறிவு உயிர் (உரியியல்)
3.மொழிபெயர்த்தல், விண்ணப்பம், மடல்கள் எழுதுதல்

அலகு – 5 இலக்கிய வரலாறு (08 மணிநேரம்)

1. நீதிநூல்கள்
2. பன்னிரு திருமுறைகள், நாலாயிர திவ்ய பிரபந்தம்
3. சிற்றிலக்கியங்களின் தோற்றமும் வளர்ச்சியும
4. சிறுகதையின் தோற்றமும் வளர்ச்சியும்

பாடநூல்:

வ.எண்	ஆசிரியர் பெயர்	நூலின் பெயர்	வெளியீடு	ஆண்டு ∴ பதிப்பு
1	தமிழ்த்துறை	பொதுத்தமிழ் - ஐஐ	கோவை கலைமகள் கலை அறிவியல் கல்லூரி	2024

பார்வை நூல்கள்

வ.எண்	ஆசிரியர் பெயர்	நூலின் பெயர்	வெளியீடு	ஆண்டு ∴ பதிப்பு
1	திருவள்ளுவர்	திருக்குறள்	இரா.ராஜேந்திரன், திருமகள் நிலையம், சென்னை.	-
2	சமணமுனிவர்கள்	நாலடியார்	கலைஞன் பதிப்பகம்	இரண்டாம் பதிப்பு - 1997
3	பெரும்புலவர்.எம்.நாராயண வேனுப்பிள்ளை	பவினெண்கீழ்கணக்கு(பழமொழி நானூறு)	இலக்கியக்களஞ்சியம்	-
4	புலவர் மாரிமுத்து	நீதிநூல் கொத்து (நிதிநெறி விளக்கம்)	மணிமேகலைப் பிரசுரம்	இரண்டாம் பதிப்பு - 1994
5	ஜெயங்கொண்டார்	கலிங்கத்துப்பரணி	சாரதா பதிப்பகம்	இரண்டாம் பதிப்பு - 2010
6	திருஞானசம்பந்தர்	தேவாரம்	வர்த்தமானன் பதிப்பகம்	மூன்றாம் பதிப்பு - 2002
7	ஸ்ரீவத்சன்	நாலாயிரத்திவ்ய பிரபந்தம்	தி லிட்டில்பிளவர் கம்பெனி, சென்னை.	
8	அ.மாணிக்கம்	திருவருட்பா	வர்த்தமானன் பதிப்பகம	முதற் பதிப்பு- 2002
9	புதுமைப்பித்தன்	புதுமைப்பித்தன் கதைகள்	பூம்புகார் பதிப்பகம்,	இரண்டாம் பதிப்பு: ஜுலை –2006.

			சென்னை.	
10	ள.மல்லிகா	இந்திய பெண் எழுத்தாளர்கள் சிறுகதைகள்	நிவேதித்தா பதிப்பகம்	-
11	பிரபஞ்சன்	நேற்று மனிதர்கள்	கவிதா பப்ளிகேசன்	ஜூன் 2001
12	என். நாகராசன்	தனிமையில் ஒரு கோயில்	ஸ்வேதகலா புக்ஸ், கோயம்புத்தூர்.	முதற் பதிப்பு - 2022
13	தாமரை	சந்திரக் கற்கள்	குமரன் பதிப்பகம்	ஜூன் 2004
14	மு.பரமசிவம்	நற்றமிழ் இலக்கணம்	சைவசித்தாந்த பதிப்பகம், திருநெல்வேலி.	முதற் பதிப்பு: 1995.
15	பவணந்தி முனிவர்	நன்னூல்	சைவசித்தாந்த பதிப்பகம், சென்னை	முதற்பதிப்பு - 1982
16	முனைவர்.சிற்பி பாலசுப்பிரமணியம், முனைவர் சொ.சேதுபதி	தமிழ் இலக்கிய வரலாறு	கவிதா பப்ளிகேஷன், சென்னை-17	முதற்பதிப்பு -2010
17	மது.ச.விமலானந்தம்	தமிழ் இலக்கிய வரலாறு	முல்லை நிலையம், சென்னை	2014
18	டாக்டர்.சி. பாலசுப்ரமணியம்	தமிழ் இலக்கிய வரலாறு	நறுமலர் பதிப்பகம், சென்னை	1997

Means of Curriculum Delivery: Chalk & Talk, Lecture, Group Discussion, Seminar, Assignment, Google classroom.

SEMESTER II

Programme Code	B.SC CS	Programme Title	Bachelor of Science (Computer Science)	
			Batch - 2024-2027	
Course Code	24U2HILT02	Title : Hindi II	Semester	II
Hrs/week	5		Credits	3

COURSE OBJECTIVE:

- A basic understanding of contemporary poetry can be gained and the nature of modern poetry can be realized. Realizing the nature of drama and its nature and improving the knowledge of reading and understanding the nature of contemporary plays. Understands the benefits of correspondence and can enhance the correspondence you need. Translation is especially useful for translating from Hindi to English

MAPPING WITH PROGRAMME OUTCOMES:

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

Unit I

MODERN POETRY **:**
PANCHVATI by MYTHLI SHARAN GUPT

Unit II

ONE ACT PLAY: EKANIKI PIYUSH

1. Owrangjeb ki aakirirath– Ramkumar varma
2. Ek din - Lakshminarayan Misra
3. Vapasi - Vishnuprabhakar
4. Badsurath rajkumari - Krishnachandra
5. Aakket – Harijeeth

Unit III

LETTER WRITING (Leave Letter, Job Application, Ordering Books, Letter to Publisher, Personal Letter)

Unit IV

CONVERSATION: (Doctor & Patient, Teacher & Student, Storekeeper & Buyer, Two Friends, Booking Clerk & Passenger at Railway Station, Auto rickshaw driver and Passenger)Ref : Bolchal Ki Hindi Aur Sanchar by Dr. Madhu Dhavan Vani Prakashan, New Delhi.

Unit V

TRANSLATION: HINDI-ENGLISH ONLY Lessons – 1-15 only ANUVADH ABYAS-III

Teaching methods: Lecturing, Assignment, Group Discussion, Quiz, Group Activity. PowerPoint Projection through LCD

Text Book:

1. Panchvati, Mythili sharan Gupt, 2015, Rajkamal Prakashan,1B Nethaji Subash Marg, New Delhi.
2. Ekaniki piyush ,Srimathi Usha mehra, 1999, Hindu sahithya Bhandar,55 choupattyan rode, Lacknow 226003 Reference Books: Bolchal Ki Hindi Aur Sanchar, 2015, Dr. Madhu Dhavan Vani Prakashan, New Delhi.

Web Link: https://hi.wikipedia.org/wiki/ https://en.wikipedia.org/wiki/Premchand http://hindigrammar.in/

Means of Curriculum Delivery: Chalk & Talk, Lecture, Group Discussion, Seminar, Assignment, Google classroom.

SEMESTER II

Programme Code :	B.SC CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
			Batch – 2024 - 2027	
Course Code :	24U2FRLT02	Title : French II	**Semester**	II
Hrs/week	4		**Credits**	3

Course Objectives:

To understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type

Course Outcomes:

S.No	Course Outcome	Blooms Level
CO1	Comprehend basic vocabulary	K1
CO2	Understand basic syntax and grammar patterns	K2
CO3	Converse slowly in known situations	K3
CO4	Translate small basic sentences	K4

Mapping with Programme Outcomes:

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

Unit I

Etape5 (Lecons 1 - 3)

Unit II

Etape6 (Lecons 1 - 3)

Unit III

Etape 7 - Leçons 1 – 2

Unit IV

Etape 7 – Leçon 3

Etape 8 – Leçon 1

Unit V

Etape 8 – Leçons 2 – 3

TEXT BOOKS

S. No	Author Name	Title of the Book	Publisher	Year / Edition
1	Céline Himber, Corina Brillant, Sophie Erlich	Adomania 1 – Methode de francais	HACHETTE FLE	-

Text Book Prescribed: Adomania 1 – Methode de francais

Author: Yves Loiseau, Régine Merieux

Publisher: French and European Publications Inc
Available at: GOYAL publishers and distributors Pvt Ltd, New Delhi (9810322459)

SWAYAM : https://swayam.gov.in/nd2_cec19_lg04/preview by Prof. NirupamaRastogi (Retd) English and Foreign Languages University, Hyderabad

Means of Curriculum Delivery: Chalk & Talk, Lecture, Group Discussion, Seminar, Assignment, Google classroom.

SEMESTER II

Programme Code	B.SC CS	Programme Title	Bachelor of Science (Computer Science)	
			Batch - 2024-2027	
Course Code	24U2MLLT02	Title : Malayalam II	Semester	II
Hrs/week	4		Credits	3

COURSE OBJECTIVE:

- A basic understanding of contemporary poetry can be gained and the nature of
- modern poetry can be realized. Realizing the nature of drama and its nature and improving the knowledge of
- reading and understanding the nature of contemporary plays. Understands the benefits of correspondence and can enhance the
- correspondence you need. Translation is especially useful for translating from English to Malayalam

Mapping with Programme Outcomes:

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

Unit I: Novel –Enmakaje
Unit II: Novel - Enmakaje
Unit III: Memmories – Neermaathalam Pootthakaalam
Unit IV"Memmories – Neermaathalam Pootthakaalam
Unit V: Translation(English to Malayalam)

Teaching methods: Lecturing, Assignment, Group Discussion, Quiz, Group Activity. PowerPoint Projection through LCD

Text Books:

1. Emakaje – AmbikasuthanMangad – DC Books Kottayam,Kerala
2. NeermaathalamPootthakaalam - Madhavikutty -DC Books Kottayam, Kerala

Reference Books:

1. Athmakathasahithyam Malayalathil-Dr.Vijayalam Jayakumar (N.B.S.Kottayam)
2. Malayala Novel SahithyaCharitram-K.M.Tharakan (N.B.S.Kottayam)
3. SahithyaCharitramPrasthanangalilude- Dr.K.M George, (D.C.Books Kottayam)
4. MalayalaSahithyavimarsam-Sukumar Azheekode (D.C.books)

Means of Curriculum Delivery: Chalk & Talk, Lecture, Group Discussion, Seminar, Assignment, Google classroom.

SEMESTER II

Programme Code :	B.SC CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
			Batch – 2024 - 2027	
Course Code :	24U2TELT02	Title : Telugu II	**Semester**	II
Hrs/week	4		**Credits**	3

PAPER – II PROSE

Mapping with Programme Outcomes:

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

Unit I

Silappadigaram

Unit II

Manimekhala

Unit III

Jeevaka Chinthamani

Unit IV

Valayapathi

Unit V

Kundalakesi

Reference:

Tamila Pancha Kavyalu, by S. Jayaprakash Sri Divya Publications, Kambar Street, Nagamalai, Madurai.

Means of Curriculum Delivery: Chalk & Talk, Lecture, Group Discussion, Seminar, Assignment, Google classroom.

SEMESTER II

Programme Code :	B.SC CS	**Programme Title**	**Bachelor of Science (Computer Science)** **Batch : 2024 - 2027**	
Course Code :	24U2KALT02	Title : Kannada II	**Semester**	II
Hrs/week	4		**Credits**	3

Objectives:

To expose the students to the Modern Kannada poetry and train them to write essays. For this an anthology of about 100 pages of Modern Poems covering different general trends, forms and contents is prescribed. Essay on given topics relating to Literature, Culture, Art, Education, Communication, Sports, Environment, Current Affairs etc., are to be given.

Course Outcomes

- To understand the Contemporary literary text in Kannada
- To Explain the Contemporary author style of writings
- To evaluate the difference between the ancient and Contemporary Literature.
- To brief the content of the techniques of General Essay Writing
- To use grammatical styles in writing.

Mapping with Programme Outcomes:

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

SYLLABUS

Units	
I	Beginning of modern Kannada Poetry-trends-themes-contents-Poetry-in a birds eye view
II	Text Poems from Part I -1,2,9, Part II - 2,4,6
III	Text Poems from Part III - 1,3, 14, 16
IV	Text Poems from Part IV - 6,8,11, Part V - 2,6,8
V	Poems reading-appreciation-general-acquaintance of the writers of the prescribed poems

Reading List (Print and Online)

Part -I :

1. Belagu-Bendre
2. Devaru ruju maadidanu-Kuvempu
9. Sharade-G.S.Shivarudrappa

Part-II :

2.Mane tumbisuvudu-V.Seetaramaiah
4. Nalli taav nam malli-G.P.Rajaratnam
6.Tungabhadre - K.S.Narasimhaswamy

Part-III :

1.Kurudu kanchaana-Bendre

3. O! Nanna Janave!-GopalaKrishna adiga

14.Samadhaana-G.P.Rajarathnam

16.Amma Aachara Naanu-K.S.Nisar Ahmad.

Part-IV :

6.Mabbininda Mabbige-G.S.Shivarudrappa

8. Kaala Nilluvudilla-Channaveera Kanavi

11.Maneyinda manege- K.S.Narasimhaswamy

Part-V :

2.Vishva kutumbiya kashta-Pu.thi.na.

6.Atithigalu- GopalaKrishna adiga

8.Angula Huluvina parakaaya pravesha-A.K.Ramanujam

Recommended Texts

Samakaaleena Kannada Kavithe-I, Ed. G.S. Shivarudrappa, 2000, Prasaranga, Bangalore University, Bangalore-560 001

Means of Curriculum Delivery: Chalk & Talk, Lecture, Group Discussion, Seminar, Assignment, Google classroom.

SEMESTER-II

Programme Code:	BSc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code:	24U2ENLT02	Language II Functional English – II	**Batch:2024-2027**	
Hrs/ Week	4 Hrs		**Semester**	II
			Credits	3

COURSE OBJECTIVES:

- To enable the students to understand the basic grammar in English.
- To acquaint students with the structure and strategies of conversation
- To make the students appreciate the significant works and style of prose
- To develop the skills of speaking and writing without flaws.
- To develop an interest in the minds of the students to enjoy and appreciate the literary works in English.

COURSE OUTCOMES (CO):

On Successful Completion of the course the students will be able to

CO Number	CO Statement
CO1	Speak and Write without committing grammatical errors.
CO2	Read and appreciate simple literary works.
CO3	Deal with various conversational situations with confidence.
CO4	Recognize the nuances of English language and attempt creative writing.
CO5	Enumerate in flawless English their understanding of societal concerns.

MAPPING WITH PROGRAMME OUTCOMES

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	M	M	L	M	H	H	M	H	M	H	H	H
CO2	H	M	M	M	M	H	M	M	M	M	M	H
CO3	H	L	M	L	H	M	H	H	H	H	M	M
CO4	H	L	M	L	H	M	H	H	H	H	M	M
CO5	H	M	H	H	M	H	M	H	L	M	H	L

SYLLABUS

UNIT –I-POETRY **(Hours-10)**

1.La Belle Dame Sans Merci - John Keats
2.The Ballad of Father Gilligan – William Butler Yeats
3.The Daffodils - William Wordsworth

UNIT- II- PROSE **(Hours-10)**

1. At School - Gandhi
2. My lost Dollar - Stephen Butler Leacock
3. On The Rule of The Road- A.G. Gardiner

UNIT- III- ONE – ACT PLAY **(Hours-10)**

1. A Meeting in a Forest - G. B. Shaw

2. The Dear Departed - Stanley Hougton

UNIT-IV-GRAMMAR AND VOCABULARY (Hours-10)

1.Noun Endings
2.Verb Endings
3.Connectives and linkers

UNIT- V- WRITING (Hours-10)

1. Picture description
2 .Writing recommendations
3. Process description

TEXT BOOKS:

Recent editions of the following books only are recommended

S. No	Name of the Author	Title of the Book	Publisher	Year /Edition
1	A.G.Xavier	An Anthology of Popular Essays and Poems	Macmillan Indian Limited	2016
2	Prof. A.E.Subramanian	Gifts to Posterity- An Anthology of Modern Short Stories	Chitra Publications, Chennai	2003

REFERENCE BOOKS:

S. No	Name of the Author	Title of the Book	Publisher	Year of Publication
1	N.Krishnaswamy	Modern English- A Book of Grammar Usage and Composition	Macmillan Indian Limited	2009
2	Prof.N. Lakshmana Perumal	Technical English - I	Sri Krishna Hitech Publishing company Pvt Ltd	2014
3.	Adibah Amin, Rosemary	Grammar Builder Level Volume 1	Cambridge University Press	2005
4.	Sanjay Kumar	Communication skills	Push Late, Oxford University Press	2018

Means of Curriculam Delivery : Lecture, Group Learning, Seminar, Assignement, Google Class Room

SEMESTER II

Programme Code:	B.Sc CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	24U2CSCT04	Core 4 : C++ PROGRAMMING	**Batch**	2024-2027
			Semester	II
Hrs/week	5 Hours		**Credits**	4

COURSE OBJECTIVES:

- To provide knowledge on object oriented programming concepts using C++.
- To enable the students to provide an in-depth knowledge about the concepts of language structure, program divisions of C++ programming language.
- To enhance the knowledge about dynamic memory management.
- To gain the knowledge about Pointers and arrays
- To enhance the students knowledge in writing C++ programs and the concepts of File Handling.
-

COURSE OUTCOMES (CO):

On successful completion of the course, students should be able to achieve the following outcomes.

CO Number	**CO Statement**
CO1	Describe the object oriented paradigm with concepts of streams, classes, functions, data and objects
CO2	Summarize relative merits of object oriented programming language & loop concepts.
CO3	Apply constructors, destructors in dynamic memory management.
CO4	Describe the concept of virtual functions and pointers,
CO5	Explain about exception handling and class templates.

MAPPING WITH PROGRAMME OUTCOMES

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	L	S	S	S	S	S	M	L	M	M	L	S
CO2	L	S	S	S	S	S	M	L	M	M	L	S
CO3	L	S	S	S	S	S	M	L	M	M	L	S
CO4	L	S	S	S	S	S	M	L	M	M	L	S
CO5	L	S	S	S	S	S	M	L	M	M	L	S

S- Strong M-Medium L-Low

SYLLABUS

UNIT - I **(Hours : 12)**

Introduction- Programming Paradigm –Key Concepts of Object Oriented Programming- -Key concepts of Object Oriented Programming.

Input and output in C++: Streams in C++ ,Stream classes –formatted and unformatted data-Typecasting with cout statement. **C++ Declarations.**

UNIT - II **(Hours : 12)**

Control Structures, Functions in C++, Classes and objects :-Structures in C++,Declaring Objects, Public ,private and protected keyword - Defining member functions –Inline Functions and rule of Inline functions-Static object-array of objects-Friend functions-Member functions non Member functions.

UNIT - III **(Hours : 12)**

Constructors and Destructors – Operator overloading and type conversion-Inheritance and types of inheritance –abstract classes.

UNIT - IV **(Hours : 12)**

Pointers and arrays - C++ and memory-Binding in C++ - virtual function functions –Rules for virtual function. Array of Pointers.

UNIT - V **(Hours : 12)**

Working with Files: File stream operations-opening and closing file- Detecting EOF- File pointers and their manipulations- Sequential I/O operations- Random Access Files- Error Handling – Command line Arguments- File I/O with Member Functions -Overloading the Extraction and Insertion Operators.

Recent editions of the following books only are recommended

TEXT BOOKS

S. No.	Author Name	Title of the Book	Publisher
1.	Ashok kamthane	Object oriented programming with Trubo C++	Pearson Education
2.	E.Balagurusamy	Object Oriented Programming with C++	Tata Mc.Graw Hill

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publisher
1.	Bjarne Stroustrup	The C++ Programming Language	Wesley Publications
2.	M.TSomashekara,D.S Guru, H.S.Nagendrasamy, K.S.Manjunath	Object Oriented Programming in C++	Tata McGrawhill, Second Edition

WEBSITE REFERENCES

1. https://www.geeksforgeeks.org/c-plus-plus/
2. https://www.tutorialspoint.com/cplusplus/
3. https://www.linkedin.com/learning/topics/c-plus-plus
4. https://www.hackerrank.com/domains/cpp
5. https://trainings.internshala.com/c-plus-plus-training

ONLINE COURSE LINK https://archive.nptel.ac.in/courses/106/105/106105234/

SEMESTER II

Programme Code:	B.Sc CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	24U2CSCT05	**Core 5** : Data Structures	**Batch**	2024-2027
			Semester	II
Hrs/week	5 Hours		**Credits**	4

COURSE OBJECTIVES

- To study about the design and implementation of the data structure and how the data are manipulated in order to develop an application and also helps the students in understanding the use of data structure in the real world.
- To make the students to understand the basic concepts of Data Structures and Algorithms.
- To understand the abstract data types stack, queue, deque, and list.
- To understand the performance of the implementations of basic linear data structures.
- To understand prefix, infix, and postfix expression formats.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	**CO Statement**
CO1	Recalls information for writing algorithms in solving problems.
CO2	Choose appropriate data structure as applied to specified problem definition.
CO3	Apply problem solving skills and provide a foundation for advanced programming courses using an object-oriented programming methodology.
CO4	Use linear and non-linear data structures like stacks, queues, linked list etc., and show operations like searching, insertion, deletion, traversing mechanism etc. on various data structures
CO5	Illustrate to store and retrieve data stored in both main memory and in secondary memory.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	L	S	S	S	M	S	M	S	L	L	L	S
CO2	L	S	S	S	M	S	M	S	L	L	L	S
CO3	L	S	S	S	M	S	M	S	L	L	L	S
CO4	L	S	S	S	M	S	M	S	L	L	L	S
CO5	L	S	S	S	M	S	M	S	L	L	L	S

S- Strong M-Medium L-Low

SYLLABUS

UNIT - I **(Hours:12)**

Introduction to algorithms, Algorithm Specification,-How To Create Programs and Analyze them - Arrays – Representation of Arrays- Ordered Lists-Sparse Matrices-Recursion – Tower of Hanoi

UNIT - II **(Hours: 12)**

Stacks: Introduction, Array representation of stacks, Operations and implementation,

Applications of stacks - Queues: Introduction, Array representation of Queue, Types of Queues :

Circular and Deques, Operations and implementation, Applications of Queues.- Evaluation of Expressions.

UNIT - III **(Hours: 12)**

Linked Lists: Representation - Types of Linked List - Single Linked Lists - Double Linked Lists - Linked Stacks and Queues – Polynomial Addition - Trees: Basic terminology, - Binary trees - Binary tree representation, Binary tree traversal, Threaded BinaryTrees- Application of trees.

UNIT - IV **(Hours: 12)**

Searching: Linear Search, Binary Search, Interpolation Search - Sorting: Internal Sorting with Insertion Sort, Bubble Sort, Heap Sort, Merge Sort, Quick Sort – External Sorting with Disks – Merging: Kway Merging - Symbol Tables- Hash Tables .

UNIT -V **(Hours: 12)**

Files: Sequential Files, Indexed Files, Hash Files - Index Techniques. File Organizations Sequential, Random, Linked Organizations - Inverted Files – Cellular Partitions.

TEXT BOOKS

S.NO	Author Name	Title of the Book	Publisher
1.	Aaron M.Taenenbaum, Yedidyah Langsam	Data Structures Using C	Prentice Hall of India
2.	ISRD group	Data sturcutres using C	Tata Mc. Graw Hill
3.	Jeen-Paul Tremblay and Paul G Sorenson	An Introduction to Data structures with Applications	Tata Mc. Graw Hill

REFERENCE BOOKS

S.No.	Author Name	Title of the Book	Publisher
1.	Ashok N Kamthane	Programming and Data Structures	PearsonEducation
2.	Ellis Horowitz & Sartaj Sahani	Fundamentals of Data Structure	Galgothia book source

WEBSITE REFERENCES

1. https://www.tutorialspoint.com/data_structures_algorithms/
2. https://code.tutsplus.com/series/data-structures-succinctly-part-1--cms-551
3. https://www.geeksforgeeks.org/data-structures/
4. https://visualgo.net/en

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google classroom.

SEMESTER II

Programme Code:	B.Sc CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	24U2CSCP06	Core 6 : C++ Programming with data structures - Practical	**Batch**	2024-2027
			Semester	II
Hrs/week	5 Hours		**Credits**	3

COURSE OBJECTIVES:

- To enable the students to gain knowledge in developing C++ Programs for certain specified problems.
- To develop the applications using C++ Programming language.
- To apply the concepts like looping, control statements arrays, function overloading and file concepts.

COURSE OUTCOMES (CO)

At the end of the practical session, students should be well-versed in

CO Number	**CO Statement**
CO1	Write programs in C++ to demonstrate Classes and objects
CO2	Use various types of arrays and constructors
CO3	Apply the concepts of virtual functions and function overloading
CO4	Write programs in C++ using special functions, constructor and destructor.
CO5	Use the file handling concepts

MAPPING WITH PROGRAMME OUTCOMES

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	L	S	S	S	S	S	M	S	L	S	M	S
CO2	L	S	S	S	S	S	M	S	L	S	M	S
CO3	L	S	S	S	S	S	M	S	L	S	M	S
CO4	L	S	S	S	S	S	M	S	L	S	M	S
CO5	L	S	S	S	S	S	M	S	L	S	M	S

S- Strong M-Medium L-Low

SYLLABUS

- Write a program which demonstrates Classes and objects.
- Write the C++program to implement of stack using arrays.
- Write a program to demonstrate different types of constructors
- Write a C++ program to demonstrate Function Overloading.
- Write a C++ program to implement function overloading and virtual functions.
- Write a C++ program to overload unary operator using friend function.
- Write a C++ program to create single inheritance and multilevel inheritance.
- Write a C++ program to Implement Quick sort.
- Write a C++ Program to Implement Linear Search.
- Write a C++ program to copy the contents of a file into another.

WEB REFERENCE

1. https://www.tutorialspoint.com/cplusplus/
2. https://www.programiz.com/cpp-programming
3. https://www.class-central.com/tag/c++
4. http://www.cplusplus.com/doc/tutorial/program_structure/
5. https://www.hscripts.com/tutorials/cpp

Means of Curriculum Delivery: Power point presentation, Lab Assignments, Observation

SEMESTER II

Programme Code :	B.Sc. (CS)	**Programme Title**	**Bachelor of Science Computer science**	
Course Code :	24U2CSAT02	**Allied :2 Discrete Mathematics**	**Batch**	2024-2027
Hrs/week	5 Hours		**Semester**	II
			Credits	4

COURSE OBJECTIVES:

To enable the Students

- To understand the concept of set theory, Logic and Relations
- To learn the concept of languages and Grammars
- To know the concept of Graph theory and its applications

COURSE OUTCOMES (CO)

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

CO Number	CO Statement
CO1	Define the concepts of set theory, partition of sets, inclusion and exclusion principles.
CO2	Write an argument using logical notation and determine if the argument is valid or invalid.
CO3	Describe the binary relations between two sets and determine if the relation is partial order relation or equivalence relation using set operations.
CO4	Explain the concepts of formal languages and construct the finite state automata.
CO5	State the concept of graphs, enumerate the types of graphs and their applications practical situations.

MAPPING WITH PROGRAMME OUTCOMES

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	M	M	S	M	S	L	L	L	M	L	M
CO2	L	M	M	S	M	S	L	L	L	M	L	M
CO3	L	M	M	S	M	S	L	L	L	M	L	M
CO4	L	M	M	S	M	S	L	L	M	S	M	S
CO5	L	M	M	S	M	S	L	L	M	S	M	S

SYLLABUS

UNITS	CONTENT
UNIT I	**(12Hrs)** Set Theory - 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.
UNIT II	**(12 Hrs)** Mathematical Logic – Introduction - Propositional Calculus – Basic logical Operations Tautologies – Contradiction – Argument - Predicate Calculus.
UNIT III	**(12 Hrs)** Relations – Binary Relations – Set operation on relations - Types of Relations – Partial order relation – Equivalence relation – Functions – Types of functions –

	Invertible functions.
UNIT IV	**(12 Hrs)** Languages – Operations on Languages – Grammar – Types of Grammars – Finite State Machine – Finite State Automata.
UNIT V	**(12 Hrs)** Graph Theory – Basic terminology – Paths, Cycle & Connectivity – Sub graphs – Types of Graphs – Representation of Graphs in Computer Memory - Trees – Properties of Trees – Binary trees- Traversing Binary Tree.

TEXT BOOK

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publisher
1	J.K. Sharma	Discrete Mathematics	Macmillan India Ltd

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publisher
1	J. P Tremblay R Manohar	Discrete Mathematics Structures with Applications to Computer Science	Mc Graw Hill International Publications
2	Dr.M.K.Venkataraman, Dr.N.Sridharan, N.Chandarasekaran	DiscreteMathematics	The National publishing Company
3	V.Sundaresan	Discrete Mathematics	A.R.Publications
4	Dr. M.K. Sen & Dr. B.C. Chakraborty	Introduction to Discrete Mathematics	Books and Allied Pvt.Ltd.

WEBSITE REFERENCE

- www.coursera.com
- www.tutorialpoint.com
- https://www.lkouniv.ac.in/site/writereaddata/siteContent/202003251324427012himanshu_%20Binary_Trees.pdf
- https://cse.buffalo.edu/~xinhe/cse191/Classnotes/note04-1x2.pdf

MEANS OF CURRICULUM DELIVERY: Chalk & Talk, Lecture, Group Discussion, Seminar, Assignment, Google classroom.

SEMESTER – II

Programme Code:	B.Sc CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code:	24U4VBET2A	Value Based Education 2: Human Rights	**Batch**	2024-2027
			Semester	III
Hours/ Week	2		**Credits**	1

COURSE OBJECTIVES:

- To prepare for responsible citizenship with awareness of the relationship between Human Rights, democracy and development.
- To impart education on national and international regime on Human Rights.
- To sensitive students to human suffering and promotion of human life with dignity.

COURSE OUTCOMES (CO):

On Successful Completion of the course the students will be able to

CO Number	CO Statement
CO1	Develop skills on human rights advocacy.
CO2	Appreciate the relationship between rights and duties.
CO3	Foster respect for tolerance and compassion for all living creature.
CO4	Create awareness about the significance of Human Rights as an academic discipline and it's utility in enhancing the quality of human lives.

MAPPING WITH PROGRAMME OUTCOMES

CO /PO	**PO 1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	M	L	L	M	S	M	L	S	S	M	S	L
CO2	M	L	L	M	S	M	L	S	S	M	S	L
CO3	M	L	L	M	S	M	L	S	S	M	S	L
CO4	M	L	L	M	S	M	L	S	S	M	S	L
CO 5	M	L	L	M	S	M	L	S	S	M	S	L

Unit I

Human Rights -: *Concept and Theories– Evolution Of Human Rights- U.N Universal Declaration- Major UN Conventions and Instruments.

Unit II

Indian Constitution -Human Rights as Fundamental Rights, and Duties- * Directive Principles of State Policy – Protection of Human Rights Act 1993-Human Rights Commissions-powers and function- Judiciary and Human Rights.

Unit III

Legal Aid – Public Interest Litigation- Right to Information - Right to Privacy –*Freedom of Press – Human Rights and Refugees.

Unit IV

Indian Legislation relating to Women and Children – Right to inheritance –Divorce-Remarriage- Contemporary issues –*Child Labour – Bonded Labour - Female foeticides

Unit V

National, International Organizations, Non Governmental Organizations- *Education and Human Rights- Mechanism for enforcement of Human Rights –UN Commission for the Human Rights

REFERENCE BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year / Edition
1	Chiranjivi J. Nirmal	Human Rights in India,	Oxford Universities Press,	2002 , Ed-I
2	Gopal Bhargava	Human Rights	, Kalpaz Publications, Delhi,	2003 , Ed- I
3	Sharma H.C	Politics and Human Rights	Book Enclave ,New Delhi,	1999, Ed- I
4	Srivatsava.A Global	Human Rights	Indian Publishers Distributors Delhi	. 2003, Ed- I
5	Sivagami Paramasivam	Human Rights	A StudySriram Computer Printers Salem,	1998, Ed- I

Means of Curriculam Delivery: Lecture, Group Discussion, Seminar, Assignment, Google Class Room.

SEMESTER – II

Programme Code:	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code:	24U2VBET2B	Value Based Education 2: Women's Rights	**Batch**	2024-2027
			Semester	II
Hours/ Week	2		**Credits**	1

COURSE OBJECTIVES:

- To make the women students understand the legal systems, constitutional frame work and human rights in India.
- To understand and appreciate the women's claims to land and their right to property.
- To make the women students to know fully about the laws enacted to protect women against violence, harassement sexual abuse and the loopholes in practice.
- To give a knowledge to the students about the various acts enacted relating to marriage validation, Hindu widow re- marriage, dowry prohibition, imortal traffic prevention, and women development and empowerment.

COURSE OUTCOMES (CO)

In Successful Completion of the course the students will be able to

CO Number	CO Statement
CO1	Explain clearly about the legal systems costitutional frame work and human rights.
CO2	Tell about their claims to land and right to property.
CO3	To explain about the various laws and acts enacted for protection of women from various kinds of violence and abuse, and for validating their marriage
CO4	Explain various acts available for women development and empowerment.

MAPPING WITH PROGRAMME OUTCOMES

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	L	L	M	S	M	L	S	S	M	S	L
CO2	M	L	L	M	S	M	L	S	S	M	S	L
CO3	M	L	L	M	S	M	L	S	S	M	S	L
CO4	M	L	L	M	S	M	L	S	S	M	S	L
CO 5	M	L	L	M	S	M	L	S	S	M	S	L

SYLLABUS

UNIT I

Laws, Legal Systems and Change:Definition - Constitutional law, CEDAW and International Human Rights – Laws and Norms – Laws and Social Context – Constitutional and Legal Framework.

UNIT II

Politics of land and gender in India: Introduction – Faces of Poverty – Land as Productive Resources – Locating Identities – Women's Claims to Land – Right to Property - Case Studies.

UNIT 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.

UNIT 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 Re-marriage

Act, 1856 - The Dowry Prohibition Act, 1961

UNIT V

Special Women Welfare Laws:Sexual Harassment at Work Places – Rape and Indecent Representation – The Indecedent Representation (Prohibition) Act, 1986 - Immoral Trafficking – The Immoral Traffic (Prevention) Act, 1956 - Acts Enacted for Women Development and Empowerment -Role of Rape Crisis Centers.

REFERENCE BOOKS:

S. No	Author Name	Title of the Book	Publisher	Year /Edition
1	Nitya Rao	Good Women do not Inherit Land	Social Science Press and Orient Blackswan	2008
2	Monica Chawla	Gender Justice	Deep and Deep Publications Pvt Ltd.	2006
3	Preeti Mishra	Domestic Violence Against Women	Deep and Deep Publications Pvt Ltd.	2007
4	P.D.Kaushik	Women Rights	Bookwell Publication	2007
5	Aruna Goal	Violence Protective Measures for Women Development and Empowerment	Deep and Deep Publications Pvt	2004

Means of Curriculam Delivery: Lecture, Group Discussion, Seminar, Assignment, Google Class Room.

SEMESTER-II

Programme Code:	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code:	**24U2ESKT02**	**Skill Based Subject 2: Employability Skills - II**	**Batch**	**2024-2027**
			Semester	**II**
Hrs/ Week	**4 Hours**		**Credits**	**-**

COURSE OBJECTIVES:

1. To focus on synonyms, antonyms, prepositions, subject-verb agreement, verbal ability, and essay writing.
2. To tackle time and work, pipes and cisterns, time and distance, trains, boats and streams, and directional challenges.
3. To identify errors, describe pictures, understand profit and loss, master calendar problems, and excel in coding, decoding, and pattern completion.

COURSE OUTCOMES (CO):

On successful completion of the course, students will be able to achieve the following outcomes.

CO Number	CO Statement
CO1	To expand vocabulary through synonyms and antonyms, and enhance problem-solving skills in time and work, as well as pipes and cisterns calculations.
CO2	To master the use of prepositions, ensure subject-verb agreement, and enhance problem-solving skills in time and distance as well as train-related problems.
CO3	To enhance reading comprehension and verbal analogy skills, as well as problem-solving abilities in boats and streams, and directional challenges.
CO4	To strengthen verbal ability and essay writing skills while mastering coding and decoding techniques, as well as pattern completion.
CO5	To identify errors, describe pictures effectively, understand profit and loss, and master calendar-related problems.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	L	H	M	H	H	M	H	H	M	L	H
CO2	M	L	H	M	H	M	M	H	M	H	H	H
CO3	H	M	H	M	M	H	M	L	H	H	H	M
CO4	M	H	M	H	L	L	H	M	L	M	M	L
CO5	M	L	M	L	H	M	H	H	M	L	M	L

SYLLABUS

UNIT-I

Synonyms- Antonyms- Time and Work-Pipes and Cisterns

UNIT- II

Preposition-Subject Verb Agreement-Time and Distance-Problems on Trains

UNIT- III

Reading Comprehension-Verbal Analogy- Boats and Streams-Directions

UNIT- IV

Verbal Ability- Essay Writing- Coding and Decoding- Pattern Completion

UNIT V

Self-Awareness Building Skills-Types of Communication – Numerical Analogy -Dice

TEXT BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year/ Edition
1	Meenakshi Raman	Communication Skills	Oxford University Press: India	2011
2	Konar, Nira	Communication Skills for Professionals	PHI Learning Private Limited	2013
3	Alex Dr.K	Soft Skills	S.Chand Competition	2012
4	R. S. Agarwal	Quantitative Aptitude (for Competitive Examinations)	S. Chand and Company Limited	2017
5	R.Gupta's	Logical and Analytical Reasoning	Ramesh Publishing House New Delhi	2018

REFERENCE BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year / Edition
1	Course team, Bharathiar University	Communication Skills a multi- skill course	Macmillan Publishers India LTD.	2009
2	Krishna Mohan	Developing Communication Skills	Trinity Press, Laxmi Publication Pvt. Ltd., New Delhi.	2018
3	Joyce Pereire	Technical English -II	Vijay Nicole Imprints Pvt.Ltd.	2017
4	Arun	Questions on GENERAL MENTAL ABILITY TESTS	YOUNG MAN & CO.	2018
5	R.V. Praveen	Quantitative Aptitude and Reasoning	PHI Learning Private Limited,Delhi	2018

Means of Curriculum Delivery: Lecture, Group Discussion, Seminar, Assignment, Google Class Room.

WEBSITE REFERENCE

1.http://www.indiabix.com 2.http://placement.freshersworld.com

SEMESTER III

SEMESTER III

Programme Code	B.Sc CS	Programme Title	Bachelor of Science (Computer Science)	
Course Code	24U3TALT03	Language 1: Paper III - Tamil III	Batch Semester	2024-2027 III
Hrs/week	4 Hours		Credits	3

நோக்கம்

1. காப்பியங்கள் மூலம் சமூகம் பற்றிய சிந்தனைகளை, மாணவர்களுக்கு உணர்த்துதல்.
2. இலக்கியங்கள் வலியுறுத்தும் மானுடப் பண்புகளை அறியச்செய்தல்
3. நடைமுறை வாழ்வியல் மூலம் சமுதாயப் போக்கினை உணர்தல்.
4. இலக்கணம் மூலம் பாவகை, அணி நயங்கள் பற்றி உணர்தல்.
5. தமிழ் இலக்கியத்தின் வளர்ச்சி மாற்றம், வகைப்பாடு பற்றி அறிதல்.

பாடப்பகுதி கற்றலின் வெளிப்பாடு - Course Outcome (CO)

CO Number	CO Statement
CO1	காப்பியங்கள் கற்பதன் மூலம் காப்பியகாலச் வாழ்வியலை அறிதல்.
CO2	மனித உறவுகளின் மேன்மையையும், இறை உணர்வு பற்றிய எளிய நெறிமுறைகளையும் உணர்தல்.
CO3	அறிவியல் தொழிநுட்ப வளர்ச்சி, நடைமுறையில் சமுதாயத்தில் ஏற்படுத்தும் மாற்றங்களை அறிதல்.
CO4	இலக்கிய நயங்களையும் இலக்கண அமைப்பினையும் அறிதல்.
CO5	தமிழ் இலக்கியங்களில் ஏற்பட்டுள்ள மாற்றங்கள் மற்றும் வளர்ச்சி நிலைகளை அறிதல்

நிரல் விளைவுகளைக் கொண்ட வரைபடம்

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

பாடத்திட்டம்

அலகு I - காப்பியம் -I **11 மணி நேரம்**

1. சிலப்பதிகாரம் - வேனிற்காதை (புகார் காண்டம்)
2. மணிமேகலை - ஆபுத்திரன் திறம் அறிவித்த காதை
3. சீவக சிந்தாமணி - கோவிந்தைவியார் இலம்பகம்

அலகு II - காப்பியம் -II **11 மணி நேரம்**

1. கம்பராமாயணம் -அனுமப் படலம் (கிட்கிந்தா காண்டம்)
2. பெரியபுராணம் -அப்பூதியடிகள் புராணம்(45 பாடல்கள்)
3. வில்லிபாரதம் -விராட பருவம்- நாடு கரந்துரை சருக்கம்(38 பாடல்கள்)

அலகு III - புதினம் **10 மணி நேரம்**

புதினம் - கண்மணிசோபியா – புவியரசு

அலகு IV - இலக்கணம் **08 மணி நேரம்**

பா வகை- வெண்பா,ஆசிரியப்பா,கலிப்பா,வஞ்சிப்பா.(பொது இலக்கணம்)

அணி இலக்கணம்- உவமை, உருவகம், எடுத்துக்காட்டு உவமையணி (பாடப்பகுதியை ஒட்டியவை)

அலகு V - இலக்கிய வரலாறு **08 மணிநேரம்**

1.ஐம்பெருங் காப்பியம்

2.சமணர்கள் தமிழுக்குச் செய்த தொண்டு

3.பௌத்தர்கள் தமிழுக்குச் செய்த தொண்டு

4.புதினத்தின் தோற்றம் வளர்ச்சி

பாடநூல்:

வ. எண்	ஆசிரியர் பெயர்	நூலின் பெயர்	வெளியீடு	ஆண்டு/ பதிப்பு
1	தமிழ்த்துறைப் பேராசிரியர்கள்	பொதுத்தமிழ் - III	கோவை கலைமகள் கலை அறிவியல் கல்லூரி	2025

பார்வை நூல்கள்

வ. எண்	ஆசிரியர் பெயர்	நூலின் பெயர்	வெளியீடு	ஆண்டு / பதிப்பு
1	ஞா.மாணிக்கவாசகன்	சிலப்பதிகாரம்	உமா பதிப்பகம், சென்னை-600001	1995
2	முனைவர் சிலப்பொலி சு.செல்லப்பன்	மணிமேகலை	பூரதி பதிப்பகம், சென்னை 600017	1998
3	பேரா. ஜே.ஸ்ரீசந்திரன்	சீவக சிந்தாமணி	நல்லறப் பதிப்பகம், சென்னை - 17	1999, முதல் தொகுதி
4	கம்பன் அறநிலை	கம்பராமாயணம் (கிட்கிந்தா காண்டம்)	கம்பன் அறநிலை, கோவை - 37	1995
5	பேரா. அ.ச. ஞானசம்பந்தன்	பெரிய புராணம்	கங்கை புத்தக நிலையம், சென்னை-42	2000
6	டாகடடர் துரை. இராசாராம்	வில்லிபாரதம்	பூம்புகார் பதிப்பகம். சென்னை - 600108	2001
7	கவிஞர் புவியரசு	கண்மணி சோபியா	நந்தினிப் பதிப்பகம்	
8	டாக்டர்.சொ.பரமசிவம்	நற்றமிழ் இலக்கணம்	சைவசித்தாந்த பதிப்பகம், திருநெல்வேலி.	முதற் பதிப்பு: 1995.
9	மது.ச.விமலானந்தம்	தமிழ் இலக்கிய வரலாறு	முல்லை நிலையம், சென்னை.	2014.
10	கா.கோ.வேங்கடராமன்	தமிழ் இலக்கிய வரலாறு	கலையக வெளியீடு, பரமத்தி வேலூர், நாமக்கல்.	2002

SEMESTER III

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	24U3HILT03	**Language 1 : Hindi III**	**Batch**	2024-2027
			Semester	III
Hrs/week	4 Hours		**Credits**	3

COURSE OBJECTIVE:

- May have knowledge of the contents of primitive poetry
- Learn about contemporary poetry and its techniques.
- Interest in reading poetry and the ability to express social thoughts will improve
- This will help you to understand the basics of Hindi literature and to understand Hindi literature properly
- Knowledge of the elements of poetry and the knowledge of subtle translation will improve.

MAPPING WITH PROGRAMME OUTCOMES

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

SYLLABUS:

Unit No	PART I - HINDI III
I	POETRY: KAVYA LEHAR – by Dr. V. Baskhar PRACHEEN KAVITHA 1. MAHATMA KABER – SAKI 2. GOSWAMY TULASIDAS – RAM-VAN-AMAN 3. MAHATMA SOORDAS- BAAL-LEELA 4. KAVIVAR RAHIM - DOHE
II	POETRY: KAVYA LEHAR – by Dr. V. Baskhar AADHUNIK KAVITHA 1. MYTHILI SHARN GUPTH – VIKARAL BIJALI 2. SUMITHRANANDAN PANTH – PARIVARTHAN 3. SURYAKANTH THRIPATI NIRALA – SANDHAYASUNDARAI 4. RAMDHARI SING DINKAR– BHAGAVAN KE DAKKIYA 5. HARIVANSRAY BACHCHAN – KOTA SIKKA 6. AGYEYA– ANUBHAV PARIPAKVA 7. NARESH MEHTHA – ULLANGAN 8.DHARMAVEER BHARATHI– TUM MERE KOUN HO
III	HISTORY OF HINDI LITERATURE :(SAHITHYIK

	TIPPANIAN) 1. AMMER KUSRO 2. VIDHYAPATHI 3. CHANDBARDHAYI 4. PRUTHIVIRAJ RASO 5. RAMACHARITHA MANAS 6. VINAYA PATRIKA
IV	ALANKAR: 1.ANUPRAS, 2. YAMAK, 3. SLESH 4.VAKROKTHI , 5.UPAMA, 6. ROOPAK, 7. VIRODHABAS
V	TRANSLATION:ENGLISH-HINDI only ANUVADH ABHYAS – III (16-30 Lessons only)

TEXT BOOKS

S.NO.	Author Name	Title of the Book	Publishers	Year/Edition
1	Dr.V.Baskhar**,** Jawahar Pusthakalay	Kavya lehar	Sadar Bazaar,Mathura	**-**
2	Dakshin Bharath	Anuvadh abyas-III	Hindi Prachar Sabha	**-**

REFERENCE BOOKS

S.NO.	Author Name	Title of the Book	Publishers	Year/Edition
1	Rajnath Sharma	Hindi sahithya ka saral ithihaas	Vinod pustak mandir	**-**
2	Kavya Pradeep	Rambadri Shukla,	Hindi Bhavan	**-**

SEMESTER III

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	24U3FRLT03	**Language 1 : French III**	**Batch**	2024-2027
			Semester	III
Hrs/week	4 Hours		**Credits**	3

COURSE OBJECTIVES:

To interact in a simple way, ask and answer simple questions about themselves, where they live, people they know, and things they have, initiate and respond to simple statements in areas of immediate need or on very familiar topics, rather than relying purely on a very finite rehearsed, lexically-organised repertoire of situation-specific phrases

COURSE OUTCOMES:

Cos/POs	Course Outcome	Blooms Level
CO1	Comprehend a repertoire of vocabulary	K1
CO2	Understand tenses and intermediary level of grammar	K2
CO3	Try to converse in unknown situation	K3
CO4	Translate unknown texts on familiar topics	K4

MAPPING WITH PROGRAMME OUTCOMES

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

Syllabus:

Part 1 - French 3	
Unit No.	**Topics**
1	Etape 1 (Lecons 1 - 3)
2	Etape2 (Lecons 1 - 3)
3	Etape 3 - Leçons 1 - 2
4	Etape 3 – Leçon 3
	Etape 4 – Leçon 1

5	Etape 4 – Leçons 2 - 3
Etapes 1 to 4, Pages 9 to 62	

Text Book

S.NO.	Author Name	Title of the Book	Publishers	Year/Edition
1	Céline Himber, Corina Brillant, Sophie Erlich	Adomania2 – Methode de francais	HACHETTE FLE	-

Reference Book

S.NO.	Author Name	Title of the Book	Publishers	Year/Edition
1	Yves Loiseau, Régine Merieux	Latitudes 1	French and European Publications Inc	-

SEMESTER III

Programme Code	B.Sc CS	**Programme Title**	**Bac Bachelor of Science (Computer Science)**	
Course Code	24U3MLLT03	**Language 1 : Malayalam III**	**Batch**	2024-2027
			Semester	III
Hrs/week	4 Hours		**Credits**	3

SYLLABUS – Poetry

MAPPING WITH PROGRAMME OUTCOMES

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

This paper will have the following five units:

Unit I, II & III

O.N.V. Kavithakal

Unit IV & V

Collection of Poems

Text Book

S.NO.	Author Name	Title of the Book	Publishers	Year/Edition
1	ONV	Bhoomikoru Charamageetham (Unit I, II & III)	D.C. Books, Kottayam	-
2	Group of Authors	Kavyanchali (Unit IV & V)	D.C. Books, Kottayam	-

Reference Book

S.NO.	Author Name	Title of the Book	Publishers	Year/Edition
1	Dr.M.Leelavathi	Kavitha Sahithya Charitram	Kerala Sahithya Academy,Trichur	-
2	Dr.M.Leelavathi	.Kavitha Dwani	D.C.Books, Kottayam	-
3	Dr.K.M.George	Aadhunika Sahithyacharithram	Prasthanangalilude	-
4	T.M.Chummar	Padya Sahithya Charithram	Kerala Sahithya Academy,Trichur	

SEMESTER III

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	24U3KALT03	**Language 1 : Kannada III**	**Batch**	2024-2027
			Semester	III
Hrs/week	4 Hours		**Credits**	3

Subject Description:

This course presents the Kannada Short Stories, enables the students to understand and explain the structure, form, motive and purpose of this form. Collections from Kannada Short Stories for appreciation of Short Stories, fiction, beauty and Language, etc.

Goals:

To enable the students to learn and understand the Kannada Short Stories.

Objectives:

Objective of the course is to make the student acquire knowledge of the development of the stages of the Short stories of Kannada.

MAPPING WITH PROGRAMME OUTCOMES

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

Contents:

Unite I Kannada Sanna Kathegalu (Anthology of Kannada Short Stories) selection lesson: 1,2,4,
Unite II selection lessons: 5,6, 7,
Unite III selection lessons: 8,10,12,
Unite IV selection lessons:14,16,17,
Unite V selection lessons: 18,19,20,25,

Text Book

S.NO.	Author Name	Title of the Book	Publishers	Year/Edition
1	-	Kannada Sanna Kathegalu	National Book trust	-
2	-	Hosagannada sahitya charitre	-	-

Reference: - Chapter 4, page No.103 to 251 Chapter 7, pageNo.335 to 340. Author: L.S.Seshagiri rao, Pub: By Ankita pustaka, 53/Gandhi Bazar, Basavanagudi, Bangaore -560004. Phone-080-26617100/26617755

SEMESTER III

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	24U3TELT03	**Language 1 : Telugu III**	**Batch**	2024-2027
			Semester	III
Hrs/week	4 Hours		**Credits**	3

PAPER – III HISTORY OF TELUGU LITERATURE

MAPPING WITH PROGRAMME OUTCOMES

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

Prescribed Text: Andhra Vangmaya Carithramu, by Divakarla Venkatavadhani
Andhra Saraswatha Parishatthu, Tilak Road, Hyderabad.

1. Pre Nannaya Period
2. The Age of Translations
3. Kavya and Prabhanda Period
4. The Age of Dakshinandhra
5. Modern period
6. Sataka Literature
7. Folk Literature
8. Dramas
9. Novels and Short Stories
10. Biographies and Autobiographies
11. Essays, Criticism and Research

SEMESTER-III

Programme Code	**All UG II Year**	**Programme Title**	**Bachelor of Computer Science**	
Course Code	24U3ENLT03	**Language 2 :** Functional English III	**Batch**	2024-2027
			Semester	III
Hrs/ Week	4 Hrs		**Credits**	3

COURSE OBJECTIVES:

- To enable the students to understand the basic grammar in English.
- To acquaint students with the structure and strategies of conversation
- To make the students appreciate the significant works and style of prose
- To develop the skills of speaking and writing without flaws.
- To develop an interest in the minds of the students to enjoy and appreciate the literary works in English.

COURSE OUTCOMES (CO):

On Successful Completion of the course the students will be able to

CO Number	**CO Statement**
CO1	Speak and Write without committing grammatical errors.
CO2	Read and appreciate simple literary works.
CO3	Deal with various conversational situations with confidence.
CO4	Recognize the nuances of English language and attempt creative writing.
CO5	Enumerate in flawless English their understanding of societal concerns.

MAPPING WITH PROGRAMME OUTCOMES

CO/ PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	H	L	H	M	H	H	M	M	H	L	M	H
CO2	H	M	H	H	H	M	L	M	H	H	H	H
CO3	H	M	H	M	H	M	H	H	H	H	M	H
CO4	H	M	M	H	H	M	H	H	M	L	H	M
CO5	H	M	H	M	H	H	M	H	H	H	H	M

SYLLABUS

UNIT I-POETRY

The Village Schoolmaster - Oliver Goldsmith
Matilda - Hilaire Belloc
Ozymandias - P.B. Shelly

UNIT II- PROSE

My Financial Career - Stephen Leacock
My Early Days - Dr. A. P. J. Abdul Kalam
Sweets for Angels - R. K. Narayan

UNIT III- SHORT STORY

Three Questions - Leo Tolstoy
Model Millionaire - Oscar Wilde

The Last Leaf - O. Henry

UNIT IV -ONE ACT PLAY

The Hour of truth - Percival Wilde

The Burden- A play Let of the Ramayana- T.P.Kailasam

UNIT V- VOCABULARY AND COMPOSITION

Jumbled Letters

Spelling Test

Compound Words

TEXT BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year /Edition
1	A.G.Xavier	An Anthology of Popular Essays and Poems	Laxmi Publications, New Delhi, India	1988
2	Prof. A.E.Subramanian	Gifts to Posterity- An Anthology of Modern Short Stories	Chitra Publications, Chennai	2003
3.	Board of Editors	Limelight – 3 (An Anthology of Prose , Biography, Poetry, Short stories and One act plays)	SSK Publishers & Distributors, Chennai.	2018

REFERENCE BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year /Edition
1	N.Krishnaswamy	Modern English- A Book of Grammar Usage and Composition	Laxmi Publications Trinity, New Delhi, India .	2007
2	Prof.K.Ramappa, Retd.	Essential English Grammar Usage & Composition	M. I. Publications	Fifth Revised Edition
3.	AdibaAmin, Rosemary Eravelly, ida J Ibrahim	Grammar Builder Level Volume 1	Cambridge University Press	2005

Means of Curriculam Delivery: Lecture, Group Learning, Seminar, Assignment, Google Class Room

SEMESTER-III

Programme code:	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code:	24U3CSCT07	Title: CORE 7: OPERATING SYSTEMS	**Batch:**	2024-2027
			Semester:	III
Hrs/Week:	5 Hrs		**Credits:**	4

COURSE OBJECTIVES:

- To gain knowledge on OS concepts and functioning of modern OS.
- To understand the different types of operating systems concepts like shell, Multi-Tasking / Time-sharing and Distributed Operating System.
- To understand the basic structure of OS, process and threads.
- To understand the deadlock & Memory management concepts.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Explain the basics of operating systems like kernel, shell, types and views of operating Systems
CO2	Implement operating system functions.
CO3	Describe the various CPU scheduling algorithms and remove deadlocks
CO4	Explain various memory management techniques and concept of thrashing
CO5	Recognize file system interface, protection and security mechanisms.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	S	S	L	M	S	L	L	L	L	M	S
CO2	M	S	S	L	M	S	L	L	L	L	M	S
CO3	M	S	S	L	M	S	L	L	L	L	M	S
CO4	M	S	S	L	M	S	L	L	L	L	M	S
CO5	M	S	S	L	M	S	L	L	L	L	M	S

SYLLABUS

UNIT I **(Hours:12)**

Introduction: Definition Of OS-History of Operating System-Computer Hardware Review-Operating System Concepts-Operating System structure.

UNIT II **(Hours:12)**

Processes and Threads: Processes-Threads-Inter process Communication.

UNIT III **(Hours:12)**

Classical IPC Problems: The Dining Philosophers Problem-The Readers and writes Problems-The Sleeping Barber Problem. Process Scheduling- round robin scheduling, priority Scheduling, multiple queues Scheduling, shortest job first Scheduling, shortest process first Scheduling policy versus Mechanism, First-in-First-out Scheduling, Scheduling in Real-Time Systems, Thread Scheduling.

UNIT IV **(Hours : 12)**

Deadlocks: Introduction, Deadlock Detection And Recovery: Deadlock Detection With One Resource of Each Type- Deadlock Detection With Multiple Resources of Each Type-Recovery From

Deadlock. Deadlock Avoidance: Bankers Algorithm for Single Resource, Bankers Algorithm for Multiple Resources. Dead Prevention: Attacking the Mutual Exclusion Condition- Attacking the Hold and wait Condition- Attacking the No Pre-emption Condition-Attacking the Circular Wait Condition.

UNIT V **(Hours :12)**

Memory Management: Physical and virtual address space; memory allocation strategies, segmentation. Virtual Memory Organization-Paging-Page Tables-Page Replacement Algorithm: The Optimal Page Replacement Algorithm-The Not Recently Used Page Replacement Algorithm- The First In First Out.

File Systems: Files-File Naming- File Structure-File Types-**File Acces**s- Attributes-File Operation

Text Book

S.NO.	**Author Name**	**Title of the Book**	**Publishers**	**Year/Edition**
1.	Abraham SilberschatzPeter BaerGalvin and Greg Gagne	Operating System Concepts	John Wiley & Sons (ASIA) Pvt. Ltd	Seventh Edition 2004
2.	Andrew S. Tanenbaum	"Modern Operating Systems"	Prentice Hall of India Pvt. Ltd	Fourth Edition 2014
3.	Harvey M. Deitel	Operating Systems	Pearson Education Pvt. Ltd	Ninth Edition 2018

Reference Books

S.NO.	Author Name	Title of the Book	Publishers	Year/Edition
1	Pramod chandra P.Bhatt	An Introduction to Operating systems	PHI Learning Pvt. Ltd	Fourth Edition 2014
2	William Stallings	Operating systems	PHI Learning Pvt. Ltd	Seventh Edition 2014
3	Sathe S R	Operating systems	Mac Millan	Fourth Edition 2014

WEBSITE REFERENCES

https://en.wikipedia.org/wiki/Operating_system
https://www.tutorialspoint.com/computer.../computer_operating_system.htm
https://www.webopedia.com/TERM/O/operating_system.html
https://www.geeksforgeeks.org/operating-systems-need-and-functions/
https://www.lifewire.com › How To › Windows › Key Concepts › Computer Concepts

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Case studies,

SEMESTER –III

Programme Code :	B.Sc CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	24U3CSCT08	**Core 8:**Python Programming	**Batch**	2024-2027
			Semester	III
Hrs/week	5 Hours		**Credits**	4

COURSE OBJECTIVES

- To understand the fundamentals of Python Programming.
- To understand and practice embedded dynamic scripting on client side Internet Programming.
- To understand and practice web development techniques on client-side.
- Learning Outcomes: To enable the students to gain knowledge in Python Programming with OOPs Concepts.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Exposed to Python syntax and semantics and be fluent in the use Python flow control and functions.
CO2	Create and run Python Programs using Lists, Dictionaries and handle File Systems.
CO3	Explain the concepts of Regular Expressions and Object-Oriented programming as used in Python.
CO4	Build Data Structures using Python.
CO5	Create programming projects from scratch using in-demand skill and technologies

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	S	S	M	S	L	S	M	S
CO2	L	S	S	S	S	S	M	S	L	S	M	S
CO3	L	S	S	S	S	S	M	S	L	S	M	S
CO4	L	S	S	S	S	S	M	S	L	S	M	S
CO5	L	S	S	S	S	S	M	S	L	S	M	S

Syllabus

UNIT – I **12 Hours**

Python Basics Python – origins – features – variable and assignment - Python basics – statement and syntax– Identifiers – Basic style guidelines – Python objects – Standard types and other built-in types– Internal types – Standard type operators – Standard type built-in functions.

UNIT – II **12 Hours**

Numbers – Introduction to Numbers – Integers – Double precision floating point numbers– Complex numbers – Operators – Numeric type functions – Sequences: Strings, Lists and Tuples – Sequences – Strings and strings operators – String built-in methods – Lists – List type Built in Methods – Tuples.

UNIT – III **12 Hours**

Mapping type: Dictionaries – Mapping type operators – Mapping type Built-in and FactoryFunctions - Mapping type built in methods – Conditionals and loops – if statement – else Statement – elif

statement – conditional expression – while statement – for statement – break statement – continue statement – pass statement – Iterators and the iter( ) function - Files and Input/Output – File objects – File built-in functions – File built-in methods – File built-in attributes – Standard files – command line arguments.

UNIT – IV **12 Hours**

Functions and Functional Programming – Functions – calling functions – creating functions –passing functions – Built-in Functions: apply( ), filter( ), map( ) and reduce( ) - Modules –Modules and Files – Modules built-in functions - classes – class attributes – Instances.

UNIT – V **12 Hours**

Database Programming – Introduction - Basic Database Operations and SQL – Example of using Database Adapters, Mysql - Regular Expression – Special Symbols and Characters – REs and Python.

TextBooks

S.No.	Author Name	Title of the Book	Publisher
1.	Wesley J Chun	Core Python Programming	Pearson 2nd Edition
2	Mark Summerfield	Programming in Python 3	Pearson 2nd Edition

Reference Book s

S.NO	Author Name	Title of the Book	Publisher &Edition
1.	Mark Luts David Ascher	Learning Python	O Reilly Media
2.	Solem Jan Erick	Programming computer vision with Python	O Reilly Media

WEBSITE REFERENCE

1.https://www.softwaretestingmaterial.com/software-testing/
2.https://www.guru99.com/software-testing-introduction-importance.html
3.https://en.wikipedia.org/wiki/Software_testing
4.https://www.tutorialspoint.com/software_testing
5.https://www.softwaretestinghelp.com/types-of-software-testing

Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER – III

Programme Code :	B.Sc CS	**Programme Title**	**Bachelor of Science Computer Science**	
Course Code :	24U3CSCP09	**Core 9:** Python Programming –Practical	**Batch**	2024-2027
			Semester	III
Hrs/week	4 Hours		**Credits**	4

COURSE OBJECTIVES

- To acquire basic knowledge of python programming.
- Understand decision making and functions in python.
- Learn object oriented programming using python.
- Write and debug iles handling in python.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Review the concepts of python functions.
CO2	Develop python program using decision making statement
CO3	Interpret object oriented programming in python.
CO4	Design and develop GUI applications
CO5	Find the error using Exception Handling.

MAPPING WITH PROGRAMME OUTCOMES

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	L	S	S	S	S	S	M	S	L	S	L	S
CO2	L	S	S	S	S	S	M	S	L	S	L	S
CO3	L	S	S	S	S	S	M	S	L	S	L	S
CO4	L	S	S	S	S	S	M	S	L	S	L	S
CO5	L	S	S	S	S	S	M	S	L	S	L	S

SYLLABUS

- Develop programs to understand the control structures of python
- Develop programs to learn different types of structures (list, dictionary, tuples) in python
- Develop programs to learn concept of functions scoping, recursion and list mutability.
- Develop programs to understand working of exception handling and assertions.
- Develop programs for data structure algorithms using python searching and sorting
- Develop programs to learn regular expressions using python.
- Learn to plot different types of graphs using PyPlot.
- Implement classical ciphers using python

WEBSITE REFERENCE

1. https://www.tutorialspoint.com/python/

Means Of Curriculum Delivery: Lecture, Group Discussion, Seminar,Assignment,Case studies and Google Classroom

SEMESTER III

Programme Code	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code :	24U3CSAT03	Title: Allied 3: Operations Research	**Batch**	2024-2027
			Semester	III
Hrs/week	5		**Credits**	4

COURSE OBJECTIVES

To enable the Students

- To Know Operation Research and LPP, solving LPP
- To solve transportation and assignment problems
- To acquire knowledge of Game theory, PERT and CPM

CO Number	CO Statement
CO1	Define Operations Research, Linear Programming Problem and explain the methods of solving Solution of LPP using Graphical Method simplex methodandBig M method
CO2	Solve Transportation problems
CO3	Solve Assignment Problems
CO4	Study the concepts of Game theory and solving simple problems
CO5	Know distinction between PERT & CPM

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	L	M	M	S	M	S	L	L	L	M	L
CO2	L	M	M	S	M	S	L	L	L	M	L
CO3	L	M	M	S	M	S	L	L	L	M	L
CO4	L	M	M	S	M	S	L	L	M	S	M
CO5	L	M	M	S	M	S	L	L	M	S	M

UNIT I **(12 Hrs)**

Linear Programming-Mathematical Model assumption of Linear programming-Graphical Method-Simplex method- Big-M Method-Problems

UNIT II **(12 Hrs)**

The Transportation Problems- Initial Basic Feasible Solution by North West Corner rule-Least Cost Method-Vogel's Approximation Method

UNIT III **(12 Hrs)**

The Assignment Problems - Assignment Algorithm-Optimum Solution-Unbalanced Assignment problem-Travelling Salesman Problem.

UNIT IV **(12 Hrs)**

Game Theory-Concept of pure and Mixed Strategies-Solving 2x2 matrix with and without saddle point- nx2-2xm games-Dominance Property.

UNIT V **(12 Hrs)**

PERT and CPM- Network representation- Backward pass- forward pass- Computation- PERT

network.

***Questions in theory and problems carry 20% and 80% marks respectively**

Text Book:

Recent editions of the following books only are recommended

S. No.	Author Name	Title of the Book	Publisher
1	V. Sundaresan, K.S. pathy Subramanian, K. esan	urce Management Techniques	Publications, Chennai.

REFERENCE BOOK

Recent editions of the following books only are recommended

S. No.	Author Name	Title of the Book	Publisher
1	Kanti Swarup, P.K. Gupta and Man Mohan	Operation Research	Sultan Chand & sons, New Delhi
2	Prof.V.Sundaresan, K.S.Ganapaty Subramanian, K. Ganesan	Resource Management Techniques	A.R. Publications, Chennai
3	Prem Kumar Gupta D.S, Hira S	Operation Research	Chand & Company Ltd, Ram Nagar, New Delhi

WEBSITE REFERENCES

1.https://www.nptel.ac.in-courses-Webcourse-contents-OPTIMIZATION-METHODS-pdf-Module

2. https://www.mech.iitm.ac.in/nspch.pdf

3. https://www.shodhganga.inflibnet.ac.in/bitstream/10603/11449/.pdf

Means of Curriculum Delivery: Lecture, Group Discussion, Seminar, Assignment, Google classroom.

SEMESTER-III

Programme code:	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code:	24U3SBST01	Skill based subject 1: JAVA PROGRAMMING	**Batch**	2024-2027
			Semester	III
Hrs/Week:	3 Hrs		**Credits**	1

COURSE OBJECTIVES

- Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- To be able to use the Java SDK environment to create, debug and run simple Java programs.
- To understand the Java Programming concepts so as to enable the students to create wide range of Applications and Applets using Java.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CONumber	CO Statement
CO1	Explain the fundamental structure of java program and to develop different programs in java language.
CO2	Understand in detail about branching ,looping and arrays in java program using the development environment.
CO3	Solve problems using methods and interface
CO4	Identify the errors and develop the Applet program
CO5	Evaluate the file management in java language.

MAPPING WITH PROGRAMME OUTCOMES

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	S	S	M	S	L	S	M	S
CO2	L	S	S	S	S	S	M	S	L	S	M	S
CO3	L	S	S	S	S	S	M	S	L	S	M	S
CO4	L	S	S	S	S	S	M	S	L	S	M	S
CO5	L	S	S	S	S	S	M	S	L	S	M	S

SYLLABUS

UNIT I **Hours:07**

Fundamentals of Object-Oriented Programming : Object-Oriented Paradigm – Basic Concepts of Object-Oriented Programming – Benefits of Object-Oriented Programming – Application of Object-Oriented Programming.

UNIT II **Hours:07**

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 – Implement of the Java Program - Java Virtual Machine.

Constants, Variables, Data Types - **Operators:** Arithmetic, Relational, Logical, Assignment, Increment/Decrement, Conditional, Bitwise and Special Operators

UNIT III **Hours: 07**

Expressions : Evaluation of Expression, Precedence of Arithmetic Operators. **Decision Making and Branching**: If,If…Else, Nested if… else, Nested IF Ladder, Switch, Conditional Operator - **Decision Making and Looping:** while, do…while, for – **Jumps in Loops -** Labelled Loops.

UNIT IV **Hours: 07**

Classes, Objects and Methods. Arrays, Strings and Vectors – Interfaces: Multiple Inheritance.

UNIT V **Hours: 08**

Packages: Putting Classes together – Multithreaded Programming - Managing Errors and Exceptions – Applet Programming Managing Input / Output Files in Java : Concepts of Streams- Stream Classes – Byte Stream classes.

TEXT BOOKS: (Recent Edition of the following books only are recommended)

S.No	Authors	Title	Publishers	Year / Edition
1.	E.Balagurusamy	PROGRAMMING WITH JAVA	TMH.	2019

REFERENCE BOOKS

S.No.	Authors	Title	Publishers	Year / Edition
1.	Ivan Bayross	WebEnabled CommercialApplication Development Using Html, Dhtml,javascript, Perl Cgi	BPB Publications	Fourth Edition 2010
2	Cay Horstman	BIG Java	Wiley Publication ,	Fifth Edition 2015
3	Herbert Schildt	Java 7, The Complete Reference,	Oracle Press	Tenth Edition 2018

WEBSITE REFERENCE

https://beginnersbook.com/2017/09/java-examples/
https://www.javapoint.com

Means Of Curriculum Delivery: Lecture, Group Discussion, Seminar,Assignment,Case studies

SEMESTER – III

Programme Code:	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code:	24U3VHWP01	**Volunteering Programme- Health and wellness**	**Batch**	2024-2027
			Semester	III
Hours/ Week	2		**Credits**	1

Course Objectives:

- The health and wellness course focuses on teaching the elements of physical, mental emotional, social, intellectual, environmental wellbeing which are essential for overall development of an individual.
- The course also addresses the dangers of substance abuse and online risks to promote emotional and mental health.

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	CO Statement
CO1	Demostrate proficiency in sports training and physical fitness practices.
CO2	Improve their mental and emotional wellbeing, fostering a positive outlook on health and life
CO3	Develop the competence and commitment as professionals in the field of health and wellness
CO4	Awareness on drug addiction and its ill effects.
CO5	Cretaing situational awareness and digital awareness

Syllabus

UNIT I: Introduction to holistic wellbeing

Introduce the core components of health and wellbeing namely physical, mental and emotional wellbeing- provide a worksheet on the four components individually and explain the interconnectedness to give overall understanding.

UNIT II: Wellness Wheel Exercise (overall Analysis)

Guide students to assess their wellbeing in various life dimensions through exercises on various aspects of wellbeing and explain the benefits of applying wellness wheel- introduce tech tools: Explore the use technology to support wellbeing- Introduce students to apps for meditation, sleep tracking or healthy recipe inspiration.

UNIT III: Breaking bad habit (Overall Analysis)

Open a discussion on bad habits and their harmful effects-provide a worksheet to the students to identify their personal bad habits – discuss the trigger, cause, consequence and solution with examples- guide them to replace the bad habits with good ones through worksheets.

UNIT IV: Physical Wellbeing

1. **Fitness**
   Introduce the different kinds of fitness activities such as basic exercises cardiovascular exercises, strength training exercises, flexibility exercises, so on and so forth.(Include Theoretical Explanations and outdoor activities)
2. **Nutrition**
   Facilitate students to reflect on their eating habits, their body type, and to test their knowledge on nutrition, its sources and the benefits.
3. **Yoga and Meditation**
   Discuss the benefits of yoga and meditation for one's overall health – demonstrate different yoga postures and their benefits on the body through visuals (pictures or videos)
4. **Brain Heath:**

Discuss the importance of brain heath for daily life- habits that affect the brain health(Irregular sleep, eating, screen time).- habits that help for healthy brains(reading, proper sleep, exercises).- benefits of breating exercises and meditation for healthy lungs.

UNIT V: Situational Awareness

1. Being street smart

Discuss – who are street smarts?- Why it is important to be street smart?- characteristics of a street smart person: importance of acquiring life skills to become a street smart-(General first aid procedure, CPR procedure, handling emergency situation like fire, flood, etc)

2. Digital awareness

Discuss- cyber security-information literacy-digital privacy- fraud detection.

3. Understanding Addiction

Plan this session around: Identifying the environmental cues, triggers that lead to picking up this habit- Knowing the impact of substance abuse – adverse health conditions, social isolation, and ruined future, hidden financial loss and damaging the family reputation- Seeking help to get out of this addiction.

Suggested Activities:

- Provide worksheets to check the students' level of understanding about substance addiction and their impacts.
- Share case studies with students from real-life.
- Play/Share awareness videos on addiction/de-addiction, experts talk.

*Conduct awareness programmes on Drugs and its ill effects.

(Average Experts from concerned government departments and NGOs working in drug addiction issues) and maintain the documents of the program.

REFERENCE BOOKS: (online)

1	https://www.un.org/sustainabledeveloment/health
2	https://healthlibrary.standford.edu/books-resourses/mindfulness-mediation.html
3	https://jamesclear.com/habits
4	https://www.betterup.com/blog/how-to-say-no

Means of Curriculam Delivery: Lecture, Group Discussion, Seminar, Assignment, Case Studies, Google Classroom.

SEMESTER III

Programme Code :	**B.Sc CS**	**Programme Title**	**Bachelor of Science Computer Science**	
Course Code :	**24U3YYET01**	**Certificate Course: Yoga for Youth Empowerment**	**Batch**	**2024 - 2027**
			Semester	**III**
Hrs/week	**-**		**Credits**	**-**

Syllabus

Unit 1: Philosophy of Life Science **(Hours:06)**

Life – Purpose of life – Philosophy of Life- Law of Nature-Kindness towards living beings Preserving Natural resources.

அலகு 1: வாழ்வியல் தத்துவம்

வாழ்க்கை - வாழ்வின் நோக்கம் -வாழ்க்கைத் தத்துவம் -இயற்கை நியதி -பிற உயிர் பேணல் - இயற்கை வளம் காத்தல்

Unit 2: Human values **(Hours:06)**

Culture –Analysis of thought- Moralization of Desire- Neutralization of Anger- Eradication of Worry- Blessings and Benefits- Harmonious Friendship- Love and Compassion-Individual Peace.

அலகு 2: தனிமனித பண்புகள்

பண்பாடு -எண்ணம் ஆராய்தல் -ஆசை சீரமைத்தல் -சினம் தவிர்த்தல் -கவலை ஒழித்தல் -வாழ்த்தும் பயனும் - நட்பு நலம் - அன்பும் கருணையும் - தனிமனித அமைதி.

Unit 3: Social Values **(Hours:06)**

Family- Family Peace- Society-Life style- World Brotherhood- Greatness of Women- Five Duties- Economics- Hygiene and Health Care- Education – Politics- Responsibilities of people.

அலகு 3: சமுதாய மதிப்புகள்

குடும்பம் - குடும்ப அமைதி - சமுதாயம் - வாழ்க்கை முறை - உலக சகோதரத்துவம் - பெண்ணின் -பெருமை - ஐவகைக் கடமைகள் -பொருளாதாரம் -சுகாதாரம் -கல்வி -அரசியல் -மக்களின் பொறுப்பு - உலக அமைதி

Unit 4: Development of Mental prosperity **(Hours:06)**

Prosperity of Mind- Life force- Bio-Magnetism and Mind – Functions of Mind- Mental Frequency – Ten Stages of Mind-Genetic Centre- Meditation- Value spirituality-Universal Magnetism and Bio-Magnetism.

அலகு 4 : மனிதவள மேம்பாடு

மனவளம் - உயிரும் மனமும் - உயிரின் இயக்க மையம் - மனத்தின் செயல்கள் - மன அலைச்சுழல் - மன இயக்கப் படி நிலைகள் - கருமையம் - தவம்(தியானம்) - ஆன்மீக மதிப்பு - வான்காந்தம் - சிவகாந்தம்

Unit 5: Maintenance of Physical Health **(Hours:06)**

Structure of Human Body- Three Functional Bodies-Harmony Between Body and Life force-Pain, Disease and Death- Reasons for Disease - Limit and Method in Five Factors- Simplified Physical Exersices- Practice for Simplified Physical Exercises.

myF5:

உடல் நலம் பேணல் உடலமைப்பு உடலின் மூவகை இயக்க மையங்கள் உடலுக்கும் உயிருக்குமான உறவு நோய்க்கான காரணங்கள் ஐந்தில் அளவு முறை எளியமுறை உடற்பயிற்சி யோகாசனங்கள் கதிரவன் வணக்கம் தண்டாசனம் சக்கராசனம் பக்கவாட்டில் விருச்சாசனம் ஏகபாத ஆசனம் திரிகோணாசனம் வஜ்ராசனம்
பத்மாசனம் யோக முத்ரா மகா முத்ரா உஸ்ட்ராசனம் வக்ராசனம் சவாசனம்

Recent editions of the following books only are recommended

TEXT BOOKS:

S. No	Author Name	Title of the Book	Publisher
1	Vethathri maharishi	Journey of Consciouness,	Vethathri Publications
2	Vethathri maharishi	Simplified Physical Exercise	Vethathri Publications
3	Vethathri maharishi	Unified Force	Vethathri Publications
4	ThuvagnaniVethathri maharishi	Yoga for modern age	Vethathri Publications
5	Dr. Chandrasekaran	Sound Health through yoga	Prem Kalyan Publications
6	வேதாத்திரி மகரிஷி	எளிய முறை உடற்பயிற்சி	வேதாத்திரி பதிப்பகம்

MEANS OF CURRICULUM DELIVERY: Lecture, Group Discussion, Seminar, Assignment, Google classroom.

SEMESTER – III

Programme Code:	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code:	24U3ESKT03	Employability Skills – III	**Batch**	2024-2027
			Semester	III
Hours/ Week	4		**Credits**	-

COURSE OBJECTIVES:

1. To improve spelling accuracy, word completion, self-introduction, e-mail writing, product reviews, JAM (Just a Minute) sessions, and various types of letter writing.
2. To master algebra, simple interest, permutation and combination, surds and indices, probability, and data sufficiency.
3. To focus on change of speech and voice, solving odd man out, series, clock-related problems, discount, blood relation problems, and directional challenges

COURSE OUTCOMES (CO):

On successful completion of the course, students will be able to achieve the following outcomes.

CO Number	**CO Statement**
CO1	To improve spelling accuracy, enhance word completion skills, and master algebra and simple interest calculations.
CO2	To master the change of speech and voice, and enhance problem-solving skills in permutation and combination, as well as surds and indices.
CO3	To develop skills in writing product reviews, participating in JAM (Just a Minute) sessions, and solving odd man out, series, and clock-related problems.
CO4	To develop skills in self-introduction and e-mail writing, and enhance problem-solving abilities in discount and blood relation problems.
CO5	To master various types of letter writing, improve listening comprehension, and enhance problem-solving skills in probability and data sufficiency.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	H	L	H	M	H	H	M	H	H	M	L	H
CO2	M	L	H	M	H	M	M	H	M	H	H	H
CO3	H	M	H	M	M	H	M	L	H	H	H	M
CO4	M	H	M	H	L	L	H	M	L	M	M	L
CO5	M	L	M	L	H	M	H	H	M	L	M	L

SYLLABUS

UNIT-I

Spellings- Word Completion- Algebra-simple Interest

UNIT- II

Change of Speech- Change of Voice- Permutation and Combination- Surds and Indices

UNIT- III

Write a Product Review-JAM (Just a minute)-Odd man out and Series-Clocks

UNIT- IV

Self-Introduction-E-mail Writing- Discount- Blood Relation

UNIT V

Types of letter-Listen to the Conversation and answer- Probability-Data Sufficiency

TEXT BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year/ Edition
1	Meenakshi Raman	Communication Skills	Oxford University Press: India	2011
2	Konar, Nira	Communication Skills for Professionals	PHI Learning Private Limited	2013
3	Alex Dr.K	Soft Skills	S.Chand Competition	2012
4	R. S. Agarwal	Quantitative Aptitude (for Competitive Examinations)	S. Chand and Company Limited	2017
5	R.Gupta's	Logical and Analytical Reasoning	Ramesh Publishing House New Delhi	2018

REFERENCE BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year / Edition
1	Course team, Bharathiar University	Communication Skills a multi- skill course	Macmillan Publishers India LTD.	2009
2	Krishna Mohan	Developing Communication Skills	Trinity Press, Laxmi Publication Pvt. Ltd., New Delhi.	2018
3	Joyce Pereire	Technical English -II	Vijay Nicole Imprints Pvt.Ltd.	2017
4	Arun	Questions on GENERAL MENTAL ABILITY TESTS	YOUNG MAN & CO.	2018
5	R.V. Praveen	Quantitative Aptitude and Reasoning	PHI Learning Private Limited,Delhi	2018

Means of Curriculum Delivery: Lecture, Group Discussion, Seminar, Assignment, Google Class Room.

WEBSITE REFERENCE

1.http://www.indiabix.com

2.http://placement.freshersworld.com

SEMESTER III

Programme Code :	12-ம் வகுப்பு வரை தமிழ் மொழிப்பாடம் பயிலாதவர்களுக்கு	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**24U3BTLT01**	**Non Credit Course 1:** Basic Tamil-I Title : அடிப்படைத் தமிழ்	**Batch**	2024-2027
			Semester	**III**
Hrs/week	-		**Credits**	-

அகமதிப்பீட்டுத் தேர்வு மட்டும்

நோக்கம் :

- தமிழ் எழுத்துக்களை எழுத, படிக்க தெரிந்து கொள்ளுதல்.
- சொற்களின் வகைகளைத் தெரிந்து கொள்ளுதல்.
- தொடர் அமைப்புகளைத் தெரிந்து கொள்ளுதல்.
- வாக்கியங்களைப் பிழையின்றி எழுதக் கற்றுக் கொள்ளுதல்.

பாடப்பகுதி கற்றலின் வெளிப்பாடு – Course Outcome (CO)

CO Number	CO Statement
CO1	தமிழ் எழுத்துக்களைத் தெளிவாக எழுதுதல்.
CO2	சொற்கள் கொடுக்கப்பட்டால் அவைகள் எச்சொற்கள் என வகைகளைக் கூறுதல்.
CO3	ஒரு சொற்றொடரில் எழுவாய், செயப்படுபொருள், பயனிலை எவை என கண்டறிந்து கூறுதல்.
CO4	வாக்கியங்களைப் பிழையின்றி எழுதுதல்.

நிரல் விளைவுகளைக் கொண்ட வரைபடம்

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	M	M
CO4	L	S	L	S	L	S	L	M	M	M	S	M
CO5	S	S	M	M	S	M	L	L	L	L	M	L

தமிழ் மொழியின் அடிப்படைக் கூறுகள்.

எழுத்துக்கள் : முதலெழுத்துக்கள் (உயிர் எழுத்து, மெய் எழுத்து, உயிர்மெய் எழுத்து)
சொற்கள் : வகைகள் (பெயர்ச்சொல், வினைச்சொல், இடைச்சொல், உரிச்சொல்)
தொடர் : தொடரமைப்பு (எழுவாய், செயப்படுபொருள், பயனிலை)
குறிப்பு எழுதுதல் : பத்துப் பதினைந்து தொடர்களில் குறிப்பு வரைதல்
பிழைநீக்கி எழுதுதல் : (ஒற்றுப்பிழை, எழுத்துப்பிழை)

	அக மதிப்பீட்டுத் தேர்வு மதிப்பெண் வழங்கும் முறை	மதிப்பெண்கள்
1	வகுப்புத்தேர்வு – 1	**10**
2	வகுப்புத்தேர்வு – 2	**10**

3	மாதிரித்தேர்வு	**10**
4	பயிற்சிக் கட்டுரை	**10**
5	வாய்மொழித் தேர்வு	**10**
	மொத்த மதிப்பெண்கள்	**50**

குறிப்பு : வாய்மொழித் தேர்வில் தமிழ்ச் செம்மொழி வரலாறு தொடர்பான வினாக்கள் மட்டுமே கேட்கப்பட வேண்டும்.

SEMESTER III

Programme Code :	12-ம் வகுப்பு வரை தமிழ் மொழிப்பாடம் பயின்றவர்களுக்கு	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**24U3ATLT01**	**Non Credit Course 1:** Advanced Tamil -I Title : சிறப்புத் தமிழ்	**Batch**	2024-2027
			Semester	**III**
Hrs/week	-		**Credits**	-

அகமதிப்பீட்டுத் தேர்வு மட்டும்

நோக்கம்:

- மேல்நிலைக் கல்வியில் தமிழ் மொழி பயின்ற மாணவர்களுக்கு இளங்கலை பட்ட வகுப்பில் தமிழ் இலக்கியத்தின் சிறப்பினை எடுத்துக் கூறுதல்.
- மரபுக் கவிதைகள், புதுக்கவிதைகள் வேறுபாடு பற்றி மாணவர்கள் அறியச் செய்தல்.
- சொற்களை உச்சரிக்கும் போது ஒலி வேறுபாடு அறிந்து வாக்கியங்களில் பிழை நீக்கி எழுதச் செய்தல்.
- பயன்பாட்டுத் தமிழில் கடிதங்கள் மற்றும் மடல்கள் எழுதுவதற்குப் பயிற்சியளித்தல்.
- பாடப்பகுதியோடு இணைந்த இலக்கிய வரலாற்றுச் செய்திகளை அறியச் செய்தல்.

பாடப்பகுதி கற்றலின் வெளிப்பாடு - Course Outcome (CO)

CO Number	CO Statement
CO1	மரபுக்கவிதை, புதுக்கவிதைகளுக்கு இடையில் உள்ள வேறுபாடுகள் அறிதல்.
CO2	மொழித்திறன் பயிற்சியின் மூலம், மாணவர்கள் பிழைநீக்கி எழுதுதல்.
CO3	இன்றைய சூழலுக்கு ஏற்ப, விண்ணப்பங்கள், மடல்கள் மற்றும் கடிதங்கள் எழுதச்செய்தல்
CO4	இலக்கியங்களின் வாயிலாக படைப்புகளின் வரலாறுகள், நோக்கம் உணர்தல்.
CO5	சொற்களைக் கொண்டு வாக்கியங்கள் அமைப்பதற்குப் பயிற்சி எடுத்தல்.

நிரல் விளைவுகளைக் கொண்ட வரைபடம்

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	M	M
CO4	L	S	L	S	L	S	L	M	M	M	S	M
CO5	S	S	M	M	S	M	L	L	L	L	M	L

பாடத்திட்டம்

கூறு – 1 : பாரதியார் கவிதைகள்
கண்ணன் என் சேவகன்
பாரதிதாசன் - அழகின் சிரிப்பு (முழுவதும்)
மீரா (கவிஞர்) - குக்கூ (புதுக்கவிதை)

கூறு – 2 மொழித்திறன்
பிழைநீக்கி எழுதுதல் - றன, ரண வேறுபாடு அறிதல்
ளன, ழன, லன வேறுபாடு அறிதல்
ன, ண, ந வேறுபாடு அறிதல்
குறில் நெடில் வேறுபாடு அறிதல்

கூறு – 3 : கடிதங்கள் எழுதுதல் - பாராட்டுக் கடிதம், நன்றிக்கடிதம், அழைப்புக்கடிதம், அலுவலக விண்ணப்பம்.

கூறு – 4 சொற்களைத் தந்து தொடர்களை அமைக்கும் பயிற்சி அளித்தல், வல்லினம் மிகும் இடங்கள்.

கூறு – 5 பாடந்தழுவிய வரலாறு.

	அக மதிப்பீட்டுத் தேர்வு மதிப்பெண் வழங்கும் முறை	**மதிப்பெண்கள்**
1	வகுப்புத்தேர்வு – 1	**10**
2	வகுப்புத்தேர்வு – 2	**10**
3	மாதிரித்தேர்வு	**10**
4	பயிற்சிக் கட்டுரை	**10**
5	வாய்மொழித் தேர்வு	**10**
	மொத்த மதிப்பெண்கள்	**50**

குறிப்பு : வாய்மொழித் தேர்வில் தமிழ்ச் செம்மொழி வரலாறு தொடர்பான வினாக்கள் மட்டுமே கேட்கப்பட வேண்டும்.

SEMESTER IV

SEMESTER IV

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Computer Science**	
Course Code	24U4TALT04	**Language 1: Paper IV-Tamil IV**	**Batch**	2024-2027
			Semester	IV
Hrs/week	4 Hours		**Credits**	3

நோக்கம்

1. சங்க காலத்தில் நிலவிய சமுதாய வாழ்க்கை நெறிகளை அறியச் செய்தல்.
2. முல்லைப்பாட்டு மூலம் இயற்கையோடு இயைந்த வாழ்க்கை, பருவங்கள், மலர்கள் பற்றி அறிதல்.
3. நாடக அமைப்பு மன்னர்கள் வாழ்க்கை, சமுதாய போக்கு பற்றி அறியச் செய்தல்.
4. திணை இலக்கணங்களை வகுத்து வாழ்வியலின் மேன்மையை அறிதல்.
5. தமிழின் தொன்மை, இலக்கியங்களின் வளர்ச்சி நிலைகள் பற்றி அறிதல்.

பாடப்பகுதி கற்றலின் வெளிப்பாடு - Course Outcome (CO)

CO Number	CO Statement
CO1	சங்க இலக்கியங்களின் வாயிலாக அகஉணர்வுகளை வெளிப்படுத்தும் பாங்கினை உணர்தல்.
CO2	மக்களின் வாழ்வியல் இயற்கையோடு கலந்து இருப்பதை உணர்தல்.
CO3	நாடக அமைப்பின் வழி சங்க இலக்கிய மரபினை உணர்தல்.
CO4	இலக்கணங்கள் வழி கட்டமைத்த மக்களின் அக, புற வாழ்வு முறை அறிதல்.
CO5	நூல்களின் வகைகள், வளர்ச்சி நிலைகள் பற்றி அறிந்து கொள்ளல்.

நிரல் விளைவுகளைக் கொண்ட வரைபடம்

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	M	M
CO4	L	S	L	S	L	S	L	M	M	M	S	M
CO5	S	S	M	M	S	M	L	L	L	L	M	L

பாடத்திட்டம்:

அலகு I - எட்டுத்தொகை நூல்கள் **12 மணி நேரம்**

1. **குறுந்தொகை - 4 பாடல்**
   1. ஆலங்குடி வங்கனார் (புறனுரைத்தல்) – கழனிமா அத்து விளைந்தூஉம் தீம்பழம் (பாடல் 8
   2. ஔவையார் (அறத்தொடு நிற்றல்) - பறைபடப் பணிலம் ஆர்ப்ப (பாடல் 15)
   3. கபிலர் (வரைவு கடாயது) - வேரல் வேலி வேர்க்கோட்பலவின் (பாடல் 15)
   4. வெள்ளி வீதியார் - (கழற்றெதிர்மறை) இடிக்குங் கேளிர் நுங்குறையாகா (பாடல் 58)
2. **புறநானூறு - 4 பாடல்**
   1. ஔவையார் - அதியமான் நெடுமான்அஞ்சி - ஒருநாட் செல்லலம். (பாடல் 101)
   2. சோழன் நல்லுருத்திரன் - விளைபதம் சீறிடம் நோக்கி. (பாடல் 190)

3. கணியன் பூங்குன்றனார் - யாதும் ஊரே யாவரும் கேளீர் (பாடல் 192)

4. வெண்ணிக் குயத்தியார் - நளியிருமுந்நீர் நாவாயோட்டி (பாடல் 66)

3. கலித்தொகை - 2 பாடல்

1. நெய்தல்- வெல்புகழ் மன்னவன் விளங்கிய ஒழுக்கத்தால் (நெய்தல்கலி - பாடல் எண் -118)

2. பாலை -எறித்தரு கதிர் தாங்கியேந்திய குடைநீழல் உறித்தாழ்ந்த (பாலைக்கலி-பாடல் எண்

4. பதிற்றுப்பத்து - இரண்டாம் பத்து (2 பாடல்)

இமயவரம்பன் நெடுஞ்சேரலாதன் - குமட்டூர் கண்ணனார்.

1. மறம் வீங்கி பல்புகழ் - வயவர் வீழ வாளரின் மயக்கி

2. சான்றோர் மெய்மறை - நிலநீர் வளிவிசும்பும் பென்ற நான்கின்

அலகு II - பத்துப்பாட்டு நூல்கள் 10 மணி நேரம்

பத்துப்பாட்டு – முல்லைப்பாட்டு

அலகு III - நாடகம் 10 மணி நேரம்

1. சேரதாண்டவம் - பாரதிதாசன்

2.

அலகு IV - இலக்கணம் 08 மணி நேரம்

1. அகத்திணை - தொல்காப்பியம் (முதல், கரு, உரிப்பொருள்)

2. புறத்திணை - புறப்பொருள் வெண்பாமாலை (12 திணைகள்)

3. உள்ளுறை உவமம், இறைச்சி

அலகு V - இலக்கிய வரலாறு 08 மணி நேரம்

1. முச்சங்கம் பற்றிய செய்திகள் (பக்கம்-20-30)

2. எட்டுத்தொகை நூல்கள்

3. பத்துப்பாட்டு நூல்கள்

4. நாடகத்தின் தோற்றமும் வளர்ச்சியும்

பாடநூல்:

வ. எண்	ஆசிரியர் பெயர்	நூலின் பெயர்	வெளியீடு	ஆண்டு/ பதிப்பு
1	தமிழ்த்துறை	பொதுத்தமிழ் - IV	கோவை கலைமகள் கலை அறிவியல் கல்லூரி	2025

பார்வை நூல்கள்:

வ.எண்	ஆசிரியர் பெயர்	நூலின் பெயர்	வெளியீடு	ஆண்டு/பதிப்பு
1.	மகாவித்துவான் மா. இராகவையங்கார் (உரையாசிரியர்)	குறுந்தொகை	கவின்கலை அச்சகம் சென்னை - 600041	1993

2.	ஔவை சு.துரைசாமிப்பிள்ளை (உரையாசிரியர்)	புறநானூறு	தென்னிந்திய சைவ சித்தாந்த நூற்பதிப்பு கழகம். திருநெல்வேலி	அப்பர் அச்சகம் சென்னை 600108 திசம்பர் - 1996
3.	புலியூர்க் கேசிகன் (உரையாசிரியர்)	கலித்தொகை	பாரி நிலையம் சென்னை - 60000	ஏழாம் பதிப்பு- 2005 மோனார்க் கிராபிக்ஸ், சென்னை
4.	ஔவை சு.துரைசாமிப்பிள்ளை (உரையாசிரியர்)	பதிற்றுப் பத்து	தென்னிந்திய சைவ சித்தாந்த நூற்பதிப்பு கழகம். திருநெல்வேலி	கழக வெளியீடு, 1995
5.	அ.மாணிக்கனார் (உரையாசிரியர்)	பத்துப்பாட்டு	வர்த்தமானன் பதிப்பகம் சென்னை -600017	---
6.	பாரதிதாசன்	சேரதாண்டவம்	நாம் தமிழர் பதிப்பகம்	முதற்பதிப்பு- 2006
7.	டாக்டர்.சொ.பரமசிவம்	நற்றமிழ் இலக்கணம்	சைவசித்தாந்த பதிப்பகம், திருநெல்வேலி.	முதற் பதிப்பு: 1995.
8.	மது.ச.விமலானந்தம்	தமிழ் இலக்கிய வரலாறு	முல்லை நிலையம், சென்னை.	2014.
9.	கா.கோ.வேங்கடராமன்	தமிழ் இலக்கிய வரலாறு	கலையக வெளியீடு, பரமத்தி வேலூர், நாமக்கல்.	2002

SEMESTER IV

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Computer Science**	
Course Code	24U4HILT04	**Language 1: Hindi IV**	**Batch**	2024-2027
			Semester	IV
Hrs/week	4 Hours		**Credits**	3

SYLLABUS

COURSE OBJECTIVE:

- Knowledge of contemporary drama contents of Hindi literature
- Learn novels and its techniques. The ability to read novels and express
- Criticism aboutit and the ability to express social thoughts will improve
- There will also be litigation messages in Hindi and news on speech techniques
- Able to write articles on their own and improve their sophisticated translation skills.

MAPPING WITH PROGRAMME OUTCOMES

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

Unit No.	PART I - HINDI IV
I	**DRAMA: DHUVASAMINY By JAYASHANKAR PARSAD**
II	**NOVEL : NIRMALA – Premchand**
III	**LOKKOTHI & MUHAVARE -** NAVEEN HINDI VYAKARAN (Selected Lokkokthi -10 & Muhavare-10)
IV	**GENERAL ESSAY** : AADARSH NIBANDH
V	**TRANSLATION** : HINDI-ENGLISH only ANUVADH ABHYAS – III (16-30 Lessons only)

TEXT BOOKS:

Dhuvasaminy –Drama- Jayashankar parsad, 2015,Publisher : dakshin bharath hindi prachar sabha, chennai – 17.
Nirmala –Novel- Premchand,2015, Rajkamal Prakashan,1B Nethaji Subash Marg,New Delhi.

REFERENCE BOOKS:

Hindi sahithya ka saral ithihaas,by rajnath sharma, vinod pustak mandir,Agra-282
Kavya Pradeep Rambadri Shukla, Hindi Bhavan, 36, Tagore Town, Allahabad – 211 002.

Means of Curriculam Delivery: Lecture, Group Learning, Seminar, Assignment, Google Classroom.

SEMESTER IV

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Computer Science**	
Course Code	24U4FRLT04	**Language 1: French IV**	**Batch**	2024-2027
			Semester	IV
Hrs/week	4 Hours		**Credits**	3

COURSE OBJECTIVES:

To communicate during easy or habitual tasks requiring a basic and direct information exchange on familiar subjects to use simple words to describe his or her surroundings and communicate immediate needs

COURSE OUTCOMES:

S. No	Course Outcome	Blooms Level
CO1	Comprehend the grammatical structures in various genres	K1
CO2	Understand the text styles and poetical elements	K2
CO3	Develop an interest in the appreciation of literature	K3
CO4	Discuss and respond to content of a reading passage	K4

Mapping with Programme Outcomes

CO /PO	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

SYLLABUS:

Part 1 - French 4	
Unit No.	**Topics**
1	Etape 5 (Lecons 1 - 3)
2	Etape6 (Lecons 1 - 3)
3	Etape 7 - Leçons 1 - 2
4	Etape 7 – Leçon 3
5	Etape 8 – Leçon 1
6	Etape 8 – Leçons 2 - 3
7	Etapes 5 to 8, Pages 63 to 114

Text Book Prescribed: Adomania 2 – Methode de francais
Authors: Céline Himber, Corina Brillant, Sophie Erlich
Publisher: HACHETTE FLE
Available at: GOYAL Publishers and Distributors Pvt Ltd, New Delhi (9810322459)

Reference: Latitudes 1
Author: Yves Loiseau, Régine Merieux
Publisher: French and European Publications Inc
Available at: GOYAL publishers and distributors Pvt Ltd, New Delhi (9810322459)

SWAYAM :https://swayam.gov.in/nd2_cec19_lg04/preview
by Prof. NirupamaRastogi (Retd) English and Foreign Languages University, Hyderabad

Means of Curriculam Delivery: Lecture, Group Learning, Seminar, Assignment, Google Classroom.

SEMESTER IV

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Computer Science**	
Course Code	24U4MLLT04	**Language 1: Malayalam IV**	**Batch**	2024-2027
			Semester	IV
Hrs/week	4 Hours		**Credits**	3

COURSE OBJECTIVE:

- Knowledge of contemporary drama contents of Malayalam literature
- Learn Screen play and its techniques. The ability to read drama and express criticism about it and the ability to express social thoughts will improve
- There will also be litigation messages in Malayalam and news on speech techniques
- Able to write articles on their own and improve their creative skills.

S.No	**COURSE OUTCOME**	
CO1	Get a basic knowledge of drama	**K1**
CO2	Can read and critique Screenplay	**K1**
CO3	Create interest in art literature courses	**K2**
CO4	The hope of writing a Drama or a Screen Play.	**K3**
CO5	The idea of creating new works and critique knowledge will improve	**K4**

Mapping with Programme Outcomes

CO /PO	**PO 1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

Unit No.	**PART I – MALAYALAM IV**	**Hours**
I	Screen Play - Perumthachan	**18**
II	Screenplay - Perumthachan	**18**
III	Drama - Saketham	**10**
IV	Drama - Saketham	**12**
V	Drama - Saaketham	**14**
	TOTAL	**72**

Means of Curriculam Delivery: Lecture, Group Learning, Seminar, Assignment, Google Classroom.

SEMESTER IV

Programme Code	ALL UG	**Programme Title**	**Bachelor of Computer Science**	
Course Code	24U4KALT04	**Language 1: Kannada IV**	**Batch**	2024-2027
			Semester	IV
Hrs/week	4 Hours		**Credits**	3

Objectives:

On successful completion of the course the students should have:

- Objective of the course is to make the student acquire knowledge of the development of the stages of Kannada
- Understood the modern Kannada prose and the composition of general essay.
- Learnt the technique and expression of poetry.
- Learnt the development of modern Kannada prose and improve the communicative skill of writing

MAPPING WITH PROGRAMME OUTCOMES

CO /PO	**PO 1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

Unit I: Modern Kannada Prose- type of Prose writing- forms of prose- creative and non creative- etc.

Unit II: Text-First 82 pages

Unit III: Text-First 82 to 133 pages

Unit IV: Composition of essay- topics- comprehension-planning- effective Language- etc.

Unit V: Text – Second (Whole text Book of 104 pages**)**

Text Book:1. DEVARU, by A.N.Murthy Rao. Pub: D.V.K. Murthy, Krishnamurthipuram, Mysore 570004. Books sellers- Getha Book House K.R.Circle Mysore, Sapna Book House 3rd Main Road, Gandhinagar, Bangalore-09 Ph.080-40114455 Shop onlaine:www.sapnaonline.com

Text Book:2. CHOMANADUDI, by SHIVARAMA KARANTHA Pub: D.V.K. Murthy,

Krishnamurthipuram, Mysore 570004. Books sellers- Getha Book House K.R.Circle Mysore, Sapna Book House 3rd Main Road, Gandhinagar, Bangalore-09 Ph.080-40114455 Shop onlaine:www.sapnaonline.com

Reference:1. Hosagannada sahitya charitre-(Chapter 4, page No.103 Chapter 7, page No. 335.)

Author: L.S.Seshagiri rao, Pub: By Ankita pustaka, 53/Gandhi Bazar, Basavanagudi, Bangalore - 560004. Phone-080-26617100/26617755

Means of Curriculam Delivery: Lecture, Group Learning, Seminar, Assignment, Google Classroom.

SEMESTER IV

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Computer Science**	
Course Code	24U4TELT04	**Language 1: Telugu IV**	**Batch**	2024-2027
			Semester	IV
Hrs/week	4 Hours		**Credits**	3

Course Objectives:

To enable the students to learn and understand the Ancient and Medieval TeluguLiterature and Language and to make the student acquire knowledge of the development of Ancient and Medieval stages of Telugu Literature

MAPPING WITH PROGRAMME OUTCOMES

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M	L	S
CO5	S	S	M	M	S	M	L	L	L	L	S	S

S- Strong M-Medium L-Low

PAPER – IV PRESCRIBED ESSAY, CREATIVE WRITING, TRANSLATION, APPLIED GRAMMAR, CORRECTING THE WORDS AND IDIOMS

1. PRESCRIBED ESSAY: One among the following topics
   1 Computers
   2 Human rights
   3 Women empowerment
   4 Social justice
   5 National integrity
   6 Students and Politics
   7 Protection of the Environment
2. CREATIVE WRITING: The students will be asked two write a letter or Short Story basing on the topic given
3. TRANSLATION: A translation of about ten lines will be given in English to translate in to modern standard Telugu language.
4. APPLIED GRAMMAR: The students will be asked two identify the names of Samasas, Sandhis and Prodsodical requirements as given below
   1. ***Samasas*:** Tathpurusha, Avyayibhava, Karmadharaya, Dvigu, Dwanda and Bahuvrihi.
   2. ***Sandhis*:** Savarna dheerga sandhi, Guna sandhi, Yanadesa sandhi, Vriddhi sandhi, Visarga sandhi, Amreditha sandhi, Yadagama sandhi, Trika sandhi, Dviruktha takara sandhi and Ikara sandhi.
   3. ***Chandas*:** Uthpalamala, Champakamala, Sardulam, Matthebhamu, Kandam, Dvipada, Tetageethi, Ataveladi and Seesam
5. CORRECTING THE WORDS: Five words will be given and the students will be ask two

correct them if at all any errors are there.

6. IDIOMS: Idioms like 'Vana rakada pranam pokada' will be given and the students will be asked to explain with example.

Means of Curriculam Delivery: Lecture, Group Learning, Seminar, Assignment, Google Classroom.

SEMESTER-IV

Programme Code	BSc CS	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	24U4ENLT04	Language 2: Functional English IV	**Batch**	2024-2027
			Semester	IV
Hrs/ Week	4 Hrs		**Credits**	4

COURSE OBJECTIVES:

- To enable the students to understand the basic grammar in English.
- To acquaint students with the structure and strategies of conversation
- To make the students appreciate the significant works and style of prose
- To develop the skills of speaking and writing without flaws.
- To develop an interest in the minds of the students to enjoy and appreciate the literary works in English.

COURSE OUTCOMES (CO):

On Successful Completion of the course the students will be able to

CO Number	CO Statement
CO1	Speak and Write without committing grammatical errors.
CO2	Read and appreciate simple literary works.
CO3	Deal with various conversational situations with confidence.
CO4	Recognize the nuances of English language and attempt creative writing.
CO5	Enumerate in flawless English their understanding of societal concerns.

MAPPING WITH PROGRAMME OUTCOMES

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	M	M	M	M	H	H	M	H	H	H	H
CO2	H	M	H	H	H	H	H	H	M	M	H	M
CO3	M	H	H	M	H	M	M	H	M	H	M	M
CO4	M	H	H	H	M	M	M	H	H	M	H	M
CO5	H	H	M	M	H	L	H	M	H	M	M	H

SYLLABUS

UNIT I - POETRY

Laugh and Be Merry - John Masefield
Mending Wall - Robert Frost
Poor Girl - Maya Angelou

UNIT II - PROSE

On Spelling – Hilaire Belloc
I Won't Let Him Go- Madhavan Kutty
Forgetting - Robert Lynd

UNIT III - SHORT STORY

The Gate Man's Gift - R. K. Narayan
The Open Window - Saki
The Lost Child - Mulk Raj Anand

UNIT IV - ONE ACT PLAY

The Pie and the Tart - Hugh Chester man
The Bear- A Farce in One Act – Anton Chekhov

UNIT V - GRAMMAR AND COMPOSITION

Fill in the blanks with suitable words

Note - Making
Gerund

TEXT BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year / Edition
1	A.G.Xavier	An Anthology of Popular Essays and Poems	Macmillan Indian Limited	1988
2	Prof. A.E.Subramanian	Gifts to Posterity- An Anthology of Modern Short Stories	Chitra Publications, Chennai	2003
3.	Board of Editors	Limelight - 4(An Anthology of Prose , Biography, Poetry, Short stories and One act plays)	SSK Publishers & Distributors, Chennai.	2019

REFERENCE BOOKS:

S. No	Author Name	Title of the Book	Publisher	Year / Edition
1	N.Krishnaswamy	Modern English- A Book of Grammar Usage and Composition	Macmillan Indian Limited	2007
2	Prof.K.Ramappa, Retd.	Essential English Grammar Usage & Composition	M. I. Publications	Fifth Revised Edition
3.	Adibah Amin, Rosemary Eravelly, Farida J Ibrahi	Grammar Builder Level Volume 1	Cambridge University Press	10 Mar 2005

SEMESTER – IV

Programme Code :	B.Sc CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	24U4CSCT10	Core 10 :Relational Database Management System	**Batch**	2024-2027
			Semester	IV
Hrs/week	4 Hours		**Credits**	4

Course Objectives

On Completion of this Course

- To understand the concepts of RDBMS.
- To have knowledge on DBMS & RDBMS.
- To enhance their on SQL, DDL, DML, DCL Statements, Select, group by and having clause String and set operations, Aggregate Functions, Nested Sub Queries.
- To develop the skills of Embedded and Dynamic SQL.

Course Outcomes (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Define the concept of Database and Database Design
CO2	Use the Commands and understand table
CO3	Use SQL query structure and modify the table
CO4	Describe about function, grouping and PL/SQL
CO5	Define the concept of Embedded SQL and PL/SQL

MAPPING WITH PROGRAM OUTCOMES

COs/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	S	S	M	S	L	S	M	S
CO2	L	S	S	S	S	S	M	S	L	S	M	S
CO3	L	S	S	S	S	S	M	S	L	S	M	S
CO4	L	S	S	S	S	S	M	S	L	S	M	S
CO5	L	S	S	S	S	S	M	S	L	S	M	S

Unit-I **10 Hrs**

Database Concepts-A Relational approach: Database -Relationships -DBMS -Relational data model -Integrity rules -Theoretical relational languages. **Database Design**: Data modelling -Dependency -Database design -Normal forms -Dependency diagrams –De-normalization.

Unit-II **10Hrs**

Structured Query Language (SQL): Introduction –DDL-Naming rules and conventions- Data types-Constraints - Creating a table-Displaying table information - Altering an existing table–Dropping, renaming, and truncating table-Table types.

Unit-III` **10Hrs**

Working with tables: DML -Adding a new Row/Record -Customized prompts -Updating and deleting an existing rows/records -Retrieving data from table -Arithmetic operations -Restricting data with WHERE clause -Sorting -Substitution variables -DEFINE command -CASE structure.

Functions and Grouping: Built-in functions-Grouping data.

Joins and Views: Join -join types-Views: Views -Creating a view -Removing a view -Altering a view.

Unit-IV **10 Hrs**

PL/SQL: Fundamentals -Block structure -comments -Data types –Other data types -Variable declaration -Assignment operation-Bind variables -Substitution variables -Printing.

Control Structures and Embedded SQL: Control structures -Nested blocks -SQL in PL/SQL -Data manipulation -Transaction control statements.

Unit-V **08Hrs**

PL/SQL: PL/SQL: Introduction – PL/SQL Execution Environment- PL/SQL Syntax – Cursors-Locks.**Stored Functions**: What are Functions? – Where do functions Reside?– How Oracle Creates a Function?– How Oracle Executes a Function?– Advantages of Functions –Syntax for Creating a Stored Function – An Application Using a Function – Deleting a Stored Function.

Database Triggers: Introduction – Use of Database Triggers – How to apply Database Triggers – Syntax for creating Triggers.

TEXT BOOKS:

S.No	Authors	Title of Book	Publisher	Year of Publication
1	Nilesh Shah	Database Systems Using Oracle(UNIT I,II,III,IV)	PHI	2ndEdition, 2012
2.	Ivan Bayross	"Commercial Application Development using ORACLE Developer 2000", (UNIT V)	BPB Publication	New Delhi, 2007

REFERENCE BOOKS:

S.No	Authors	Title of Book	Publisher	Year of Publication
1	Silberschatz A, Korth	Database System Concepts	McGraw-Hill	6 th Edition.
2.	Raghu Rama Krishnan	Database Management System	McGraw-Hill,	3 rd Edition.
3	J.Keerthika	Database Management Systems	Excellent Publishers,	1st Edition, 2014.

WEBSITE REFERENCES

1.https://en.wikipedia.org/wiki/RDBMS
2.https://www.tutorialspoint.com/DBMS
3.https://www.geeksforgeeks.org/
4.https://www.cs.cmu.edu/..
5.https://www.tutorialspoint.com/

Means of Curriculum Delivery : Power point presentation, Lab Assignments, Observation, Google Classroom

SEMESTER-IV

Programme code:	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code:	24U4CSCT11	Title: Core11: Data Communications and Networks	**Batch**	2024-2027
			Semester	III
Hrs/Week:	4 Hrs		**Credits**	4

COURSE OBJECTIVES

- At the end of the course, the students will be able to:
- Build an understanding of the fundamental concepts of computer networking.
- Familiarize the student with the basic taxonomy and terminology of the computer networking area.
- Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking.
- Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

COURSE OUTCOMES

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

CO Number	CO Statement
CO1	Independently understand basic computer network technology. And Understand and explain Data Communications System and its components.
CO2	To Apply the different types of network topologies and protocols.
CO3	Analyse the layers of the OSI model, TCP/IP and the function(s) of each layer.
CO4	To Evaluate and building the skills of subnetting and routing mechanisms.
CO5	To Create the basic protocols of computer networks and how they can be used to assist in network design and implementation.

MAPPING OUTCOME

CO& PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	S	S	L	M	S	L	L	L	L	M	S
CO2	M	S	S	L	M	S	L	L	L	L	M	S
CO3	M	S	S	L	M	S	L	L	L	L	M	S
CO4	M	S	S	L	M	S	L	L	L	L	M	S
CO5	M	S	S	L	M	S	L	L	L	L	M	S

SYLLABUS

UNIT I **Hours : 10**

INTRODUCTION -Data communications – Networks – Network Types – Internet History – Standards and Administration – Network models: Protocol layering – TCP/IP Protocol Suite – OSI model.

UNIT II **Hours:10**

PHYSICAL LAYER : Data and Signals – Periodic and Aperiodic signal analog - **Analog Signals :** Sine wave, Phase, Time and Frequency Domains, Composite Signals, Bandwidth – **Digital Signal :** Bit Interval and Bit Rate, Digital Signal as a Composite Analog Signal, Digital Verses Analog Bandwidth,

Higher Bit Rate. **Transmission Media :** Guided Media and Unguided Media.

UNIT III **Hours:10**

DATA LINK LAYER - Error detection and correction : Block coding – Cyclic coding – Checksum – Forward error correction - Point to point Protocol(PPP) – **Media Access Control(MAC**) : Random Access – Controlled Access – Channelization.

UNIT IV **Hours:10**

NETWORK LAYER- Network Layer services - Packet switching – IPV Address – Forwarding of IP packets – **Network layer protocols :** Internet protocol (IP) – ICMPv4 – Mobile IP – Next generation IP :IPv6 Addressing – The IPv6 Protocol – The ICMPv6 Protocol – Transition from IPv4 to Ipv6.

UNIT V **Hours:08**

TRANSPORT LAYER : Transport layer protocols - User Datagram Protocol – Transmission Control Protocol – SCTP – **APPLICATION LAYER** : Standard client server protocols : WWW and HTTP – FTP - Electronic mail – Telnet – Secure Shell – Domain Name System – SNMP

Text Books (Recent Edition of the following books only are recommended)

S.No	Authors	Title	Publishers	Year/ Edition
1.	Behrouz .Forouzan	Data Communications and Networking	McGraw Hill Education pvt ltd	Fifth Edition 2015

Reference Books

S.No	Authors	Title	Publishers	Year/ Edition
1.	AchyutS Godbole	Data Communications and Networks	Tata McGraw Hill Education pvt Ltd	Second Edition 2017
2.	Uyless d. Black	Data Communications and Networks	Tata McGraw Hill Education pvt Ltd	Second Edition 2004

WEBSITE REFERENCE

- https://www.tutorialspoint.com/data_communication_computer_network/index.html
- https://www.geeksforgeeks.org/data-communication-definition-components-types-channels/
- https://www.sciencedirect.com/topics/computer-science/data-communication-network

SEMESTER – IV

Programme Code :	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code :	24U4CSCP12	CORE 12: Relational Database Management System -Practical	**Batch**	2024-2027
			Semester	IV
Hrs/week	4 Hours		**Credits**	4

COURSE OBJECTIVES

- To enable the students to gain knowledge in developing C Programs for certain specified problems.
- Understand the basics of computer graphics, different graphics systems and applications of computer graphics
- Understand the concepts of different type of geometric transformation of objects in 2D and 3D

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Understand the concept of Database and Database Design
CO2	Understand the Commands and tables
CO3	Demonstrate SQL query structure and modify the table
CO4	Demonstrate about function, grouping and PL/SQL
CO5	Demonstrate the concept of Embedded SQL and PL/SQL

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	S	S	M	S	L	S	L	S
CO2	L	S	S	S	S	S	M	S	L	S	L	S
CO3	L	S	S	S	S	S	M	S	L	S	L	S
CO4	L	S	S	S	S	S	M	S	L	S	L	S
CO5	L	S	S	S	S	S	M	S	L	S	L	S

SYLLABUS

- Exercise using DDL and DML Commands
- Exercise using Different operators.
- Exercise using Control Structures.
- Exercise to implement Built-in functions.
- Exercise to implement update and Alter table
- Exercise using Constraints a) Not NULL b) Primary key c) Unique key d) Foreign key
- Exercise to implement splitting the table
- Exercise to implement joining the table.
- Exercise to implement using Aggregate functions (AVG, COUNT, MIN, MAX, SUM).
- Exercise to implement using Grouping Data (GROUP BY, HAVING)
- Exercise to implement using Date Functions (SYSDATE,ADD_MONTHS, LAST_DAY, NEXT_DAY).
- Exercise to implement using Commit, Rollback and Save point

SEMESTER-IV

Programme Code :	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code :	24U4CSAT04	ALLIED 4: BUSINESS ACCOUNTING	**Batch**	2024-2027
			Semester	IV
Hrs/week	5 Hours		**Credits**	4

COURSE OBJECTIVE

- To make the students understand the accounting principles, branches of accounting and journal, ledger and trial balance.
- To enable the students to prepare the final accounts.
- To enlighten the students of various methods of costing.
- To make the students to calculate the stock level and differtiate between cost, management and financial accounting.
- To provide knowledge on various types of budjets.

COURSE OUTCOMES(CO)

On successful completion of the course, students should be able to achieve the following outcomes

CO Number	CO Statement
CO1	Explain the basic Accounting concepts and the procedure to prepare journal and ledger.
CO2	Prepare Final Accounts of sole proprietor concern.
CO3	Prepare the cost sheet.
CO4	Calculate the Pricing of Material Issues.
CO5	Explain the Budgetary control system and Prepare the various types of budgets.

MAPPING WITH PROGRAMME OUTCOMES

CO/ PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	L	M	M	S	M	S	L	L	L	M	L	M
CO2	L	M	M	S	M	S	L	L	L	M	L	M
CO3	L	M	M	S	M	S	L	L	L	M	L	M
CO4	L	M	M	S	M	S	L	L	M	S	M	S
CO5	L	M	M	S	M	S	L	L	M	S	M	S

SYLLABUS

UNIT –I **(Hours:12)**

Introduction – Accounting Principles – Braches of accouting – accounting rules - Journalising – Ledger – Subsidiary book including cash books – Trial balance

UNIT – II **(Hours:12)**

Preparation of Final accounts: Trading, Profit and Loss Account and Balance sheet with simpe adjustmets – Outstanding Expenses and Income, Prepaid expenses, Pre received Income, Depreciation – Provisin for bad debts

UNIT – III **(Hours:12)**

Cost Accounting: Meaning and elements of cost – Preparation of cost sheet with simple adjustments

UNIT – IV **(Hours:12)**

Cost Accounting: Meaing and Importance - Stores Ledger: FIFO – LIFO – Weighted average and Simple average method. Managemet Accounting: Its meaning and objectives – Difference between management accounting, financial accounting and cost accounting.

UNIT – V **(Hours:12)**

Budget and Budgetary control – Preparation of various budgets: Fexible budget – Production budget – Cash budget – Sales budget.

(Questions on problems and theory carry 80% and 20% of marks respectively)

Text Books:

S. No.	Author Name	Title of the Book	Publishers	Year / Edition
1.	T. S. Reddy & A. Murthy	Financial Accounting	Margham Publication, Chennai	2012
2.	K.L.Nagarajan, N.Vinayakam, P.L.Nagarajan	Principles of Accountancy	S. Chand & Sons Company Limited	2010
3.	N.P.Srinivasan& Sakthivel Murugan	Accounting for management	S. Chand & Company Limited	2010
4.	T.S.Reddy & Y Hari Prasad Reddy	Cost Accounting	Margham publications	2012
5.	S.Reddy & Y Hari Prasad Reddy	Management Accounting	Margham publications	2000

SEMESTER – IV

Programme code:	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code:	24U4SBSP02	Skill Based Subject 2: Java Programming Practical	**Batch**	2024-2027
			Semester	IV
Hrs/Week:	3 Hrs		**Credits**	1

COURSE OBJECTIVES:

- To develop the applications using Java Programming language.
- To apply the concepts like looping, methods, interface, applets and file concepts.

COURSE OUTCOMES:

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Observe Java to demonstrate practical experience in developing solutions
CO2	Evaluating different methods, interface, applets and file concepts.
CO3	Distinguish about Compile and debug programs in Java language
CO4	Evaluating different controls in java
CO5	Evaluating the file handling functions

MAPPING WITH PROGRAMME OUTCOMES:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	S	S	M	S	L	S	L	S
CO2	L	S	S	S	S	S	M	S	L	S	L	S
CO3	L	S	S	S	S	S	M	S	L	S	L	S
CO4	L	S	S	S	S	S	M	S	L	S	L	S
CO5	L	S	S	S	S	S	M	S	L	S	L	S

PROGRAM LIST

1. Write a Java Program to implement Factorial
2. Write a Java Program to find a Prime Number
3. Write a Java Program using Operators
4. Write a Java Program using Branching Statements
5. Write a Java Program using methods
6. Write a Java Program to implement multiple Inheritance
7. Write a Java Program to implement Packages
8. Write a Java Program to implement multi threding concept
9. Write a Java Program to implement Exception Handling
10. Write a Java Program to Applet Concept

WEBSITE REFERENCE

1.https://www.programiz.com/java-programming/examples
2.https://fresh2refresh.com/java-programming/java-programs

SEMESTER IV

Programme Code	B.Sc.CS	Programme Title	Bachelor of Science (Computer Science)	
Course Code	24U4NMET1A	Non Major Elective : Food Science and Nutrition	**Batch**	2024-2027
			Semester	IV
Hrs/week	2 Hours		**Credits**	1

COURSE OBJECTIVE

- TounderstandtheimportanceofNutritionandtheroleoffoodinthemaintenanceofgoodhealth
- To know about the functions, deficiency and toxicity of nutrients.
- To understand Malnutrition and its prevention
- To know about various adulterants in food and the methods of detecting them.
- To have awareness on the prevailing laws, hygiene and sanitation relating to food safety

CO Number	CO Statement
CO1	identify the properties of various food components
CO2	Explain the role of nutrition in the maintenance of good health
CO3	Explain about classification, sources, functions, requirements, health hazards due to deficiency and excess of these vitamins.
CO4	Explain the problem of malnutrition and measures to overcome the same.
CO5	Explain the various laws, available for food safety and find out whether the food is adulterated.

MAPPING WITH PROGRAMME OUTCOMES

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	M	M
CO4	L	S	L	S	L	S	L	M	M	M	S	M
CO5	S	S	M	M	S	M	L	L	L	L	M	L

Unit	Content
Unit 1	Introduction to Nutrition: Terms used in Nutrition and Health. Definitions - Health, Nutrition, Nutrients, Foods, Diet, R.D.A., Balanced diet, Malnutrition, Under nutrition, Over nutrition, Optimum nutrition. Five Food Groups and Food guide, relationship between food and nutrition, functions of food, classification of nutrients, factors affecting food consumption and food acceptance. Elementary idea of probiotics, prebiotics and organic food.
Unit 2	Basic Nutrition: WATER- Functions, sources, requirements, water balance, dehydration (ORS) and toxicity. CARBOHYDRATE - Composition and classification, source, functions, requirements. LIPIDScomposition, sources, functions, requirements, deficiency and excess; fatty acids- essential and non-essential, SFA, USFA, MUFA, PUFA, significance of fatty acids, Rancidity. PROTEINScomposition, classification sources, functions, requirements, deficiency. ENERGY- unit of energy, food as a source of energy, definition of calorie and joules, energy requirement and factors affecting it- BMR, RMR, SDA.

Unit 3	VITAMINS- classification, sources, functions, requirements, deficiency and excess of the following: Vitamin A, D, E, K, C, Thiamin, Riboflavin, Niacin and B Complex. MINERALS - distribution in body, functions andsources, requirement, deficiency and excess of the following. Calcium, Phosphorus, Iron and Iodine. FIBRE- definition, types, sources, functions, importance in disease prevention
Unit 4	Ecology of malnutrition- Definition, causes and consequences of malnutrition Ecological factors leading to malnutrition such as income, family size, dietary pattern, occupation, customs, food fads, fallacies and other factors. Measures to overcome malnutrition (only introduction)- Increased agricultural production through food technology, food fortification and enrichment, Nutrition education, Nutrition intervention programme genesis, objectives and operation of school lunch programme and ICDS, Organizations that combat malnutrition- International organization – FAO, WHO, UNICEF National Organizations – ICMR, NIN, CFTRI, DFRL, ICAR
Unit 5	Food Adulteration and Food Laws- Definition,Types, Common adulterants and home scale methods of detecting adulterants; Food Laws (only introduction) – PFA, BIS, AGMARK, FPO, HACCP. Food toxicants- Naturally occurring toxicants in canned foods, Alcoholic and non alcoholic beverages Sugars, preservatives, mushrooms Carcinogens in heated foods.

Recent editions of the following books only are recommended

TEXT BOOKS:

S. No	Author Name	Title of the Book
1	Dr.A.Indhuleka	Healthy Vittles and Bits

REFERENCE BOOKS:

S. No	Author Name	Title of the Book	Publisher
1	Guthrie Helen.	Introductory Nutrition	Mirror/ Mosby College Publishing Times
2	Mudambi, S.R., Rajgopal, M.V.	Fundamentals of Foods and Nutrition	NewAge International Pvt. Ltd

Means of Curriculam Delivery: Lecture, Group Learning, Seminar, Assignment, Google Classroom.

SEMESTER IV

Programme Code :	B.Sc CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code:	24U4NMET1B	**Non-Major Elective : Nattu Maruthuvam Muligai Chedigalum நாட்டு மருத்துவமும் மூலிகைச் செடிகளும்**	**Batch**	2024-2027
Hrs/ Week	2 Hours		**Semester**	4
			Credits	1

நோக்கம்

1. நாட்டு மருத்துவத்தின் பயன்பாடு, வகைகள், மருத்துவ முறைகளை அறிதல்.
2. பெண்கள், ஆண்கள், குழந்தைகளுக்கு ஏற்படுகின்ற நோய்கள், மருத்துவ முறைகள், மக்களிடையே உள்ள நம்பிக்கை மருத்துவம் பற்றி அறிதல்.
3. பொதுவாக மக்களுக்கு ஏற்படுகின்ற நோய்களும், அதற்குரிய நாட்டு மருத்துவமுறை பற்றி அறிதல்.
4. மூலிகைகளின் தன்மைகளை ஆராய்ந்து, கஷாயம், மாத்திரை, மூலிகைப் பொடி தயாரிக்கும் முறை பற்றி அறிதல்.
5. உடல் நலத்தை பேணுகின்ற முறைகள், உணவு முறை, உடற்பயிற்சிகள் மற்றும் நோய்கள், நோய் தீர்க்கும் மூலிகைகளைப் பற்றி அறிதல்.

பாடப்பகுதி கற்றலின் வெளிப்பாடு - Course Outcome (CO)

CO Number	**CO Statement**
CO1	பயன்பாட்டில் உள்ள பல வகையான நாட்டு மருத்துவ முறைகள், முக்கியத்துவம் பற்றி அறிந்து கொண்டனர்.
CO2	ஆண்கள், பெண்கள் குழந்தைகளுக்கு ஏற்படுகின்ற நோய்கள் அவற்றைத் தீர்க்கும் மருத்துவ முறைகள் மற்றும் மக்களின் நம்பிக்கை மருத்துவம் பற்றி மாணவர்கள் அறிந்துகொள்ளுதல்.
CO3	மக்களுக்கு அடிக்கடி ஏற்படும் காய்ச்சல் போன்ற பொதுவான நோய்களும், அவற்றிற்குரிய மருத்துவ முறைகள் பற்றியும் அறிந்து கொள்ளுதல்.
CO4	மூலிகைகளின் பயன்பாடு பற்றி மாணவர்கள் அறிந்து கொள்ளுதல்.
CO5	உடல் வலிமை, பாதுகாப்பிற்குத் தேவையான மூலிகைகள், இயற்கை உணவுப் பற்றி மாணவர்கள் அறிந்த கொள்ளுதல்.

MAPPING WITH PROGRAMME OUTCOMES

CO /PO	**PO 1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	M	M
CO4	L	S	L	S	L	S	L	M	M	M	S	M
CO 5	S	S	M	M	S	M	L	L	L	L	M	L

பாடத்திட்டம் : நாட்டு மருத்துவமும் மூலிகைச் செடிகளும்

அலகு 1

நாட்டு மருத்துவ அறிமுகம் - தேவையும் - தேடலும் - மருத்துவ முறைகள் - சித்த மருத்துவம் - ஆயுர்வேதம் - யுநானி - ஹோமியோபதி - அக்குபஞ்சர் - நாட்டு மருத்துவமும் அதன் பெயர்களும் - கை வைத்தியம் - பாட்டி வைத்தியம் - மூலிகை வைத்தியம் - இராஜ வைத்தியம் - இரசிய மருந்து வைத்தியம் - இயற்கை வைத்தியம் - நாட்டு மருத்துவமும் ஆங்கிலேயர் விளக்கமும் - நாட்டு மருத்துவ விளக்கம் - நாட்டு மருத்துவ மூலங்கள் - நோய் - மருத்துவர் - மருந்து – மருத்துவம் - மருந்துசெய் கருவிகள் - மருத்துவ வகைகள் - ஆங்கில மருத்துவமும் நாட்டு மருத்துவமும்.

அலகு 2

மகளிர் மருத்துவம் - பொதுவான நோய்கள் - திருமணத்திற்கு பின்புவரும் நோய்கள் - ஆடவர் மருத்துவம் - நோய்கள் பிற மருத்துவக் குறிப்புகள் - குழந்தையர் மருத்துவம் - நோய்களும் மருத்துவ

முறைகளும் - பிற மருத்துவக் குறிப்புகள் - நம்பிக்கை மருத்துவம்.

அலகு 3

பொது மருத்துவம் - காய்ச்சல் - தலை நோய்கள் - தோல் நோய்கள் - கால் நோய்கள் - குடல் நோய்கள் - சுவாச நோய்கள் - சிறுநீர் நோய்கள் - கண் நோய்கள் - காது நோய்கள் - பல் நோய்கள் மூல நோய் - பௌத்திர நோய் - காமாலை – சர்க்கரை – வாதம் - எயிட்ஸ் - விசக்கடி நோய்கள் - பிற நோய்கள் - பிற மருத்துவக் குறிப்புகள்.

அலகு 4

நலமான வாழ்வுக்கு தெய்வீக மூலிகைகள் - கஷாயம், மாத்திரை, மூலிகைப்பொடி தயாரிக்கும் முறைகள் - நோயின்றி வாழும் வழி - இயற்கை உணவு – நூறாண்டு வாழ்வது எப்படி – பருகும் பானங்களை எவ்வாறு அருந்த வேண்டும் - உடல் தேய்மானங்களும் புதுப்பிக்கப்படுதலும் - உணவும் உடலும் - உணவுப் பிரச்சினை – வேண்டாத பழக்கங்களை விட்டொழியுங்கள் - மனித சக்தியும் - மின் சக்தியும் 74 அதிசய விளக்கம் - பூலோக தேவாமிர்தம் (பக்க எண் 45 – 84)

அலகு 5

பொதுவான உடல் நலம் பெற முக்கியக் குறிப்புகள் - நார்ச்சத்து நமது உடலுக்கு உயிர்சத்து - மூலிகை மருந்து உட்கொள்ளும் நோயாளிகள் பின்பற்ற வேண்டிய இயற்கை உணவு முறைகள் - பின்பற்ற வேண்டிய உடற்பயிற்சிகள் - இருதயக் கோளாறுக்கு மூலிகை மருந்துகள் - இரத்த சோகை – ஆஸ்துமா மலச்சிக்கள் - மூல நோய்- வயிற்றில் புழு, பூச்சிகள், கிருமிகள் வெளியேற – வயிற்றுவலி, வயிற்றுப் புண், வயிற்றோட்டம், மஞ்சள் காமாலை – கல்லீரல் பாதிப்பால் ஏற்படும் நோய்களுக்கு தெய்வீக மூலிகை மருத்துவம் (பக்க எண் - 86 – 150)

பாடநூல்

வ.எ	ஆசிரியர் பெயர்	நூலின் பெயர்	வெளியீடு	ஆண்டு - பதிப்பு
1	ந. சந்திரன்	நாட்டு மருத்துவம்	விஜயா பதிப்பகம், கோவை.	3ஆம் பதிப்பு 2018
2	ஞானோதய வைத்தியர் டாக்கடர் சி.கே. மாணிக்கவாசகம்.	எளிய முறையில் பிணி அகற்றும் தெய்வீக மூலிகைகள்.	நர்மதா பதிப்பகம், சென்னை.	மே 2000.

SEMESTER IV

Programme Code:	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**24U4NMET1C**	**Non Major Elective : Floriculture**	**Batch**	**2024-2027**
			Semester	**IV**
Hrs/week	**2 Hrs**		**Credits**	**1**

COURSE OBJECTIVE

- To make the students know what is floriculture, its status, scope and development.
- To make the students to know how to cultivate various types of cut flowers, arranging bouquets and scope of loose flowers to trade.
- To make the students understand how to make various designs such as vase design, basket/mug design etc.,
- To make the students clear about how to propogate various varieties of flowers which are Annuals & Perennials and their growing techniques.
- The students will be made to understand whether floriculture can be taken,as their career and the opportunities available.

COURSE OUTCOME (CO)

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

CO Number	CO Statement
CO1	Explain the scope, status and development of floriculture in India.
CO2	To make use of cut flowers in arranging bouquets and explain the significance of loose flowers to trade.
CO3	Demonstrate how to make vase design, basket / mug design creatively by using flowers.
CO4	Explain the varieties of flowers which are annuals and perennials and their growing techniques.
CO5	Make floriculture to be taken as their career by knowing the government incentives, subsidies and other supporting agencies.

MAPPING WITH PROGRAMME OUTCOMES

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	M	M
CO4	L	S	L	S	L	S	L	M	M	M	S	M
CO5	S	S	M	M	S	M	L	L	L	L	M	L

SYLLABUS

Unit	Content
Unit-I	**(6 Hours)** Floriculture – Definition, Introduction and Scope of Floriculture. Status of floriculture in

	India. Development of Floriculture
Unit-II	**(6 Hours)** Cut Flowers- Types of cut flowers, Arranging bouquets, Using floral design tools. Loose Flowers- Scope of loose flower trade, Significance in the domestic market/export.
Unit-III	**(6 Hours)** Design- Types of design Flower choice for design, Corsages/Boutonnières, Vase design, Basket/mug design.
Unit-IV	**(6 Hours)** Propagation-Types of propagation, Annuals & Perennials, Varieties, Growing seasons, Potting techniques.
Unit-V	**(6 Hours)** Careers in Floriculture. Export/Import and marketing in floriculture. Government Incentives and Schemes. The role of supporting agencies.

TEXT BOOKS:

Recent editions of the following books only are recommended

S. No	Author Name	Title of the Book	Publisher
1	Dr.S.N.Suresh	Introduction to Floriculture	Techers Publishing House, I Edition, 2017

REFERENCE BOOKS:

S. No	Author Name	Title of the Book	Publisher
1	Jacob Varghese unthara	Know your Garden Plants	H and C Books
2	Dr. B. Hemlanaik	Production Technology of Ornamental Crops and Landscape Gardening	UAHS, Shimoga

Means of Curriculam Delivery: Lecture, Group Discussion, Seminar, Assignment, Case Studies, Google Classroom.

SEMESTER - IV

Programme Code :	B.Sc CS	Programme Title	Bachelor of Science (Computer Science)	
Course Code:	24U4NMET1D	Non-Major Elective : Organic Farming and Mushroom Cultivation இயற்கை விவசாயமும் காளான் வளர்ப்பும்	Batch	2024-2027
Hrs/ Week	2Hours		Semester	4
			Credits	1

நோக்கம்

- இயற்கை வேளாண்மையின் முக்கியத்துவத்துவம், உரங்களின் தீமைகளை உணர்தல், மண் வளத்தை அறியச் செய்தல்.
- இயற்கை வேளாண்மையில் முன்னனோடி பண்ணை உருவாக்குவதன் நோக்கம், உருவாக்கும் முறை பற்றி அறியச்செய்தல்.
- காளான்களின் பயன்பாடு, வளர்ப்பதற்கான வாய்ப்புகள், பயிற்சி மையங்கள் பற்றி அறிதல்.
- காளான் வளர்ப்பின் மூலம் பொருளாதாரத்தில் மேன்மையடைதல், காளான் சந்தைப்படுத்துதல் பற்றி மாணவர்களுக்கு உணர்த்துதல்.
- காளான் வளர்ப்பிற்கு அரசு மானியங்கள், காளான் வளர்ப்புக் குடில் அமைத்தல், விதை தயாரித்தல், நோய்த்தொற்றில் இருந்து பாதுகாக்கும் முறைகளை மாணவர்களை அறியச் செய்தல்.

பாடப்பகுதி கற்றலின் வெளிப்பாடு - Course Outcome (CO)

CO Number	CO Statement
CO1	இயற்கை வேளாண்மையின் மூலம் மண் வளத்தையும் மக்களின் உடல் வளத்தையும் பேணலாம் என மாணவர்களிடம் அறிந்துகொள்ளல்.
CO2	இயற்கை வேளாண்மையில் பண்ணைகள் அமைத்தல், இயற்கை உரங்கள் தயாரித்தல், நஞ்சில்லாத விளைபொருட்களை தயாரித்தல் குறித்து மாணவர்கள் அறிந்துகொள்ளல்.
CO3	காளான் வளர்ப்பதற்கான சூழல்கள், களான் வளர்ப்பு பயிற்சி மையங்கள், காளான்களின் பயன்கள் பற்றி மாணவர்கள் அறிந்துகொள்ளல்.
CO4	காளான் வளர்ப்பின் மூலம் சுயதொழிலை தொடங்குதல், காளான் சந்தைப்படுத்துதல், காளான் வளர்ப்பில் பொருளீட்டல் பற்றி மாணவர்களை உணரச் செய்தல்.
CO5	காளான் வளர்ப்பதற்கான அரசு மானியங்கள், காளான் வளர்த்தல் மற்றும் அதை பாதுகாக்கும் முறைகள் பற்றிய மாணவர்கள் அறிந்துகொள்ளல்.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	M	M
CO4	L	S	L	S	L	S	L	M	M	M	S	M
CO 5	S	S	M	M	S	M	L	L	L	L	M	L

பாடத்திட்டம் : அக்னிச் சிறகுகள்

அலகு 1

வயல் வெளியே பல்கலைக்கழகம் - நிலம் என்ன நீள அகலம் மட்டுமா? - நண்பர்களுக்குமா நஞ்சு? - இருமடிப் பாத்தி - மண்புழுவா கரையானா? - பயிரில் பூச்சி வந்தால் - மூன்று அமாவாசைகள்!

அலகு 2

வறட்சியிலும் பண்ணை - எம்.பி.ஏ படித்தும் விவசாயமா - இயற்கை சான்றிதழ் - தேனி வளர்ப்பு-தித்திப்பு! - உலகம் இரு கரம் நீட்டி வரும்! - பாலையூர் அறுவடை

அலகு 3

பூஞ்சைகள் - காளான்கள் - உலகின் முக்கிய காளான்கள் - காளான்களின் உயிரியல் - காளான்களின் ஊட்டச்சத்துக்கள் - வளர்ப்புக்கேற்ற காளான்கள் - காளான்களின் வளர்ப்பு ஏன் - இந்தியாவின் புரதப் பஞ்சமும் புரதத் தேவையும்.

அலகு 4

காளான்களின் வளர்ப்புக்கான ஊடகங்கள் - காளான் வளர்ப்பதற்கான வாய்ப்புகள் - வளர்ப்புக் காளான் தேர்வு - காளான் வளர்ப்பு - காளான் வளர்ப்பு உலக அளவிலும் இந்திய நிலையியலும் - ஆண்டு முழுவதுமான காளான் வளர்ப்பு - காளான் வளர்ப்புக் குடில் - மதர்ச் ஸ்பான் தயாரிப்பு.

அலகு 5

ஆய்வுக்கூடத்தில் கவனிக்கப்பட வேண்டிய விதிகள் - காளான் வளர்ப்பில் கவனிக்க வேண்டிய அணுகுமுறைகள் - காளான் வளர்ப்பு மேலாண்மை - காளான்களைப் பாதிக்கும் நோய்கள் - வளர்ப்புக் காளான்களின் நல மேலாண்மை - காளான்கள் அறுவடை - காளான்களைப் பதனம் செய்து கையாலும் முறை - காளான்களை எப்படி உண்ண வேண்டும்!

பாடநூல்

வ.எ	ஆசிரியர் பெயர்	நூலின் பெயர்	வெளியீடு	ஆண்டு -பதிப்பு
1	பொன். செந்தில்குமார்	இயற்கை வேளாண்மை அ முதல் ∴ வரை	விகடன் பிரசுரம் - 409, சென்னை.	17 ஆம் பதிப்பு செப்டம்பர் 2017
2	முனைவர் வெ. சுந்தரராஜ்	காளான் வளர்க்கலாம் காசு பார்க்கலாம்	சீதை பதிப்பகம், திருவல்லிக்கேணி, சென்னை	2ஆம் பதிப்பு 2017

SEMESTER – IV

Programme Code:	B.Sc CS	**Programme Title**	Bachelor of Science (Computer Science)	
Course Code:	24U4ESKT04	Employability Skills – IV	**Batch**	2024-2027
			Semester	IV
Hours/ Week	4		**Credits**	-

COURSE OBJECTIVES:

1. To focus on grammar, essay writing, reading comprehension, group discussions, and verbal analogy
2. To address number series, chain rule, data interpretation, syllogisms, and seating arrangements.
3. To tackle puzzles, dice, mirror and water images, and age-related problems.

COURSE OUTCOMES (CO):

On successful completion of the course, students will be able to achieve the following outcomes.

CO Number	CO Statement
CO1	To ensure subject-verb agreement, identify errors, and enhance problem-solving skills in number series and the chain rule.
CO2	To master one-word substitutions, enhance essay writing skills, and develop problem-solving abilities in partnership and data interpretation.
CO3	To enhance reading comprehension and group discussion skills, and develop problem-solving abilities in alphanumeric series and age-related problems.
CO4	To develop skills in delivering a five-minute talk on given topics and self-introduction, and enhance problem-solving abilities in mirror and water image, and syllogism challenges.
CO5	To develop skills in resume writing and verbal analogy, and enhance problem-solving abilities in puzzles, dice, and seating arrangements.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	L	H	M	H	H	M	H	H	M	L	H
CO2	M	L	H	M	H	M	M	H	M	H	H	H
CO3	H	M	H	M	M	H	M	L	H	H	H	M
CO4	M	H	M	H	L	L	H	M	L	M	M	L
CO5	M	L	M	L	H	M	H	H	M	L	M	L

SYLLABUS

UNIT-I

Subject Verb Agreement-Spot the Error- Number Series-Chain Rule

UNIT- II

One Word Substitution-Essay Writing- Partnership- Data Interpretation

UNIT- III

Reading Comprehension-Group Discussion- alpha Numeric series-Age

UNIT- IV

Five Minute talk on given topics, Self-Introduction- Mirror and Water Image, Syllogism

UNIT V

Resume Writing, Verbal Analogy- Puzzle and Dice, Seating Arrangement

TEXT BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year/ Edition
1	Meenakshi Raman	Communication Skills	Oxford University Press: India	2011
2	Konar, Nira	Communication Skills for Professionals	PHI Learning Private Limited	2013
3	Alex Dr.K	Soft Skills	S.Chand Competition	2012
4	R. S. Agarwal	Quantitative Aptitude (for Competitive Examinations)	S. Chand and Company Limited	2017
5	R.Gupta's	Logical and Analytical Reasoning	Ramesh Publishing House New Delhi	2018

REFERENCE BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year / Edition
1	Course team, Bharathiar University	Communication Skills a multi- skill course	Macmillan Publishers India LTD.	2009
2	Krishna Mohan	Developing Communication Skills	Trinity Press, Laxmi Publication Pvt. Ltd., New Delhi.	2018
3	Joyce Pereire	Technical English -II	Vijay Nicole Imprints Pvt.Ltd.	2017
4	Arun	Questions on GENERAL MENTAL ABILITY TESTS	YOUNG MAN & CO.	2018
5	R.V. Praveen	Quantitative Aptitude and Reasoning	PHI Learning Private Limited,Delhi	2018

Means of Curriculum Delivery: Lecture, Group Discussion, Seminar, Assignment, Google Class Room.

WEBSITE REFERENCE

1.http://www.indiabix.com

2.http://placement.freshersworld.com

SEMESTER IV

Programme Code :	12-ம் வகுப்பு வரை தமிழ் மொழிப்பாடம் பயிலாதவர்களுக்கு	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**24U4BTLT02**	**Non Credit Course 2 : Basic Tamil-II Title : அடிப்படைத் தமிழ்**	**Batch Semester**	**2024-2027 IV**
Hrs/week	-		**Credits**	-

அகமதிப்பீட்டுத் தேர்வு மட்டும்

நோக்கம்:

- ஆத்திச்சூடி, கொன்றை வேந்தன், திருக்குறள் போன்ற நூல்களில் கூறப்பட்டுள்ள நீதிகளைத் தெரிந்து கொள்ளுதல்.
- தடையில்லாமல், பிழையில்லாமல் படிப்பதற்கு எளிமையான கதைகளைப் படித்துப் பழகுதல்.
- தமிழ் இலக்கியங்களின் வரலாறு மற்றும் சிறப்புகளை அறிந்து கொள்ளச்செய்தல்.
- தமிழக மக்களின் வாழ்க்கை முறை உணவுமுறை, கலாச்சாரம், பண்பாடு பற்றி அறிந்துகொள்ளச் செய்தல்.

பாடப்பகுதி கற்றலின் வெளிப்பாடு (Course Outcome)

CO Number	CO Statement
CO1	ஆத்திச்சூடி, கொன்றை வேந்தன், திருக்குறள் போன்ற நூல்களின் வழி அக்கால மக்கள் பின்பற்றிய நீதிகளை அறிந்து அதன்படி வாழ்தல்.
CO2	எளிமையான நூல்களைப் படிப்பதன் மூலம், பிழையில்லாமல், தெளிவான உச்சரிப்போடு கதைகளைப் படித்துப் பழகுதல்.
CO3	தமிழ் இலக்கியங்களின் வரலாறு மற்றும் அதன் சிறப்புகளை அறிந்து கொள்ளுதல்.
CO4	பழங்கால மக்களின் வாழ்க்ககை முறை, பண்பாடு, கலாச்சாரம் ஆகியவற்றை அறிந்து கொள்ளுதல்.

நிரல் விளைவுகளைக் கொண்ட வரைபடம்

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	M	M
CO4	L	S	L	S	L	S	L	M	M	M	S	M
CO5	S	S	M	M	S	M	L	L	L	L	M	L

நீதி நூல்கள் : ஆத்திச்சூடி (முதல் 12) ‘‘அறம் செய விரும்பு’’, முதல் ‘‘ஔவியம் பேசேல்’’ வரை.

கொன்றை வேந்தன் - ‘‘அன்னையும் பிதாவும் முன்னறி தெய்வம்’’ முதல் ‘‘எண்ணும் எழுத்தும் கண்ணெனத்தகும்’’ வரை (7)

திருக்குறள் (5)
1. அகர முதல... (1)
2. செயற்கரிய... (26)
3. மனத்துக் கண்... (34)
4. கற்க கசடறக்... (391)
5. எப்பொருள் யார் யார்... (423)

எளிய நீதிக் கதைகள் - (தெனாலிராமன் கதைகள், பீர்பால் கதைகள், கிராமியக் கதைகள், ஈசாப் கதைகள்)

தமிழ் இலக்கியங்கள் : வரலாறு – குறிப்பு – அறிமுகம்

எடுத்துக்காட்டு : குறள் பற்றி எளிய தொடர்களில் அறிமுகம்
தமிழகம் - உணவுமுறை, விழாக்கள், கலைகள் பற்றியக் குறிப்புகள்

	அக மதிப்பீட்டுத் தேர்வு மதிப்பெண் வழங்கும் முறை	மதிப்பெண்கள்
1	வகுப்புத்தேர்வு – 1	10
2	வகுப்புத்தேர்வு – 2	10
3	மாதிரித்தேர்வு	10
4	பயிற்சிக் கட்டுரை	10
5	வாய்மொழித் தேர்வு	10
	மொத்த மதிப்பெண்கள்	50

குறிப்பு : வாய்மொழித் தேர்வில் தமிழ்ச் செம்மொழி வரலாறு தொடர்பான வினாக்கள் மட்டுமே கேட்கப்பட வேண்டும்.

SEMESTER IV

Programme Code :	**12-ம் வகுப்பு வரை தமிழ் மொழிப்பாடம் பயின்றவர்களுக்கு**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code :	**24U4ATLT02**	**Advanced Tamil-II # Title : சிறப்புத் தமிழ் II**	**Batch**	**2024-2027**
			Semester	**IV**
Hrs/week	-		**Credits**	-

அகமதிப்பீட்டுத் தேர்வு மட்டும்

நோக்கம்:

- இளங்கலை பட்ட வகுப்பில் தமிழ் - பயிலாதவர்களுக்கு, தமிழ் இலக்கியத்தின் சிறப்பினை எடுத்துக்கூறுதல்.
- திருக்குறளின் சிறப்பை அறியச் செய்தல்.
- சொற்களைப் பயன்படுத்தும் முறைகளையும், வாக்கியப் பிழைகள் ஏற்படுவதைத் தவிர்க்கும் முறைகளையும் அறியச் செய்தல்.
- பேச்சு வழக்குகளில் நாம் பயன்படுத்தும் சொற்களையும், சொற்களில் உள்ள பிழைகளையும், சரியாகப் பயன்படுத்தும் சொற்களையும் தெரிந்து கொள்ளச் செய்தல்.
- மாணவர்களின் கற்பனைத்திறன், படைப்பாற்றல் திறமை மேம்படுத்த பயிற்சி அளித்தல்.

பாடப்பகுதி கற்றலின் வெளிப்பாடு (Course Outcome)

CO Number	CO Statement
CO1	தமிழ் இலக்கியங்களின் சிறப்பினை உணரச் செய்தல்
CO2	திருக்குறளின் வாயிலாக மக்களின் வாழ்க்கைமுறைகளை அறிதல்
CO3	வாக்கியங்களை பிழையில்லாமல் சரியான முறையில் எழுதுதல்.
CO4	பேச்சு வழக்கில் நாம் பேசும் போது ஏற்படும் மரபுபிழைகளைத் தவிர்த்தல் மற்றும் தகுதியான வழக்குச் சொற்களைப் பயன்படுத்துதல்.
CO5	திறமையான மாணவர்களை ஊக்குவித்து படைப்பாளர்களாக, கவிஞர்களாக உருவாக்குதல்.

நிரல் விளைவுகளைக் கொண்ட வரைபடம்

CO /PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	S	S	S	S	S	S	S	S	S	S	S	S
CO2	M	S	S	M	S	M	S	S	M	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M	M	M
CO4	L	S	L	S	L	S	L	M	M	M	S	M
CO5	S	S	M	M	S	M	L	L	L	L	M	L

பாடத்திட்டம்

கூறு – 1 திருக்குறள் - ஒழிபியல் முதல் 5 அதிகாரங்கள் மட்டும்.

கூறு – 2 உரைநடை : (கட்டுரை)
(இளைஞர்களின் ஒளிமயமான எதிர்காலத்திற்கு - கு.வெ. பாலசுப்பிரமணியம்)

கூறு – 3 எழுத்துப்பிழை நீக்க வழிகள் - பிழையும் திருத்தமும், சொற்களைச் சரியாகப் பயன்படுத்தும் பாங்கு – வினைச்சொற்கள் துணை வினைகள்
(எடுத்துக்காட்டுகளுடன் விளக்குதல்)

கூறு – 4 வழக்கறிதல் : மரபு வழக்கு - இயல்பு வழக்கு – தகுதி வழக்கு அறிதல்

கூறு – 5 படைப்பாற்றல் பயிற்சி – கட்டுரை எழுதுதல்.

	அக மதிப்பீட்டுத் தேர்வு மதிப்பெண் வழங்கும் முறை	மதிப்பெண்கள்
1	வகுப்புத்தேர்வு – 1	10
2	வகுப்புத்தேர்வு – 2	10
3	மாதிரித்தேர்வு	10
4	பயிற்சிக் கட்டுரை	10
5	வாய்மொழித் தேர்வு	10
	மொத்த மதிப்பெண்கள்	50

குறிப்பு : வாய்மொழித் தேர்வில் தமிழ்ச் செம்மொழி வரலாறு தொடர்பான வினாக்கள் மட்டுமே கேட்கப்பட வேண்டும்

SEMESTER V

SEMESTER V

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	24U5CSCT13	**Core 13: PHP & MySQL**	**Batch**	2024-2027
			Semester	V
Hrs/week	5 Hours		**Credits**	4

COURSE OBJECTIVES

- Develops skills to create server-side scripts using PHP. Introduces server-side programming concepts and terminology. Explores a variety of server-side techniques and MySQL database manipulation.

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	**CO Statement**
CO1	Describe and use the features and syntax of programming language PHP
CO2	Create, translate, and process HTML information using the Common Gateway Information (CGI) protocol.
CO3	Apply PHP code to produce outcomes and solve problems.
CO4	Display and insert data using PHP and MySQL. Retrieve, insert, update, and delete data from the relational database MySQL
CO5	Test, debug, and deploy web pages containing PHP and MySQL.

MAPPING WITH PROGRAMME OUTCOMES

Cos/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	S	S	M	S	L	S	M	S
CO2	L	S	S	S	S	S	M	S	L	S	M	S
CO3	L	S	S	S	S	S	M	S	L	S	M	S
CO4	L	S	S	S	S	S	M	S	L	S	M	S
CO5	L	S	S	S	S	S	M	S	L	S	M	S

SYLLABUS

UNIT I **(Hours:12)**

What is PHP? Why use PHP? Embedding PHP with HTML, Enhancing further, PHP Language Basics: Using variable in PHP, understanding Data types, operator and expressions. Making decisions: simple decision with if statements, switch, ternary operator, do..while loop, for statement, break, loop skip iteration, nested loop, Function: calling functions, working with variable functions, own functions references, recursive functions.

UNIT II **(Hours:12)**

Arrays: creating and accessing array elements, looping through arrays, multidimensional array, manipulating array Strings: creating and accessing strings, searching strings, replacing text within strings and formatting strings.

UNIT III **(Hours:14)**

Handling HTML forms with PHP: HTML forms work, capture form data with PHP, multi value fields, web forms with PHP, storing PHP variables in forms, create file upload forms, redirecting PHP.Use and advantatage of RE over in build function;use of PREG match functions() PREG – Replace() function-Spilt () in RE.

UNIT IV **(Hours:10)**

Introducing Database and SQL: Deciding how to store data, quick play with MYSQL, connecting to MYSQL from PHP, retrieving data from MYSQL with PHP.

UNIT V **(Hours:12)**

Manipulating MYSQL data with PHP insert, update, delete records- Working with files anddirectories: understanding files and directories, getting information on files, opening and closing files,reading files and writing files , file permissions, Copying ,renaming and deleting files, working withdirectories. Case Study: Building a text editor (to be given as assignment).

TEXT BOOKS:

S.No	Authors	Title	Publishers&Edition
1.	Matt Doyle	Beginning PHP 5.3	TataMcgraw Hill,2012

REFERENCE BOOKS:

S.No	Authors	Title	Publishers&Edition
1.	VikramVaswani	PHP: A Beginners guide	TataMcgraw Hill,2009.
2.	Lawpoint	Guide to PHP	LP Computer series 2007.
3.	Larry Ullman	PHP 6 and MySQL 5	Pearson Education,2008

WEBSITE REFERENCES

https://www.phpexercises.com
https://www.w3resource.com/php-exercises/
https://www.geeksforgeeks.org/php/
Means of Curriculum Delivery : Lecture, Group Learning, Seminar, Assignment, Google Classroom

SEMESTER -V

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code	24U5CSCP14	**CORE 14: PHP AND MY SQL - PRACTICAL**	**Batch**	2024-2027
			Semester	V
Hrs/week	5 Hours		**Credits**	4

COURSE OBJECTIVE

To enable the students to gain knowledge in developing PHP and MySQL Programs for certain specified problems.

COURSE OUTCOMES (CO)

At the end of the practical session, students would be well-versed in

CO Number	CO Statement
CO1	Write PHP code to produce outcomes and solve problems.
CO2	Display and insert data using PHP and MySQL.
CO3	Test, debug, and deploy web pages containing PHP and MySQL.

MAPPING WITH PROGRAMME OUTCOMES

CO/ Pos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	S	S	M	S	L	S	L	S
CO2	L	S	S	S	S	S	M	S	L	S	L	S
CO3	L	S	S	S	S	S	M	S	L	S	L	S
CO4	L	S	S	S	S	S	M	S	L	S	L	S
CO5	L	S	S	S	S	S	M	S	L	S	L	S

PROGRAM LIST

1.Write a program to create different variables.
2.Develop a PHP program using controls and functions
3.Develop a PHP program to design a college application form using MYSQL table.
4.Write a program to send an HTML formatted Email in PHP.
5.Develop a PHP program to display student information using MYSQL table.
6. Write a program to do different types of Sorting in PHP.
7. Write a program to do String Manipulation in PHP.
8. Write a PHP program to get color code from the user which displays the color name.
9. Write a PHP program to do calculator functions
10.Write a program to upload a file in PHP.

WEBSITE REFERENCES

https://www.phpexercises.com
https://www.w3resource.com/php-exercises/
https://www.geeksforgeeks.org/php/
Means of Curriculum Delivery: Power point presentation, Lab Assignments, Observation

SEMESTER -V

Programme code:	B.Sc CS	Programme Title	**Bachelor of Science (Computer Science)**	
Course code:	24U5CSCT15	**Core 15: Software Engineering and Testing**	**Batch**	2024-2027
			Semester	V
Hrs/week	5 Hours		**Credits**	4

Course Objectives

To enable the students

- ✓ To provide knowledge on Software engineering concepts
- ✓ To understand various techniques of cost estimation of software, software design and software Requirements.
- ✓ To understand various issues in implementation of software, verification, validation and maintenance of software to give a roadmap to design a new software project.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Define the various models of software development life cycle
CO2	Explain the software requirement analysis and cost Estimation
CO3	Understand the software design techniques
CO4	Apply verification and validation tools
CO5	Use software testing methods

MAPPING WITH PROGRAMME OUTCOME

CO / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

Syllabus

UNIT –I **(Hours – 12)**

Introduction to Software Engineering : Introduction-Basic definitions- Distribution of effort- Project Size Categories – Managerial Issues -Quality and Productivity Factors – Software Cost Factors. **Planning a Software Project:** Introduction – Software life Cycle Models – Waterfall Model – Work Products and Reviews – Prototype Model – Spiral Model – Concurrent Development Model – Component Assembly Model – Rapid Application Development Model – The incremental Model – Planning an Organizational Structure.

UNIT –II **(Hours – 12)**

Software Cost Estimation: Introduction- Software Cost Estimation Techniques – Staffing Level Estimation – Software Maintenance Cost Estimation. **Software Requirements Analysis:** Software Requirements Analysis – Facilitated Application Specification Technique – Quality Function Deployment – Elements of Requirements Analysis- Classical Analysis Methods.

UNIT –III **(Hours – 12)**

Software requirements Definition: Software Requirements Specification- Formal Specification

Techniques – Languages and Processors for SRS**. Software Design:** Introduction – Types of Design – Design Strategies – Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Distributed and Real Time System Design.

UNIT –IV **(Hours – 12)**

Unit Testing: Overview - Integration Testing: Overview- Techniques: Graph based & Path based- Functional Testing-System Testing: Overview- Categories: Reliability Security Performance Recovery- Acceptance Testing: Overview, Types of Acceptance Testing

UNIT -V **(Hours – 12)**

Software Testing Methods: Flow graph and Graph Matrix- Software Testing Methods – White box testing – White Box Testing Techniques – Black box Testing - Black box Testing Techniques – Characteristics of testable software.

TEXT BOOK

Recent editions of the following books only are recommended

S.No	Author	Title of the Book	Publisher
1	A.K.R.S. Anusha	Software Engineering	Charulatha Publications
2	A Practitioner's Approach (India) Paperback – Import	Software Engineering	Pressman
3	Rajib Mall	Fundamentals Of Software Engineering	Eastern Economy
4	Srinivasan Desikan, Gopalaswamy Ramesh	Software Testing: Principles and Practice	Pearson

SEMESTER V

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Science (Computer Science)**	
Course Code:	24U5CSCT16	Core:16: **Cyber Security**	**Batch**	**2024-2027**
			Semester	**V**
Hrs/Week:	**5 Hrs**		**Credits**	**4**

COURSE OBJECTIVES

1. To learn about the basic understanding of security, cryptography, system attacks and defences against them.
2. To develop graduates that can plan, implement, and monitor cyber security.
3. To help ensure the protection of information technology assests.
4. To develop graduates that can identify, analyze, and remediate computer security breaches.

COURSE OUTCOMES

This course aims at understanding Information and Scientific visualization techniques and gives a clear picture of various abstraction mechanisms.

MAPPING WITH PROGRAMME OUTCOMES

CO / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

Unit I: **(Hours : 12)**

INTRODUCTION TO CYBER SECURITY: Introduction -Computer Security - Threats -Harm - Vulnerabilities - Controls –Authentication AccessControl and Cryptography - Web—User Side - Browser Attacks - Web Attacks Targeting Users –obtainingUser or Website Data - Email Attacks.

Unit II **(Hours : 12)**

SECURITY IN OPERATING SYSTEM &NETWORKS: Security in Operating Systems - Security in the Design of Operating Systems -Rootkit – Networksecurity attack- Threats to Network Communications - Wireless Network Security - Denial ofService - Distributed Denial-of-Service.

Unit III **(Hours : 12)**

DEFENCES: SECURITYCOUNTER MEASURES: Cryptography in Network Security - Firewalls - Intrusion Detection and Prevention Systems – NetworkManagement - Databases - Security Requirements of Databases - Reliability and Integrity – DatabaseDisclosure - Data Mining and Big Data.

Unit IV **(Hours :12)**

PRIVACY IN CYBERSPACE : Privacy Concepts -Privacy Principles and Policies -Authentication and Privacy – DataMining -Privacy on the Web - Email Security - Privacy Impacts of Emerging Technologies- Where the Field IsHeaded.

Unit V **(Hours :12)**

MANAGEMENT AND INCIDENTS: Security Planning - Business Continuity Planning - Handling Incidents - Risk Analysis – Dealingwith Disaster - Emerging Technologies - The Internet of Things - Economics - Electronic Voting -Cyber Warfare- Cyberspace and the Law - International Laws – Cybercrime - Cyber Warfare and Home Land Security.

Text Book:

1. Charles P. Pfleeger Shari Lawrence Pfleeger Jonathan Margulies, Security in Computing, 5th Edition , Pearson Education , 2015

Reference Book(s)

1. George K.Kostopoulous, Cyber Space and Cyber Security, CRC Press, 2013.
2. Martti Lehto, Pekka Neittaanmäki, Cyber Security: Analytics, Technology and Automation edited, Springer International Publishing Switzerland 2015
3.Nelson Phillips and Enfinger Steuart, ―Computer Forensics and Investigations‖, Cengage Learning, New Delhi, 2009.

SEMESTER-V

Programme Code:	**BSC CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**24U5ESKT05**	**Skill Based Subject 5: Employability Skills - V**	**Batch**	**2024-2027**
			Semester	**V**
Hrs/ Week	**4 Hours**		**Credits**	**-**

COURSE OBJECTIVES:

1. To develop skills in resume overview, e-mail writing, news reporting, and JAM (Just a Minute) sessions
2. To develop skills in mock group discussions and Mock HR interviews.
3. To focus on communication and mathematical aptitude questions.

COURSE OUTCOMES (CO):

On successful completion of the course, students will be able to achieve the following outcomes.

CO Number	CO Statement
CO1	To develop skills in resume overview and registration on company job portals.
CO2	To develop skills in e-mail writing and complete Assessment 1, which includes communication and mathematical aptitude questions.
CO3	To develop skills in news reporting and complete Assessment II.
CO4	To develop skills in JAM (Just a Minute) sessions and participate in mock group discussions.
CO5	To develop skills for Mock HR interviews and complete Assessment III.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	L	H	M	H	H	M	H	H	M	L	H
CO2	M	L	H	M	H	M	M	H	M	H	H	H
CO3	H	M	H	M	M	H	M	L	H	H	H	M
CO4	M	H	M	H	L	L	H	M	L	M	M	L
CO5	M	L	M	L	H	M	H	H	M	L	M	L

SYLLABUS

UNIT-I

Resume Overview, Registration on Company Job Portal

UNIT- II

E-Mail Writing, Assessment 1

UNIT- III

News Reporting Assessment II

UNIT- IV

JAM (Just a Minute) Mock GD

UNIT V

Mock HR Assessment III

TEXT BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year/ Edition
1	Meenakshi Raman	Communication Skills	Oxford University Press: India	2011
2	Konar, Nira	Communication Skills for Professionals	PHI Learning Private Limited	2013
3	Alex Dr.K	Soft Skills	S.Chand Competition	2012
4	Uma Maheswari , Wiley	Soft Skills for Campus Placements		
5	R. S. Agarwal	Quantitative Aptitude (for Competitive Examinations)	S. Chand and Company Limited	2017
6	R.Gupta's	Logical and Analytical Reasoning	Ramesh Publishing House New Delhi	2018

REFERENCE BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year / Edition
1	Course team, Bharathiar University	Communication Skills a multi-skill course	Macmillan Publishers India LTD.	2009
2	Krishna Mohan	Developing Communication Skills	Trinity Press, Laxmi Publication Pvt. Ltd., New Delhi.	2018
3	Joyce Pereire	Technical English -II	Vijay Nicole Imprints Pvt.Ltd.	2017
4	Arun	Questions on GENERAL MENTAL ABILITY TESTS	YOUNG MAN & CO.	2018
5	R.V. Praveen	Quantitative Aptitude and Reasoning	PHI Learning Private Limited,Delhi	2018

Means of Curriculum Delivery: Lecture, Group Discussion, Seminar, Assignment, Google Class Room.

WEBSITE REFERENCE

1.http://www.indiabix.com

2.http://placement.freshersworld.com

SEMESTER VI

SEMESTER-VI

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Computer Science**	
Course Code	24U6CSCT17	Core 17: :Machine Learning Techniques	**Batch**	2024-2027
			Semester	VI
Hrs/week	5 Hrs		**Credits**	4

OBJECTIVES:

To expose the students the fundamental concepts of Artificial Intelligence and its applications

COURSE OUTCOMES (CO):

On Successful Completion of the course the students will be able to

CO Number	CO Statement
CO1	Understanding of the fundamental issues and challenges of machine learning: data,model selection, model complexity, etc.
CO2	Understanding of the strengths and weaknesses of many popular machine learningapproaches.
CO3	Explain about the concepts of computational learning theory and dimensionalityreduction
CO4	Appreciate the underlying mathematical relationships within and across MachineLearning algorithms and the paradigms of supervised and un-supervised learning.
CO5	Applying application of data mining.

MAPPING WITH PROGRAMME OUTCOMES

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	S	S	M	L	M	M	L	S
CO2	L	S	S	S	S	S	M	L	M	M	L	S
CO3	L	S	S	S	S	S	M	L	M	M	L	S
CO4	L	S	S	S	S	S	M	L	M	M	L	S
CO5	L	S	S	S	S	S	M	L	M	M	L	S

S- Strong M-Medium L-Low

Syllabus

UNIT I **(12 hours)**

Introduction to Learning: Algorithmic models of learning, Learning classifiers, functions, relations, grammars, probabilistic models, value functions, behaviors and programs for experience. Bayesian, maximum some posterior,and minimum description length frameworks.

UNIT II **(12 hours)**

ML-Models: Parameter Estimation, sufficient statistics, decision trees, neural networks, support vector machines, Bayesian networks, bag of words classifiers, N-gram models; Markov and Hidden Markov models, probabilistic relational models, association rules, nearest neighbor classifiers, locally weighted regression, ensemble classifiers..

UNIT III **(12 hours)**

Computational Learning: Computational Learning theory, mistake bound analysis, sample complexity analysis, VC dimension, Occam learning, accuracy and confidence boosting,

Dimensionality reduction: Principal component Analysis, feature selection and visualization.

UNIT IV **(12 hours)**

Unsupervised Learning: Unsupervised Learning: Clustering, mixture models, k-means clustering, hierarchical clustering, distributional clustering, Reinforcement learning; Learning from heterogeneous, distributed, data andknowledge.

UNIT V **(12 hours)**

Applications in DataMining: Selected applications in data mining, automated knowledge acquisition, pattern recognition, program synthesis, text and language processing, internet-based information systems, humancomputer interaction, semantic web, and Bio informatics and computational biology.

Text Book(s):

1	Bishop,C.(2006).PatternRecognitionandMachineLearning.Berlin:Springer-Verlag..

Reference Book(s):

1	Russel,S.AndNorving,P.(2003).ArtificialIntelligence:AModernApproach.2nd Editio n,NewYork:Prentice-Hall.
2	Baldi,P.,Frasconi,P.,Smyth,P.(2002).Bioinformatics:AMachineLearningApproach. Cambridge,MA:MITPress.
3	Baldi,P.,Frasconi,P.,Smyth,P.(2003).ModelingtheInternetandtheWeb –ProbabilisticMethodsandAlgorithms.NewYork:Wiley.
4	Bishop,C.M.NeuralNetworksforpatternrecognition.NewYork:OxfordUniversitypress(199 5).
	Related Online Contents(MOOC,SWAYAM,NPTEL,Websites etc)
1	**https://onlinecourses.swayam2.ac.in/aic20_sp06/preview**
2	**https://onlinecourses.swayam2.ac.in/arp19_ap79/preview**

SEMESTER-VI

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Computer Science**	
Course Code	24U6CSCP18	Core 18: Machine Learning Practical	**Batch**	2024-2027
			Semester	VI
Hrs/week	5Hrs		**Credits**	4

OBJECTIVES:

- To introduce students to the concepts and techniques of Machine Learning.

COURSE OUTCOMES (CO):

On Successful Completion of the course the students will be able to

CO Number	CO Statement
CO1	Understand the basic concepts and techniques of Machine Learning.
CO2	Explain the regression methods, classification methods, clustering methods.
CO3	Understand the inference and learning algorithms for the hidden Markov model.
CO4	Demonstrate Dimensionality reduction Techniques
CO5	Appreciate the underlying mathematical relationships within and across MachineLearning algorithms and the paradigms of supervised and un-supervised learning.

MAPPING WITH PROGRAMME OUTCOMES

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	L	S	S	S	S	S	M	L	M	M	L	S
CO2	L	S	S	S	S	S	M	L	M	M	L	S
CO3	L	S	S	S	S	S	M	L	M	M	L	S
CO4	L	S	S	S	S	S	M	L	M	M	L	S
CO5	L	S	S	S	S	S	M	L	M	M	L	S

S- Strong M-Medium L-Low

Syllabus

List of Programs

1. Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a. CSV file

2. For a given set of training data examples stored in a .CSV file, implement and demonstrate the Candidate-Elimination algorithm to output a description of the set of all hypotheses consistent with the training examples

3. Write a program to demonstrate the working of the decision tree based ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.

4. Build an Artificial Neural Network by implementing the Back propagation algorithm and test the same using appropriated at a sets.

5. Write a program to implement the naïve Bayesian classifier for a sample training data set storedas a. CSV file. Compute the accuracy of the classifier, considering few test datasets.

6. Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task. Built-in Java classes / API can be used to write the program. Calculate the accuracy, precision, and recall for your data set.

SEMESTER-VI

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Computer Science**	
Course Code	24U6CSCT19	Core 19: R Programming	**Batch**	2024-2027
			Semester	IV
Hrs/week	5 Hrs		**Credits**	4

OBJECTIVES:

To expose the students of the fundamental concepts of R Programming

COURSE OUTCOMES (CO):

On Successful Completion of the course the students will be able to

CO Number	CO Statement
CO1	Understand the basics in R programming in terms of constructs, control statements,string functions
CO2	Understand the use of R for Big Data analytics
CO3	Apply R programming for Text processing
CO4	Appreciate and apply the R programming from a statistical perspective
CO5	Apply R programming Interfaces.

MAPPING WITH PROGRAMME OUTCOMES

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	S	S	M	L	M	M	L	S
CO2	L	S	S	S	S	S	M	L	M	M	L	S
CO3	L	S	S	S	S	S	M	L	M	M	L	S
CO4	L	S	S	S	S	S	M	L	M	M	L	S
CO5	L	S	S	S	S	S	M	L	M	M	L	S

S- Strong M-Medium L-Low

Syllabus

UNIT I **(12 hours)**

Introducing to R: Introducing to R–R Data Structures–Help Functions in R–Vectors–Scalars–eclarations–Recycling–Common Vector Operations–Using all and any–Vectorized operations– A and NULL values– Filtering–Victoriesed if-then else–Vector Element names.

UNIT II **(12 hours)**

Matrices: Creating matrices–Matrix Operations–Applying Functions to Matrix Rows and Columns–Adding anddeleting rows and columns-Vector/Matrix Distinction– Avoiding Dimension Reduction–Higher Dimensional arrays–lists–Creating lists–General list operations–Accessing list components and values–applying functions to lists–recursive lists.

UNIT III **(12 hours)**

Data Frames: Creating Data Frames–Matrix-like operations in frames–merging Data frames–Applying functions toData Frames–Factors and Tables–Factors and levels–Common Functions used with factors–Working with tables–Other factors and table related functions–Control statements–Arithmetic and Boolean operators and values–Default Values for arguments–Returning Boolean Values–Functions are objects–Environment and scope issues–Writing Upstairs–

Recursion–Replacement functions–Tools for Composing function code–Math and Simulation in R.

UNIT IV **(12 hours)**

Classes:S3Classes–S4Classes–Managingyourobjects–Input/output–accessingkeyboardandmonitor–readingandwritingfiles–accessingtheinternet–StringManipulation–Graphics–CreatingGraphs –CustomizingGraphs–SavingGraphstofiles–CreatingThree-Dimensionalplots.

UNIT V **(12 hours)**

Interfacing R: Interfacing R to other languages–Parallel R–Basic Statistics–Linear Model–Generalized Linear models–Non-linear Models–Time Series and Auto-Correlation–Clustering.

Text Book(s):

1	NormanMatloff,–TheArtofRProgramming:ATourofStatisticalSoftwareDesign‖,No StarchPress,2011.
2	JaredP.Lander,–RforEveryone:AdvancedAnalyticsandGraphics‖,Addison-WesleyData &AnalyticsSeries,2013.

Reference Book(s):

1	MarkGardner,–BeginningR–TheStatisticalProgrammingLanguage‖,Wiley,2013.
2	RobertKnell,–IntroductoryR:ABeginner‘sGuidetoDataVisualisation,StatisticalAnalysisand programminginR‖,AmazonDigitalSouthAsiaServicesInc,2013.RichardCotton(2013). LearningR,O‘ReillyMedia.
3	GarretGrolemund(2014).Hands-onProgrammingwithR.O‘ReillyMedia,Inc.
4	RogerD.Peng(2018).RProgrammingforDataScience.LeanPublishing.
	RelatedOnlineContents(MOOC,SWAYAM,NPTEL,Websitesetc)
1	**https://onlinecourses.swayam2.ac.in/aic20_sp06/preview**
2	**https://onlinecourses.swayam2.ac.in/arp19_ap79/preview**

SEMESTER- VI
CORE 22: PROJECT VIVA - VOCE

Subject Code: 24U6CSCV20 **Hours:5 hr** **No. of Credits: 4**

Objective: To enable the students to apply practically in a specific area using any specific domain knowledge he/she posses and get the results.

GUIDELINES FOR PROJECT WORK

1. The aim of the project work is to acquire practical knowledge on the implementation of the programming concepts studied.
2. Each student should carry out individually one project work and it may be a work using the software packages that they have learned or the implementation of concepts from the papers studied or implementation of any innovative idea focusing on application oriented concepts.
3. The project work should be compulsorily done in the college only under the supervision of the department staff concerned.

FINAL VIVA-VOCE

- Project work carries 100 marks with 4 credits.
- Internal Assessment: 80 marks (60 marks for 3 reviews and 20 marks for record)
- External Assessment: 20 marks (Viva-Voce).
- For awarding a pass, a candidate should have obtained 40% of the total 100 Marks.
- The evaluation would be done jointly by both the examiners(Internal and External). Students who fail in the project work and viva-voce examination or who are absent for the project viva-voce who fail to submit the project report before the due date will have to re-submit the project work and appear for the viva-voce examination during the subsequent year.

PROJECT WORK

TITLE OF THE DISSERTATION
Bonafide Work Done by
STUDENT NAME
REG. NO.

Dissertation submitted in partial fulfillment of the requirements for the award of Bachelor of Computer Science of Bharathiar University, Coimbatore-46

College emblem

GUIDE HOD

Submitted for the Viva-Vice Examination held on _____

Internal Examiner External Examiner

MONTH – YEAR

CONTENTS

ACKNOWLEDGEMENT

CONTENTS

SYNOPSIS

1. INTRODUCTION
    1.1 ORGANIZATION PROFILE
    1.2 SYSTEM SPECIFICSTION
        1.2.1 HARDWARE CONFIGURATION
        1.2.2 SOFTWARE SPECIFICSTION

2. SYSTEM STUDY
    2.1 EXISTING SYSTEM
        2.1.1 DRAWBACKS
    2.2 PROPOSED SYSTEM
        2.2.1 FEATURES

3. SYSTEM DESIGN AND DEVELOPMENT

3.1 FILE DESIGN
3.2 INPUT DESIGN
3.3 OUTPUT DESIGN
3.4 DATABASE DESIGN
3.5 SYSTEM DEVELOPMENT
3.5.1 DESCRIPTION OF MODULES
(Detailed explanation about the project work)

4. TESTING AND IMPLEMENTATION

5. CONCLUSION

BIBLIOGRAPHY

APPENDICES
A. DATA FLOW DIAGRAM
B. TABLE STRUCTURE
C. SAMPLE CODING
D. SAMPLE INPUT
E. SAMPLE OUTPUT
F. REPORTS

SEMESTER-VI

Programme Name	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**24U6ESKT06**	**Skill Based Subject 6: Employability Skills - VI**	**Batch**	**2024-2027**
			Semester	**VI**
Hrs/ Week	**4 Hours**		**Credits**	**-**

COURSE OBJECTIVES:

1. To develop skills in resume overview, e-mail writing, news reporting, and JAM (Just a Minute) sessions
2. To develop skills in mock group discussions and Mock HR interviews.
3. To focus on communication and mathematical aptitude questions.

COURSE OUTCOMES (CO):

On successful completion of the course, students will be able to achieve the following outcomes.

CO Number	**CO Statement**
CO1	To develop skills in self-introduction and participate in mock group discussions.
CO2	To develop skills for Mock HR interviews and complete Assessment 1, which includes communication and mathematical aptitude questions.
CO3	To enhance skills in listening to a song and comprehending its meaning, and listening to a conversation and responding accurately.
CO4	To write a product review and complete Assessment II.
CO5	To share your dreams and complete Assessment III.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	H	L	H	M	H	H	M	H	H	M	L	H
CO2	M	L	H	M	H	M	M	H	M	H	H	H
CO3	H	M	H	M	M	H	M	L	H	H	H	M
CO4	M	H	M	H	L	L	H	M	L	M	M	L
CO5	M	L	M	L	H	M	H	H	M	L	M	L

SYLLABUS

UNIT-I

Self –Introduction-Mock GD

UNIT- II

Mock HR-Assessment 1

UNIT- III

Listening to a song and Comprehend, Listening to a conversation and Answer.

UNIT- IV

Write a Product Review, Assessment II

UNIT V

Tell about your Dreams, Assessment III

TEXT BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year/ Edition
1	Meenakshi Raman	Communication Skills	Oxford University Press: India	2011
2	Konar, Nira	Communication Skills for Professionals	PHI Learning Private Limited	2013
3	Alex Dr.K	Soft Skills	S.Chand Competition	2012
4	Uma Maheswari , Wiley	Soft Skills for Campus Placements		
5	R. S. Agarwal	Quantitative Aptitude (for Competitive Examinations)	S. Chand and Company Limited	2017
6	R.Gupta's	Logical and Analytical Reasoning	Ramesh Publishing House New Delhi	2018

REFERENCE BOOKS:

S. No.	Author Name	Title of the Book	Publisher	Year / Edition
1	Course team, Bharathiar University	Communication Skills a multi- skill course	Macmillan Publishers India LTD.	2009
2	Krishna Mohan	Developing Communication Skills	Trinity Press, Laxmi Publication Pvt. Ltd., New Delhi.	2018
3	Joyce Pereire	Technical English -II	Vijay Nicole Imprints Pvt.Ltd.	2017
4	Arun	Questions on GENERAL MENTAL ABILITY TESTS	YOUNG MAN & CO.	2018
5	R.V. Praveen	Quantitative Aptitude and Reasoning	PHI Learning Private Limited,Delhi	2018

Means of Curriculum Delivery: Lecture, Group Discussion, Seminar, Assignment, Google Class Room.

WEBSITE REFERENCE

1.http://www.indiabix.com
2.http://placement.freshersworld.com

Electives

SEMESTER – V

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	24U5CSET1A	**ELECTIVE 1 :**Foundation of Data Science	**Batch**	2024-2027
			Semester	V
Hrs/ Week	5 Hrs		**Credits**	4

COURSE OBJECTIVES

- Develop a broad academic and practical literacy in computer science, statistics, and optimization, with relevance in data science and artificial intelligence, so that students are able to critically select and apply appropriate methods and techniques to extract relevant and important information from data.
- Provide strong core training so that graduates can adapt easily to changes and new demands from industry.
- Enable students to understand not only how to apply certain methods, but when and why they are appropriate.
- Integrate fields within computer science, optimization, and statistics to create adept and well-rounded data scientists.
- Expose students to real-world problems in the classroom and through experiential learning

COURSE OUTCOMES (CO):

In Successful Completion of the course the students will be able to

CONumber	CO Statement
CO1	Understanding basic concepts of Data Science
CO2	Understanding the Structure of Data science
CO3	Understanding the Techniques of Data science
CO4	Understanding the Tools of Data science
CO5	To Applying Data Science into R-Tool

MAPPING WITH PROGRAMME OUTCOMES

CO / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

UNIT – I **HOURS:12**

Introduction to Data Science:Data science process – roles, stages in data science project – working with data from files – working with relational databases – exploring data – managing data – cleaning and sampling for modeling and validation – introduction to NoSQL. Handling Relational Data Base.

UNIT – II **HOURS:12**

Modeling Methods: Choosing and evaluating models – mapping problems to machine learning, evaluating clustering models, validating models – cluster analysis – K-means algorithm, Naïve Bayes – Memorization Methods – Linear and logistic regression – unsupervised methods.

UNIT – III **HOURS:12**

Introduction to R: Reading and getting data into R – ordered and unordered factors – arrays and matrices – lists and data frames – reading data from files – probability distributions – Writing your own functions, statistical models in R - manipulating objects – data distribution.

UNIT – IV **HOURS:12**

Map Reduce: Introduction – distributed file system – algorithms using map reduce, MatrixVector Multiplication by Map Reduce – Hadoop - Understanding the Map Reduce architecture - Writing Hadoop Map Reduce

Programs - Loading data into HDFS - Executing the Map phase - Shuffling and sorting - Reducing phase execution.

UNIT – V **HOURS:12**

Delivering Results: Documentation and deployment – producing effective presentations– Introduction to graphical analysis – plot() function – displaying multivariate data – matrix plots – multiple plots in one window - exporting graph - using graphics parameters. Case studies.

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publishers
1.	Nina Zumel, John Mount	"Practical Data Science with R",	Manning Publications, 2014
2.	Jure Leskovec, AnandRajaraman, Jeffrey D.Ullman	"Mining of Massive Datasets"	Cambridge University Press, 2014.
3.	Mark Gardener	"Beginning R -The Statistical Programming Language"	John Wiley & Sons, Inc., 2012

WEBSITE REFERENCES

1. https://www.slideshare.net/slideshow/cs3351-foundations-of-data-science-notes-pdf/271436444

SEMESTER – V

Programme Code	B.Sc CS	Programme Title	Bachelor of Computer Science	
Course Code	24U5CSET1B	Elective 1: Cognitive Analysis	Batch	2024-2027
			Semester	V
Hrs/week	5 Hours		Credits	4

COURSE OBJECTIVES

To enable the students

- To Understand different planning problems and have the basic knowledge how to design and implement cognitive computing.
- Understand the strengths and limitations of various state-space search algorithms and choose theappropriatealgorithms for a problem.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	To understand the basic concepts of cognitive analytics
CO2	To understand the technologies of cognitive analytics
CO3	To establish relationship of cognitive analytics and big data analytics
CO4	To understand the application of cognitive analytics
CO5	To apply cognitive analytics in case studies

MAPPING WITH PROGRAMME OUTCOMES

CO / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

SYLLABUS

UNIT I **HOURS:12**

Foundation of Cognitive Computing: cognitive computing as a new generation- the uses of cognitive systems-system cognitive-gaining insights from data-Artificial Intelligence as thefoundation of cognitive computing-understanding cognition Design Principles for CognitiveSystems: Components of a cognitive system-building the corpus-bringing data into cognitiveSystem- machine learning-hypotheses generation and scoring-presentation and visualization
services

UNIT II **HOURS:12**

Natural Language Processing in support of a Cognitive System: Role of NLP in a cognitive System-semantic web- Applying Natural language technologies to Business problems.Representing knowledge in Taxonomies and Ontologies: Representing knowledge- DefiningTaxonomies and Ontologies- knowledge representation-models for knowledge representation-implementation considerations.

UNIT III **HOURS:12**

Relationship between Big Data and Cognitive Computing : Dealing with human-generated Data-defining big data- architectural foundation-analytical data warehouses-Hadoop-data in motion and streaming data-integration of big data with traditional data. **Applying Advanced Analytics to cognitive computing**: Advanced analytics is on a path to cognitive computing- Key capabilities in advanced analytics- Using advanced analytics to create value- Impact of open source tools on advanced analytics

UNIT IV **HOURS:12**

The Business Implications of Cognitive Computing : Preparing for change -advantages of new disruptive models -knowledge meaning to business-difference with a cognitive systems approach -meshing data together differently-using business knowledge to plan for the future-answering business questions in new ways -building business specific solutions -makingcognitive computing a reality- cognitive application changing the market.

The process of building a cognitive application:Emerging cognitive platform, defining the objective-defining the domain-understanding the intended users and their attributes-questions and exploringinsights-training and testing

UNIT V **HOURS:12**

Building a cognitive health care application: Foundations of cognitive computing for Healthcare-constituents in healthcare ecosystem- learning from patterns in healthcare Data-Building on a foundation of big data analytics- cognitive applications across the health care eco System- starting with a cognitive application for healthcare-using cognitive applications to improve health and wellness-using a cognitive application to enhance the electronic medical record Using cognitive application to improve clinical teaching.

TEXT BOOKS

Recent editions of the following books are only recommended

S. No	Author Name	Title of the Book	Publishers
1.	"Cognitive computing and Big Data Analytics"	"Cognitive computing and Big Data Analytics"	Wiley

REFERENCE BOOKS

S. No	Author Name	Title of the Book
1.	**Elakkiya R, Subramaniyaswamy V**	Cognitive Analytics and Reinforcement Learning: Theories, Techniques and Applications

WEBSITE REFERENCES

1.https://www.xenonstack.com/insights/what-is-cognitive-analytics

SEMESTER – V

Programme Code	B.Sc CS	**Programme Title**	**Bachelor of Computer Science**	
Course Code	24U5CSET1C	**Elective I: Internet Of Things**	**Batch**	2024-2027
			Semester	V
Hrs/week	5 Hours		**Credits**	4

COURSE OBJECTIVES

- Understand the architecture of Internet of Things and connected world.
- Explore on use of various hardware, communication and sensing technologies to build IoT applications.
- Illustrate the real time IoT applications to make smart world
- Understand challenges and future trends

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able t**o**

CO Number	**CO Statement**
CO1	Understand the architecture of Internet of Things and connected world.
CO2	Explore the use of various hardware and sensing technologies to build IoT applications.
CO3	Illustrate the real time IoT applications to make smart world.
CO4	Understand the available cloud services and communication API's for developing smart cities.
CO5	Solid knowledge in a broad range of methods based on design and implementation of IoT in network performance, analysis and problem solving with design of networks.

MAPPING WITH PROGRAMME OUTCOMES

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	L	H	H	M	M	H	H	L	M	M	M	H
CO2	L	H	H	M	M	H	H	L	M	M	M	H
CO3	L	H	H	M	M	H	H	L	M	M	M	H
CO4	L	H	H	M	M	H	H	L	M	M	M	H
CO5	L	H	H	M	M	H	H	L	M	M	M	H

L-Low M-Medium H-High

SYLLABUS

UNIT - I **(Hours:12)**

INTRODUCTION TO INTERNET OF THINGS (IoT): Definition and characteristics of IoT, physical design of IoT, logical design of IoT, IoT enabling technologies, IoT levels and deployment, domain specific IoTs.

UNIT - II **(Hours: 12)**

IoT AND M2M: ntroduction, M2M, difference between IoT and M2M, software defined networking (SDN) and network function virtualization (NFV) for IoT, basics of IoT system management with

NETCONF-YANG.

UNIT - III **(Hours: 12)**

IoT PLATFORMS DESIGN METHODOLOGY: IoT Architecture: State of the art introduction, state of the art; Architecture reference model: Introduction, reference model and architecture, IoT reference model.

Logical design using Python: Installing Python, Python data types and data structures, control flow, functions, modules, packages, file handling.

UNIT - IV **(Hours: 12)**

IoT PHYSICAL DEVICES AND ENDPOINTS: Introduction to Raspberry Pi interfaces (Serial, SPI, I2C), programming Raspberry PI with Python,other IoT devices.

UNIT -V **(Hours: 12)**

IoT PHYSICAL SERVERS AND CLOUD OFFERINGS: Introduction to cloud storage models and communication APIs, WAMP – AutoBahn for IoT, Xively cloud for IoT, case studies illustrating IoT design – home automation, smart cities, smart environment.

TEXT BOOKS

S. No	Author Name	Title of the Book	Publisher
1.	Arshdeep Bahga, Vijay Madisetti	Internet of Things: A Hands-on-Approach	VPT, 1st Edition, 2014.

REFERENCE BOOKS

S.No.	Author Name	Title of the Book	Publisher
1.	Adrian McEwen, Hakim Cassimally,	Designing the Internet of Things	John Wiley and Sons 2014.
2.	Francis daCosta	Rethinking the Internet of Things: A Scalable Approach to Connecting Everything	A press Publications, 1st Edition2013.

WEBSITE REFERENCES

1. https://www.upf.edu/pra/en/3376/22580.
2. https://www.coursera.org/learn/iot.
3. https://bcourses.berkeley.edu.
4. www.innovianstechnologies.com.

Means of Curriculum Delivery: Lecture, Group Learning, Seminar, Assignment, Google classroom.

SEMESTER V

Programme code :	BSc CS	**Programme Title**	**Bachelor of Computer Science**	
Course code:	**24U5CSET1D**	**Elective I: Block Chain Technology**	**Batch**	2024-2027
Hrs/week	5 Hrs		**Semester**	V
			Credits	4

COURSE OBJECTIVES

The main objectives of this course are to:

1. Understand the fundamentals of block chain and cryptocurrency.
2. Understand the influence and role of block chain in various other fields.
3. Learn security features and its significance.
4. Identify problems &challenges posed by Block Chain.

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	**CO Statement**
CO1	Demonstrate blockchain technology and crypto currency
CO2	Understand the mining mechanism in blockchain
CO3	Apply and identify security measures, and various types of services that allow people to trade and transact with bitcoins
CO4	Apply and analyze Blockchain in health care industry
CO5	Analyze security, privacy, and efficiency of a given Blockchain system

MAPPING WITH PROGRAMME OUTCOMES

COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	L	H	H	M	M	H	H	L	M	M	M	H
CO2	L	H	H	M	M	H	H	L	M	M	M	H
CO3	L	H	H	M	M	H	H	L	M	M	M	H
CO4	L	H	H	M	M	H	H	L	M	M	M	H
CO5	L	H	H	M	M	H	H	L	M	M	M	H

SYLLABUS

UNIT - I **(Hours : 12)**

Introduction : Introduction to Blockchain - The big picture of the industry – size, growth, structure, players. Bitcoin versus Cryptocurrencies versus Blockchain - Distributed Ledger Technology (DLT). Strategic analysis of the space – Blockchain platforms, regulators, application providers. The major application: currency, identity, chain of custody.

UNIT - II **(Hours : 12)**

Network And Security: Advantage over conventional distributed database, Blockchain Network, Mining Mechanism, Distributed Consensus, Blockchain 1.0, 2.0 and 3.0 – transition, advancements and features. Privacy, Security issues in Blockchain

UNIT – III **(Hours : 12)**

Cryptocurrency : Cryptocurrency - History, Distributed Ledger, Bitcoin protocols -Symmetric-key cryptography - Public-key cryptography - Digital Signatures -High and Low trust societies - Types of Trust model: Peer-to-Peer, Leviathan, and Intermediary. Application of Cryptography to Blockchain

UNIT - IV **(Hours : 12)**

Cryptocurrency Regulation :Cryptocurrency Regulation - Stakeholders, Roots of Bit coin, Legal views - exchange of cryptocurrency - Black Market - Global Economy. Cyrptoeconomics – assets, supply and demand, inflation and deflation – Regulation

UNIT - V **(Hours : 12)**

Challenges In Block Chain :Opportunities and challenges in Block Chain – Application of block chain: Industry 4.0 – machine to machine communication – Data management in industry 4.0 – future prospects. Block chain in Health 4.0 - Blockchain properties - Healthcare Costs - Healthcare Quality - Healthcare Value - Challenges for using blockchain for healthcare data

TEXT BOOKS

S. No	Author Name	Title of the Book	Publisher	Year of Publication
1.	1 Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder	Bitcoin and Cryptocurrency Technologies A Comprehensive Introduction	Princeton University Press	(July 19, 2016).
2.	Antonopoulos	Mastering Bitcoin: Unlocking Digital Cryptocurrencies		

REERENCE BOOKS

S. No	Author Name	Title of the Book	Publisher	Year of Publication
1.	Mr.Mark L Murphy	"Bitcoin: A Peer-to-Peer Electronic Cash System"	CommonsWare	20 July 2011
2.	Rodrigo da Rosa Righi, Antonio Marcos Alberti, Madhusudan Singh,	Blockchain Technology for Industry 4.0" Springer 2020.	3rd Edition Published Inc.	2015

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

https://www.javatpoint.com/blockchain-tutorial 2

https://www.tutorialspoint.com/blockchain/index.htm 3

https://nptel.ac.in/noc/courses/noc20/SEM1/noc20-cs01/

Means of Curriculum Delivery : Lecture, Group Discussion, Seminar, Assignment, Case Studies, Google Classroom

SEMESTER – V

Programme Code	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course Code	**24U5CSET2A**	**ELECTIVE 2: Software Project Management**	**Batch**	**2024-2027**
			Semester	**V**
Hrs/week	**5**		**Credits**	**4**

COURSE OBJECTIVES

- To get knowledge of how to handle project development activities
- To understand the threats and opportunities in Project managements
- To study various project cost, time estimation models.
- To study how to make quality software products.
- To Appreciate management issues like team structure and group dynamics

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following outcomes

CO Number	CO Statement
CO1	Apply project management concepts and techniques to an IT project.
CO2	Identify issues that could lead to IT project success or failure.
CO3	Explain project management in terms of the software development process.
CO4	Describe the responsibilities of IT project managers.
CO5	Apply project management concepts through working in a group as team leader or active team member on an IT project

MAPPING WITH PROGRAMME OUTCOMES

CO / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

SYLLABUS

UNIT I **Hours:12**

SOFTWARE PROJECT MANAGEMENT: Introduction, Need for Software Project Management – Software Project versus other projects – Overview of Project planning – SDLC Models –Waterfall model, Iterative model, Spiral model, V-model, Big Bang model.

UNIT II **Hours:12**

PROJECT EVALUATION :Introduction, Strategic assessment, Technical Assessment, Cost benefit Analysis, cash flow forecasting, Cost benefit Evaluation Techniques Risk Evaluation – Selection of appropriate project planning.

UNIT III **Hours:12**

ACTIVITY PLANNING: Objectives of activity planning, Project schedules, Projects and activities, Sequencing and scheduling activities, Network Planning models – Formulating network models, Using dummy activities, Identifying critical path, identifying critical activities. Risk Analysis and Management: Nature of risk, Managing risk, Risk identification, Risk analysis, reducing the risks, evaluating the risks.

UNIT IV **Hours:12**

SOFTWARE EFFORT ESTIMATION: Problems with over and under estimate, the basis for software estimation, software estimation Techniques. Expert judgments, Estimating by analogy, Function point analysis. Resource Allocation: Identifying resource requirements, Scheduling resources, Monitoring and control, Managing people and organization teams.

UNIT V **Hours:12**

PROJECT MANAGEMENT :Project Management in the Testing phase – Introduction, test scheduling, test types, issues, management structures for testing, metrics for testing phase, Project Management in the Management phase – Introduction, activities, management issues, configuration management, estimating size, effort and people resources, advantages, metrics.

TEXT BOOK

S.No.	Authors	Title	Publishers	Year of Publication
1.	Bob Hughes and Mike Cotterell,	Software Project Management	Tata McGraw Hill 5th Edition	Nil
2	Dr.Gopalaswamy Ramesh	Managing Global Software Projects	TMH.	2001

REFERENCE BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1.	Walker Royce	Software Project Management	Addison Wesley	1998
2.	Stellman & Greener	Applied software project management	SPD	nil

WEBSITE REFERENCE

https://www.google.com

SEMESTER – V

Programme Code	**B.Sc**	**Programme Title**	**Bachelor of Computer Science**	
Course Code	**24U5CSET2B**	**ELECTIVE 2: Bio Informatics**	**Batch**	**2024-2027**
			Semester	**V**
Hrs/week	**5**		**Credits**	**4**

COURSE OBJECTIVES

To enable the students

To improve the programming skills of the student

To let the students know the recent evolution in biological science

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following outcomes

CO Number	CO Statement
CO1	Develop bioinformatics tools with programming skills.
CO2	Apply computational based solutions for biological perspectives.
CO3	Pursue higher education in this field.
CO4	Practice life-long learning of applied biological science.
CO5	To Undersatand The Peal Programming

MAPPING WITH PROGRAMME OUTCOMES

CO / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

UNIT I

INTRODUCTION **12Hrs**

Introduction to Operating systems, Linux commands, File transfer protocols ftp and telnet, Introduction to Bioinformatics and Computational Biology, Biological sequences, Biological databases, Genome specific databases, Data file formats, Data life cycle, Database management system models, Basics of Structured Query Language (SQL).

UNIT II

SEQUENCE ALIGNMENT **12Hrs**

Sequence Analysis, Pair wise alignment, Dynamic programming algorithms for computing edit distance, string similarity, shotgun DNA sequencing, end space free alignment. Multiple sequence alignment, Algorithms for Multiple sequence alignment, Generating motifs and profiles, Local and Global alignment, Needleman and Wunsch algorithm, Smith Waterman algorithm, BLAST, PSIBLAST and PHIBLAST algorithms

UNIT III

PHYLOGENETIC METHODS **12Hrs**

Introduction to phylogenetics, Distance based trees UPGMA trees, Molecular clock theory, Ultrametric trees, Parsimonious trees, Neighbour joining trees, trees based on morphological traits, Bootstrapping. Protein Secondary structure and tertiary structure prediction methods, Homology modeling, abinitio approaches, Threading, Critical Assessment of Structure Prediction, Structural genomics

UNIT IV

PROTEIN STRUCTURE ANALYSIS **12 Hrs**

Machine learning techniques: Artificial Neural Networks in protein secondary structure prediction, Hidden Markov Models for gene finding, Decision trees, Support Vector Machines. Introduction to Systems Biology and Synthetic Biology, Microarray analysis, DNA computing,Bioinformatics approaches for drug discovery, Applications of informatics techniques in genomics and proteomics: Assembling the genome, STS content mapping for clone contigs, Functional annotation, Peptide mass fingerprinting.

UNIT V

PERL PROGRAMMING **12 Hrs**

Basics of PERL programming for Bioinformatics: Data types: scalars and collections, operators, Program control flow constructs, Library Functions: String specific functions, User defined functions, File handling.

TEXT BOOKS:

S.No	Author	Text Book	Publisher
1	Arthur K. Lesk	Introduction to Bioinformatics	Oxford University Press
2	Dan Gusfield	Algorithms on Strings, Trees and Sequences	Cambridge University Press
3	R.Durbin, S.Eddy, A.Krogh, G.Mitchison	Biological Sequence Analysis Probabilistic Models of proteins and nucleic acids	-
4	David W. Mount	Bioinformatics Sequence and Genome Analysis	Cold Spring Harbor Laboratory Press.
5	James Tindall, O'Reilley Media	Beginning Perl for Bioinformatics: An introduction to Perl for Biologists	-

REFERENCE:

1. Bioinformatics The Machine Learning Approach by Pierre Baldi and Soren Brunak.

SEMESTER:V

Programme code:	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**23U5CSET2C**	**ELECTIVE 2 : E-COMMERCE**	**Batch**	**2024-2027**
			Semester	**V**
Hrs/Week:	**5 Hrs**		**Credits**	**4**

COURSE OBJECTIVES

To enable students

- To have knowledge on concepts of e-Commerce.
- To enhance the knowledge in business strategy and inter organisational transactions.
- To understand the concepts of E-Markets, Electronic Data Interchange and E-Business.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following Outcomes

CO Number	CO Statement
CO1	Understand the basic concepts and technologies used in the field of management information systems;
CO2	Have the knowledge of the different types of management information systems
CO3	Understand the processes of developing and implementing information systems
CO4	Be aware of the ethical, social, and security issues of information systems
CO5	Understand the E-Wallet operation

MAPPING WITH PROGRAMME OUTCOMES

CO / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

SYLLABUS

UNIT – I **(Hours - 12)**

Introduction to E-Commerce : Electronic Commerce – The Scope of Electronic Commerce – Definition of Electronic Commerce - Electronic Commerce and the Trade Cycle - Electronic Markets - Electronic Data Interchange – Internet Commerce – e-Commerce in perspective. Business Strategy in an Electronic Age: The Value chain – Supply Chains Porter's Value Chain Model – Inter Organisational Value Chains.

UNIT – II **(Hours - 12)**

Business Strategy: Introduction to Business Strategy – Strategic Implications of IT – Technology – Business Environment – Business Capability – Existing Business Strategy – Strategy Formulation & Implementation Planning – e-Commerce Implementation – e-Commerce Evaluation. Inter-organisational Transactions: Inter-organisational Transactions – The Credit Transaction Trade Cycle – A Variety of Transactions.

UNIT – III **(Hours - 12)**

Electronic Markets: Markets - Electronic Markets – Usage of Electronic Markets – Advantages

and Disadvantages of Electronic Markets. Electronic Data Interchange: Introduction to EDI – EDI Definition – The Benefits of EDI – EDI Example – EDI Implementation – EDI Agreement – EDI Security.

UNIT – IV **(Hours - 12)**

The Internet: The Internet – The Development of the Internet – TCP/IP – Internet Components – Uses of Internet. A Page on the Web: HTML Basics – Introduction to HTML – Further HTML – Client Side Scripting – Server Side Scripting – HTML Editors and Editing. The Elements of E-Commerce : Elements – e-Visibility – The e-Shop – Online Payments – Delivering Goods – Internet e-Commerce Security.

UNIT – V **(Hours - 12)**

Introduction to E-Wallet operation:What is an e-wallet-benifits of Wallet-risks-types of ewalet:paytm,MobiKwik,oxigenWallet,CitrusWallet,ItsCash,FreeCharge,AirtelMoney,Jiomoney,mRupee,SBIBuddy,Vodaphone M-Pesa.Advantages and disadvantages of digital Wallet.

TEXT BOOKS: (Recent Edition of the following bools only are recommended)

S.No	Authors	Title	Publishers
1.	David Whitely	E-Commerce Strategy, Technologies, and Applications	McGraw Hill Education (India) Edition 2001 32nd reprint 2013

REFRENCE BOOKS:

S.No	Authors	Title	Publishers
1.	Dr C.S. Rayudu	E-Commerce E- Business	SHimalaya Publishing House, First Edition 2004, Reprint 2012
2.	Nidhi Dhawan	E-Commerce Concepts and Applications	International Book House Pvt Ltd First Edition 2011
3.	Efrain Turban, David King	Electronic Commerce	Pearson Education, 2009

WEBSITE REFERENCE

https://en.wikipedia.org/wiki/E-commerce
https://ecommerceguide.com/guides/what-is-ecommerce/
https://www.youtube.com/watch?v=AhgtoQIfuQ4

SEMESTER – V

Programme Code	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code:	**23U5CSET2D**	**ELECTIVE 2 :CLIENT SERVER TECHNOLOGY**	**Batch**	**2024-2027**
			Semester	**V**
Hrs/ Week	**5 Hrs**		**Credits**	**4**

Course Objectives:

- To understand the concepts of client/server
- To learn the components of client and server application
- To learn the components of client and server application-Connectivity
- To learn the components of client and server application-Software & Hardware

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able to

CO Number	CO Statement
CO1	Define the concepts of client/server computing
CO2	Use the components of client/server applications
CO3	Discuss about client/server connectivity
CO4	Explain the client/server application software
CO5	Explain the client/server application hardware

MAPPING WITH PROGRAMME OUTCOMES

CO / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

Syllabus

UNIT-I **(Hours - 12)**

Client/Server Computing : Mainframe -Centric Client/Server Computing-Downsizing and Client/Server Computing. Advantages of Client / Server Computing -Connectivity –Ways to improve Performance –How to reduce network Traffic.

UNIT-II (**Hours-12)**

Components of Client/Server Applications –The Client: Role of a Client –Client Services – Request for Service-RPC- Fax/Print services, Window services, Remote Boot Services, Remote services, Utility Services, Message services, Network services, Application services, Database services, Dynamic Data Exchange (DDE), Object Linking and Embedding (OLE), Common Object Request Broker Architecture (CORBA).

UNIT-III (**Hours - 12)**

Components of Client/Server Applications –The Server: The Role of a Server –Server

Functionality in Detail –The Server Operating system- Server functionality, Request processing, file services, Fax/Print/Image services, Database services, Communication services, Security services, Network Operating System, platforms, Server operating system, Distributed Computing Environment (DCE), System Application Architecture (SAA).

UNIT-IV **(Hours - 12)**

Components of Client/Server Applications –Connectivity: Open System Interconnect – Communications Interface Technology – Inter process communication –WAN Technologies-Network Management

UNIT-V **(Hours - 12)**

Components of Client/Server Applications–Software: Factors, Costs, Technology improvement, Platform migration, Common interface across platforms, Client/Server systems development technology, Project management, Architecture development, systems development environment, productivity measures, OOP. **Components of Client/Server Applications–Hardware:** Hardware/Network Acquisition –PC-Level Processing Units –Macintosh, notebooks, Pen –UNIX Workstation –x-terminals –Disk, Tape, Optical Disks, NIC and UPS.

TEXT BOOK

Recent editions of the following books only are recommended

S.No	Author	Title of the Book	Edition and Publisher
1	Patrick N.Smith with Steve L.Guengerich	Client /Server Computing	Second Edition, SAMS Publishers
2	Robert Orfali, Dan Harkey, Jeri Edwards	The Essential Client/Server Survival Guide	Van Nostrand Reinhold,
3	Dewire and Dawanatravis	Client/ Server Computing	Tata Mcgraw Hill Pub

WEBSITE REFERENCES

1.https://en.wikipedia.org/wiki/Client%E2%80%93server_model
2.https://www.eukhost.com/blog/webhosting/client-server-technology/
3.https://www.lifewire.com/introduction-to-client-server-networks-817420
4.https://www.javatpoint.com/computer-network-client-and-server-model

Means of Curriculum Delivery: Lecture, Group Learning, Seminar, Assignment, Google Classroom.

SEMESTER – VI

Programme Code	BSc CS	Programme Title	Bachelor of Computer Science	
Course Code	24U6CSET3A	Elective 3: Open Source Systems	Batch	2024-2027
			Semester	VI
Hrs/week	5 Hours		Credits	4

COURSE OBJECTIVES

The main objectives of open source systems are to make software cheaper, more reliable, and better quality, while also providing it for free. Open source software is developed through a public collaboration and is made available to the public.

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able t**o**

CO Number	CO Statement
CO1	To Implement basic virtualization
CO2	To Install and maintain open-source client operating system
CO3	To Create user account
CO4	To Create and use file systems
CO5	To Utilize the command-line interface

MAPPING WITH PROGRAMME OUTCOMES

CO / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

Syllabus

Unit - I **Hours (12)**

Introduction to Open sources – Need of Open Sources –Advantages of Open Sources – Application of OpenSources. Open source operating systems: **LINUX**:Introduction–General Overview–Kernel Mode and usermode–Process–Advanced Concepts–Scheduling – Personalities – Cloning – Signals – Development with Linux. .

Unit – II

OPEN SOURCE DATABASE **Hours(12)**

MySQL: Introduction Setting up account Starting, terminating and writing your own SQL programs –Record selection Technology– Working with strings – Date and Time–Sorting Query Results –GeneratingSummary – Working with metadata –Usingsequences –MySQL and Web.

Unit – III OPEN SOURCE PROGRAMMING LANGUAGES **Hours(12)**

PHP: Introduction – Programming in web environment – variables – constants–datatypes –

operators –Statements– Functions– Arrays – OOP –String Manipulation and regular expression –File handling and datastorage –PHP and SQL database – PHP and LDAP – PHP Connectivity –Sending and receiving E-mails –Debugging and error handling – Security – Templates.

Unit - IV PYTHON **Hours(12)**

Syntax and Style – Python Objects – Numbers – Sequences – Strings –Lists and Tuples – Dictionaries –Conditionals and Loops – Files – Input and Output –Errors and Exceptions – Functions – Modules –Classes andOOP – Execution Environment.

Unit – V PERL **Hours(12)**

Perl backgrounder – Perl overview– Perl parsing rules – Variables and Data –Statements and Controlstructures – Subroutines, Packages, and Modules-Working with Files –Data Manipulation.

Text Books:

1. Remy Card, Eric Dumas and Frank Mevel, “The Linux Kernel Book”, Wiley 3 Publications,2003
2. Steve Suchring, “MySQL Bible”, John Wiley, 2002

Books for Reference:

1. Rasmus Lerdorf and Levin Tatroe, “Programming PHP”, O’Reilly, 2002
2. Wesley J. Chun, “Core Phython Programming”, Prentice Hall, 2001
3. Martin C. Brown, “Perl: The Complete Reference”, 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.
4. Steven Holzner, “PHP: The Complete Reference”, 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.
5. Vikram Vaswani, “MYSQL: The Complete Reference”, 2nd Edition, Tata McGraw-Hill Publishing CompanyLimited, Indian Reprint 2009.

SEMESTER – VI

Programme Code	**B.Sc CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code	**24U6CSET3B**	**ELECTIVE 2: Virtual Reality and Augmentation**	**Batch**	**2024-2027**
			Semester	**VI**
Hrs/week	**5**		**Credits**	**4**

COURSE OBJECTIVES

- To learn and explore the evolution of Virtual Reality (VR), its underlying technologies, and its interdisciplinary nature.
- To Study Human Perception and Interaction
- To Understand visual perception principles, visual rendering techniques and methods to improve latency, frame rates, and reduce optical distortions to create realistic VR experiences.
- To examine the wide range of applications of VR and AR across different fields, including healthcare, education, entertainment, gaming, architecture, and industry.

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following outcomes

CO Number	CO Statement
CO1	Describe how VR systems work and list the applications of VR.
CO2	Understand the design and implementation of the hardware that enables VR systems to be built.
CO3	Understand the system of human vision and its implication on perception and rendering.
CO4	Explain the concepts of motion and tracking in VR systems.
CO5	Describe the importance of interaction and audio in VR systems.

MAPPING WITH PROGRAMME OUTCOMES

CO / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

UNIT - I **(Hours: 12)**

Introduction to Virtual Reality: Defining Virtual Reality - History of VR - Human Physiology and Perception - Key Elements of Virtual Reality Experience - Virtual Reality System - Interface to the Virtual World, Input & output- Visual, Aural & Haptic Displays - Applications of Virtual Reality.

UNIT - II **(Hours : 12)**

Representation of the Virtual World: Visual Representation in VR - Aural Representation in VR - Haptic Representation in VR. The Geometry of Virtual Worlds and The Physiology of Human Vision: Geometric Models - Changing Position and Orientation – Axis Angle Representations of Rotation - Viewing Transformations - Chaining the Transformations - Human Eye - Eye movements & implications for VR.

UNIT - III **(Hours : 12)**

Visual Perception & Rendering: Visual Perception - Perception of Depth - Perception of Motion - Perception of Color - Combining Sources of Information Visual Rendering _Ray Tracing and Shading Models - Rasterization - Correcting Optical Distortions - Improving Latency and Frame Rates.

UNIT - IV **(Hours : 12)**

Motion & Tracking: Motion in Real and Virtual Worlds- Velocities and Accelerations - The Vestibular

System - Physics in the Virtual World - Mismatched Motion and Vection. Tracking: Tracking 2D & 3D Orientation - Tracking Position and Orientation - Tracking Attached Bodies.

UNIT - V **(Hours : 12)**

Interaction and Audio: Interaction - Motor Programs and Remapping – Locomotion – Manipulation - Social Interaction. Audio: The Physics of Sound - The Physiology of Human Hearing - Auditory Perception - Auditory Rendering.

TEXT BOOKS:

S.No	Author	Text Book	Publisher
1	Steven M. LaValle	Virtual Reality	Cambridge University Press, 2016.
2	William R Sherman and Alan B Craig	Understanding Virtual Reality: Interface, Application and Design	Morgan Kaufmann Publishers, San Francisco, CA, 2002.
3	Alan B Craig, William R Sherman and Jeffrey D Will	Developing Virtual Reality Applications: Foundations of Effective Design	Morgan Kaufmann Publishers, 2009.

REFERENCE BOOKS:

S.No	Author	Text Book	Publisher
1	Gerard Jounghyun Kim	Designing Virtual Systems: The Structured Approach	Springer, 2005th edition
2	Doug A Bowman, Ernest Kuijff, Joseph J LaViola, Jr and Ivan Poupyrev	3D User Interfaces, Theory and Practice	Addison Wesley, USA, 2005.
3	Oliver Bimber and Ramesh Raskar,	Spatial Augmented Reality: Meging Real and Virtual Worlds	A K Peters/CRC Press, Illustrated edition
4	Burdea, Grigore C and Philippe Coiffet	Virtual Reality Technology	Wiley Interscience, India, 2003.

E-BOOKS:

http://lavalle.pl/vr/book.html

WEBSITE REFERENCES

- https://www.coursera.org/articles/augmented-reality-vs-virtual-reality
- https://www.geeksforgeeks.org/virtual-reality-augmented-reality-and-mixed-reality
- https://www.britannica.com/technology/virtual-reality
- https://www.geeksforgeeks.org/basics-augmented-reality/
- https://www.sap.com/india/products/scm/industry-4-0/what-is-augmented-reality.html

ONLINE COURSE LINK

- https://nptel.ac.in/courses/106/106/106106138/
- https://www.coursera.org/learn/introduction-virtual-reality

SEMESTER – VI

Programme Code	**BSC CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code	**24U6CSET3C**	**ELECTIVE 3:** Natural Language Processing	**Batch**	**2024-2027**
			Semester	**VI**
Hrs/week	**5**		**Credits**	**4**

COURSE OBJECTIVES

To understand basics of linguistics, probability and statistics

- To study statistical approaches to NLP and understand sequence labeling
- To outline different parsing techniques associated with NLP
- To explore semantics of words and semantic role labeling of sentences
- To understand discourse analysis, question answering and chatbots

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following outcomes

CO Number	CO Statement
CO1	Understand basics of linguistics, probability and statistics associated with NLP
CO2	Implement a Part-of-Speech Tagger
CO3	Design and implement a sequence labeling problem for a given domain
CO4	Implement semantic processing tasks and simple document indexing and searching system using the concepts of NLP
CO5	Implement a simple chatbot using dialogue system concepts

MAPPING WITH PROGRAMME OUTCOMES

CO / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

UNIT I **Hours:12**

Natural Language Processing – Components - Basics of Linguistics and Probability and Statistics – Words Tokenization-Morphology-Finite State Automata

UNIT II **Hours:12**

N-grams and Language models –Smoothing -Text classification- Naïve Bayes classifier –Evaluation - Vector Semantics – TF-IDF - Word2Vec- Evaluating Vector Models -Sequence Labeling – Part of Speech – Part of Speech Tagging -Named Entities –Named Entity Tagging

UNIT III **Hours:12**

Constituency –Context Free Grammar –Lexicalized Grammars- CKY Parsing – Earley's algorithm- Evaluating Parsers -Partial Parsing – Dependency Relations- Dependency Parsing -Transition Based - Graph Based

UNIT IV **Hours:12**

Word Senses and WordNet – Word Sense Disambiguation – Semantic Role Labeling – Proposition-Bank- FrameNet- Selectional Restrictions - Information Extraction - Template Filling

UNIT V **Hours:12**

Discourse Coherence – Discourse Structure Parsing – Centering and Entity Based Coherence – Question Answering –Factoid Question Answering – Classical QA Models – Chatbots and Dialogue systems – Frame-based Dialogue Systems – Dialogue–State Architecture

TEXT BOOKS:

S.No	Author	Text Book	Publisher
1	Daniel Jurafsky and James H.Martin	"Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics and Speech Recognition"	Prentice Hall Series in Artificial Intelligence,2020
2	Jacob Eisenstein	"Natural Language Processing "	MIT Press, 2019
3	Samuel Burns	"Natural Language Processing: A Quick Introduction to NLP with Python and NLTK	2019
4	Mohamed Zakaria Kurdi	"Natural Language Processing and Computational Linguistics: Speech, Morphology and Syntax (Cognitive Science)"	ISTE Ltd., 2016
5	Nitin Indurkhya,Fred J. Damerau,	"Handbook of Natural Language Processing"	Second edition, Chapman & Hall/CRC: Machine Learning & Pattern Recognition, Hardcover,2010

REFERENCE:

S.No	Author	Text Book	Publisher
1	Christopher Manning	"Foundations of Statistical Natural Language Processing"	MIT Press, 2009.
2	Atefeh Farzindar,Diana Inkpen	"Natural Language Processing for Social Media (Synthesis Lectures on Human Language Technologies)"	Morgan and Claypool Life Sciences, 2015

SEMESTER – VI

Programme Code	B.Sc CS	Programme Title	Bachelor of Science Computer Science	
Course Code	24U6CSET3D	Elective3 : Cloud Computing with Azure	Batch	2024-2027
			Semester	VI
Hrs/week	4		Credits	4

COURSE OBJECTIVES

Understand Core Cloud Concepts

- Grasp fundamental principles of cloud computing, including service models (IaaS, PaaS, SaaS) and deployment models (public, private, hybrid).

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	CO Statement
CO1	The concepts and terminologies of Cloud computing and virtualization.
CO2	The Cloud computing architecture and the Aneka cloud computing platform.
CO3	Programming applications with Thread and Task-based application models.
CO4	Data intensive computing and Map-Reduce programming model.
CO5	The Cloud platforms in industry such as Amazon web services, Google appengine, Microsoft Azure and Cloud scientific applications

MAPPING WITH PROGRAMME OUTCOMES

CO / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

SYLLABUS

UNIT 1 **HOURS: 12**

INTRODUCTION:

Cloud Computing Introduction –From -Collaboration to cloud -Working of cloud computing -pros and cons –benefits -developing cloud computing services - Cloud service development -discovering cloud services.

UNIT 2 **HOURS: 12**

CLOUD COMPUTING FOR EVERYONE

Centralizing email communications – cloud computing for community - collaborating on schedules - collaborating on group projects and events - cloud computing for corporation –mapping – schedules - managing projects -presenting on road.

UNIT 3 **HOURS: 12**

USING CLOUD SERVICES:

Collaborating on calendars - Schedules and task management -exploring on line scheduling and planning -collaborating on event management -collaborating on contact management -collaborating

on project management.

UNIT 4 **HOURS: 12**

MICROSOFT AZURE

AZURE ACTIVE DIRECTORY: Overview - what is Azure Active Directory -Group and Access Management Group-based licensing -Azure AD architecture - Default User Permissions – Organization –Groups –Users Authentication (Multifactor &Self-Service Password Reset) -Azure RBAC -Custom Roles in Azure -Privileged Identity Management.

UNIT 5 **HOURS: 12**

AZURE STORAGE:

Azure Storage Accounts Overview- Storage account types-Blob Storage-Page Blobs-Block Blobs-Table Storage-Queue Storage-File Storage -Data Redundancy -Access Tiers-Performance & Scaling –Concurrency-Static Websites using Storage Accounts -Event Handling -Page Blobs - Transferring Data using AzCopy.

Reference Books:

S. No	Author Name	Title of the Book	Publishers
1.	Microsoft MVP	Learning Microsoft Azure: Cloud Computing and Development Fundamentals	**Grayscale Indian edition**

SEMESTER VI

Programme code	BSc CS	**Programme Title**	**Bachelor of Computer Science**	
Course code	**24U6CSET4A**	**ELECTIVE 4:** Mobile and Pervasive Computing	**Batch**	2024-2027
Hrs/week	5 Hrs		**Semester**	VI
			Credits	4

COURSE OBJECTIVES

To enable the students

To understand the concepts of Mobile and Pervasive Computing.

COURSE OUTCOMES (CO)

On successful completion of the course, students would be able to

CO Number	CO Statement
CO1	Explain the concepts and features of mobile networks.
CO2	Explain the working of wireless communication protocols.
CO3	Compare the routing protocols of mobile networks
CO4	Explain the transport and application layer protocols of mobile networks
CO5	Outline the basics of pervasive computing

MAPPING WITH PROGRAMME OUTCOMES

CO & PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

SYLLABUS

UNIT - I **(Hours : 12)**

MOBILE NETWORKS Cellular Wireless Networks – GSM – Architecture – Protocols –connection establishment – Frequency Allocation – Routing – Mobility Management – Security – GPRS.

UNIT - II **(Hours : 12)**

WIRELESS NETWORKS Wireless LANs and PANs – IEEE 802.11 Standard – Architecture – Services –Network – HiperLAN – BlueTooth WiFi – WiMAX.

UNIT - III **(Hours : 12)**

ROUTING Mobile IP – DHCP – AdHoc– Proactive and Reactive Routing Protocols – MulticastRouting.

UNIT - IV **(Hours : 12)**

TRANSPORT AND APPLICATION LAYERS Mobile TCP– WAP – Architecture – WWW Programming Model– WDP – WTLS – WTP WSP – WAE – WTAArchitecture – WML – WMLScripts.

UNIT - V **(Hours : 12)**

. PERVASIVE COMPUTING Pervasive computing infrastructure applications Device Technology Hardware, Human machine Interfaces, Biometrics, and Operating systems– Device Connectivity – Protocols, Security,

and Device Management pervasive Web Application architecture Access from PCs and PDAs Access via WAP.

TEXT BOOKS

S. No	Author Name	Title of the Book	Publisher	Year of Publication
1.	Jochen Schiller	"Mobile Communications	PHISecond Edition	2003.
2.	Jochen Burkhardt	Pervasive Computing: Technology and Architecture of MobileInternet Applications	Addison Wesley Professional; 3 rd edition	2007

REFERENCE BOOKS

S. No	Author Name	Title of the Book	Publisher	Year of Publication
1.	Frank Adelstein, Sandeep KS Gupta, Golden Richard	Fundamentals of Mobile and Pervasive Computing	McGraw-Hill	2005
2.	Debashis Saha	Networking Infrastructure for Pervasive Computing: EnablingTechnol ogies,	Kluwer Academic Publisher, Springer; 1 st edition	2002
3.	Agrawal and Zeng	Introduction to Wireless and Mobile Systems	Cole(Thom son Learning),1st edition	2002
4.	Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober	Principles Of Mobile Computing	Springer, New York	2003

WEBSITE REFERENCES

1 https://developer.android.com/
2 https://github.com/android
3 https://www.udemy.com/courses/search/?q=android%20development
4 https://www.coursera.org/courses?query=android%20development
5 https://codelabs.developers.google.com/?cat=Android

Means of Curriculum Delivery : Lecture, Group Discussion, Seminar, Assignment, Case Studies, Google Classroom

SEMESTER – VI

Programme Code	B.Sc CS	Programme Title	Bachelor of Science (Computer Science)	
Course Code	24U6CSET4B	Elective 4: Computational Intelligence	Batch	2024-2027
			Semester	VI
Hrs/week	5		Credits	4

COURSE OBJECTIVES

- Understanding AI,Real-world applications,Reinforcement learning,Artificial neural networks And Creativity and Embedded Systens

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able t**o**

CO Number	CO Statement
CO1	To understand Understanding AI
CO2	To understand Knowledge Representation And Reasoning
CO3	To understand uncertainty
CO4	To understand learning Methods
CO5	To understand Intelligence And Applications

MAPPING WITH PROGRAMME OUTCOMES

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	H	H	M	M	H	H	L	M	M	M	H
CO2	L	H	H	M	M	H	H	L	M	M	M	H
CO3	L	H	H	M	M	H	H	L	M	M	M	H
CO4	L	H	H	M	M	H	H	L	M	M	M	H
CO5	L	H	H	M	M	H	H	L	M	M	M	H

L-Low M-Medium H-High

Syllabus

UNIT I **Hours(12)**

INTRODUCTION

Introduction to Artificial Intelligence-Search-Heuristic Search-A* algorithm-Game Playing- Alpha-Beta Pruning-Expert systems-Inference-Rules-Forward Chaining and Backward Chaining- Genetic Algorithms.

UNIT II KNOWLEDGE REPRESENTATION AND REASONING **Hours(12)**

Proposition Logic — First Order Predicate Logic — Unification — Forward Chaining -Backward Chaining — Resolution — Knowledge Representation — Ontological Engineering — Categories and Objects — Events — Mental Events and Mental Objects — Reasoning Systems for Categories — Reasoning with Default Information — Prolog Programming.

UNIT III UNCERTAINTY **Hours(12)**

Non monotonic reasoning-Fuzzy Logic-Fuzzy rules-fuzzy inference-Temporal Logic-Temporal Reasoning-Neural Networks-Neuro-fuzzy Inference.

UNIT IV LEARNING **Hours(12)**

Probability basics — Bayes Rule and its Applications — Bayesian Networks — Exact and Approximate Inference in Bayesian Networks — Hidden Markov Models — Forms of Learning — Supervised Learning — Learning Decision Trees — Regression and Classification with Linear Models — Artificial Neural Networks — Nonparametric Models — Support Vector Machines — Statistical Learning — Learning with Complete Data — Learning with Hidden Variables- The EM Algorithm — Reinforcement Learning

UNIT V INTELLIGENCE AND APPLICATIONS Hours(12)

Natural language processing-Morphological Analysis-Syntax analysis-Semantic Analysis-AIl applications — Language Models — Information Retrieval — Information Extraction — Machine Translation — Machine Learning — Symbol-Based — Machine Learning: Connectionist — Machine Learning.

TEXT BOOKS

Kumar S., "Neural Networks – A Classroom Approach", Tata McGraw Hill, 2004.
Konar A., "Computational Intelligence: Principles, Techniques and Applications", Springer Verlag, 2005

WEBSITE REFERENCES

1.https://www.pit.ac.in/assets/pdf/btech-it/qb/3/IT8601-Computaional-Intelligence.pdf

SEMESTER – VI

Programme Code	B.Sc CS	Programme Title	Bachelor of Science (Computer Science)	
Course Code	24U6CSET4C	Elective 4: Pattern Recognition and Analogy Detection	Batch	2024-2027
			Semester	VI
Hrs/week	5		Credits	4

COURSE OBJECTIVES:

- Understand the basics of pattern recognition and analogy detection
- Learn various techniques for pattern recognition and analogy detection
- Apply pattern recognition and analogy detection to real-world problems

COURSE OUTCOMES (CO)

On successful completion of the course, students should be able t**o**

CO Number	CO Statement
CO1	To Understand the basics of pattern recognition and analogy detection
CO2	Learn various techniques for pattern recognition.
CO3	To understand Analogy Detection
CO4	To understand Analogy Detection Techniques
CO5	To understand Applications of Pattern Recognition

MAPPING WITH PROGRAMME OUTCOMES

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	H	H	M	M	H	H	L	M	M	M	H
CO2	L	H	H	M	M	H	H	L	M	M	M	H
CO3	L	H	H	M	M	H	H	L	M	M	M	H
CO4	L	H	H	M	M	H	H	L	M	M	M	H
CO5	L	H	H	M	M	H	H	L	M	M	M	H

L-Low M-Medium H-High

SYLLABUS

UNIT-1 **Hours: 12**

Introduction to Pattern Recognition- Definition and importance of pattern recognition
- Types of patterns (visual, auditory, textual)

UNIT-II **Hours: 12**

Pattern Recognition Techniques- Statistical methods (Bayes' theorem, decision trees)
Machine learning methods (neural networks, SVM)- Deep learning methods (convolutional neural networks, recurrent neural networks).

UNIT-III **Hours: 12**

Analogy Detection- Definition and importance of analogy detection- Types of analogies

(visual, textual)

UNIT-IV **Hours: 12**

Analogy Detection Techniques- Rule-based methods- Machine learning methods (neural networks, SVM)- Deep learning methods (siamese networks, graph neural networks)

UNIT-V **Hours: 12**

Applications of Pattern Recognition and Analogy Detection- Image and speech recognition- Natural language processing- Expert systems

TEXTBOOKS

1. "Pattern Recognition and Machine Learning" by Christopher M. Bishop
2. "Analogy and Analogical Reasoning" by Dedre Gentner and Keith J. Holyoak

WEBSITE REFERENCE

1 .https://www.cet.edu.in/noticefiles/273_PATTERN%20RECOGNITION.pdf

SEMESTER – VI

Programme Code	**BSC CS**	**Programme Title**	**Bachelor of Computer Science**	
Course Code	**24U6CSET4D**	**Elective 4: WIRELESS NETWORKS**	**Batch**	**2024-2027**
			Semester	**VI**
Hrs/week	**5**		**Credits**	**4**

COURSE OBJECTIVES

The main objectives of this course are to:

1. Learn state-of-the-art wireless technologies and the fundamental principles of electromagnetic wave propagation, and the parameters that dictate its performance.
2. Acquire knowledge in routing protocols for wireless networks.
3. Explore and understand the basic network performance metrics for evaluating and maintaining Quality of Service (QoS) in broadband mobile and wireless communication systems.
4. Comprehend the time synchronization, localization, energy management in wireless sensor network

COURSE OUTCOMES

On the successful completion of the course, students will be able to achieve the following outcomes

CO Number	CO Statement
CO1	Understand the basic WSN technology and supporting protocols, with emphasis place on standardization basic sensor systems and provide a survey of sensor technology.
CO2	Understand the medium access control protocols and address physical layer issues.
CO3	Evaluate key routing protocols for sensor networks and main design issues.
CO4	Analyze transport layer protocols for sensor networks, and design requirements.
CO5	Understand the Sensor management, sensor network middleware, operating systems.

MAPPING WITH PROGRAMME OUTCOMES

CO / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	L	S	S	S	M	S	M	M	L	L	L	M
CO2	L	S	S	S	L	S	M	M	L	L	L	M
CO3	L	S	S	S	M	S	M	M	L	L	L	M
CO4	L	S	S	S	S	S	M	M	L	L	L	M
CO5	L	S	S	S	S	S	M	M	L	L	L	M

UNIT I **12 Hours**

Evolution of wireless networks – Challenges - Transmission fundamentals: Analog and digital data transmission - Transmission media - Modulation techniques for wireless systems - Multiple access for wireless systems - Performance increasing techniques for wireless networks.

UNIT II **12 Hours**

Introduction to Wireless LANs – WLAN Equipment, Topologies, Technologies, IEEE 802.11 WLAN – Architecture and Services - Physical Layer - MAC Sub Layer –MAC Management Sub Layer, Other IEEE 802.11 Standards.

UNIT III **12Hours**

Introduction – Bluetooth: Architecture - Protocol Stack - Physical Connection – Mac mechanism – Frame format – Connection management –Low Rate and High Rate WPAN, ZigBee Technology IEEE 802.15.4: Components – Network topologies – PHY – MAC.

UNIT IV **12 Hours**

Introduction- Characteristics of Adhoc Networks - Classifications of MAC Protocols: Connection

Based protocols, Reservation Mechanism - Table driven Routing protocols: DSDV, WRP - On Demand routing protocols: DSR,AODV,TORA –Routing Protocol with Efficient Flooding Mechanism: OLSR - Hierarchical routing protocols – CBRP, FSR.

UNIT V **12 Hours**

Introduction - Challenges for wireless sensor networks - Comparison of sensor network with ad-hoc network - Single node architecture: Hardware components - Energy consumption of sensor nodes - Network architecture: Sensor network scenarios - Design principles – Operating systems.

TEXT BOOKS:

S.No	Author	Text Book	Publisher
1	Nicopolitidis P, ".	Wireless Networks", John Wiley and Sons, New York, 2010	
2	Vijay K Garg	Wireless Communication and Networking, Morgan	, Kaufmann Publishers 2010.
3	Siva Ram Murthy C.Manoj B S.	Ad Hoc Wireless Networks: Architectures and Protocols",	,", Prentice Hall, 2012

REFERENCE:

S.No	Author	Text Book	Publisher
1	Holger Karl and Andreas Willig,	Protocol and Architecture for Wireless Sensor Networks	John Willey Publication, 2011.
2	Kaveh Pahlavan,	Principles of wireless networks	Prentice-Hall of India, 2013