BCA (COMPUTER APPLICATIONS)

LOCF SYLLABUS 2025

Department of Information Technology

School of Computing Sciences

St. Joseph's College (Autonomous)

Tiruchirappalli - 620002, Tamil Nadu, India

SCHOOLS OF EXCELLENCE WITH CHOICE BASED CREDIT SYSTEM (CBCS) UNDERGRADUATE COURSES

St. Joseph's College (Autonomous), an esteemed institution in the realm of higher education in India, has embarked on a journey to uphold and perpetuate academic excellence. One of the pivotal initiatives in this pursuit is the establishment of five Schools of Excellence commencing from the academic year 2014-15. These schools are strategically designed to confront and surpass the challenges posed by the 21st century.

Each School amalgamates correlated disciplines under a unified umbrella, fostering synergy and coherence. This integrated approach fosters the optimal utilization of both human expertise and infrastructural assets. Moreover, it facilitates academic fluidity and augments employability by nurturing a dynamic environment conducive to learning and innovation. Importantly, while promoting collaboration and interdisciplinary study, the Schools of Excellence also uphold the individual identity, autonomy, and distinctiveness of every department within.

The overarching objectives of these five schools are as follows:

1. Optimal Resource Utilization: Ensuring the efficient use of both human and material resources to foster academic flexibility and attain excellence across disciplines.

2. Horizontal Mobility for Students: Providing students with the freedom to choose courses aligning with their interests and facilitating credit transfers, thereby enhancing their academic mobility and enriching their learning experience.

3. Credit-Transfer Across Disciplines (CTAD): The existing curricular structure, in accordance with regulations from entities such as TANSCHE and other higher educational institutions, facilitates seamless credit transfers across diverse disciplines. This underscores the adaptability and uniqueness of the choice-based credit system.

4. Promotion of Human Excellence: Nurturing excellence in specialized areas through focused attention and resources, thus empowering individuals to excel in their respective fields.

5. Emphasis on Internships and Projects: Encouraging students to engage in internships and projects, serving as stepping stones toward research endeavors, thereby fostering a culture of inquiry and innovation.

6. Addressing Stakeholder Needs: The multi-disciplinary nature of the School System is tailored to meet the requirements of various stakeholders, particularly employers, by equipping students with versatile skills and competencies essential for success in the contemporary professional landscape.

In essence, the Schools of Excellence at St. Joseph's College (Autonomous) epitomize a holistic approach towards education, aiming not only to impart knowledge but also to cultivate critical thinking, creativity, and adaptability – qualities indispensable for thriving in the dynamic global arena of the 21st century.

Credit system

The credit system at St. Joseph's College (Autonomous) assigns weightage to courses based on the hours allocated to each course. Typically, one credit is equivalent to one hour of instruction per week. However, credits are awarded regardless of actual teaching hours to ensure consistency and adherence to guidelines.

The credits and hours allotted to each course within a programme are detailed in the Programme Pattern table. While the table provides a framework, there may be some flexibility due to practical sessions, field visits, tutorials, and the nature of project work.

For undergraduate (UG) courses, students are required to accumulate a minimum of 137 credits, as stipulated in the programme pattern table. The total number of courses offered by the department is outlined in the Programme Structure.

OUTCOME-BASED EDUCATION (OBE)

OBE is an educational approach that revolves around clearly defined goals or outcomes for every aspect of the educational system. The primary aim is for each student to successfully achieve these predetermined outcomes by the culmination of their educational journey. Unlike traditional methods, OBE does not prescribe a singular teaching style or assessment format. Instead, classes, activities, and evaluations are structured to support students in attaining the specified outcomes effectively.

In OBE, the emphasis lies on measurable outcomes, allowing educational institutions to establish their own set of objectives tailored to their unique context and priorities. The overarching objective of OBE is to establish a direct link between education and employability, ensuring that students acquire the necessary skills and competencies sought after by employers.

OBE fosters a student-centric approach to teaching and learning, where the delivery of courses and assessments are meticulously planned to align with the predetermined objectives and outcomes. It places significant emphasis on evaluating student performance at various levels to gauge their progress and proficiency in meeting the desired outcomes.

Here are some key aspects of Outcome-Based Education:

Course: A course refers to a theory, practical, or a combination of both that is done within a semester.

Course Outcomes (COs): These are statements that delineate the significant and essential learning outcomes that learners should have achieved and can reliably demonstrate by the conclusion of a course. Typically, three or more course outcomes are specified for each course, depending on its importance.

Programme: This term pertains to the specialization or discipline of a degree programme.

Programme Outcomes (POs): POs are statements that articulate what students are expected to be capable of by the time they graduate. These outcomes are closely aligned with Graduate Attributes.

Programme Specific Outcomes (PSOs): PSOs outline the specific skills and abilities that students should possess upon graduation within a particular discipline or specialization.

Programme Educational Objectives (PEOs): PEOs encapsulate the expected accomplishments of graduates in their careers, particularly highlighting what they are expected to achieve and perform during the initial years postgraduation.

LEARNING OUTCOME-BASED CURRICULUM FRAMEWORK (LOCF)

The Learning Outcomes-Centric Framework (LOCF) places the learning outcomes at the forefront of curriculum design and execution. It underscores the importance of ensuring that these outcomes are clear, measurable, and relevant. LOCF orchestrates teaching methodologies, evaluations, and activities in direct correlation with these outcomes. Furthermore, LOCF adopts a backward design approach, focusing on defining precise and attainable learning objectives. The goal is to create a cohesive framework where every educational element is in harmony with these outcomes.

Assessment practices within LOCF are intricately linked to the established learning objectives. Evaluations are crafted to gauge students' achievement of these outcomes accurately. Emphasis is often placed on employing authentic assessment methods, allowing students to showcase their learning in real-life scenarios. Additionally, LOCF frameworks emphasize flexibility and adaptability, enabling educators to tailor curriculum and instructional approaches to suit the diverse needs of students while ensuring alignment with the defined learning outcomes.

Some Important Terminologies

Core Course (CC): *Core Courses represent obligatory elements within an academic programme, imparting fundamental knowledge within the primary discipline while ensuring consistency and acknowledgment.*

Allied Course (AC): *Allied Courses complement primary disciplines by furnishing supplementary knowledge, enriching students' understanding and skill repertoire within their academic pursuit.*

Skill Enhancement Course (SEC): *Skill Enhancement Courses aim to nurture students' abilities and competencies through practical training, open to students across disciplines but particularly advantageous for those in programme-related fields.*

Value Education (VE): *Value education encompasses the teaching of moral, ethical, and social values to students, aiming to foster their holistic development. It instills virtues such as empathy, integrity, and responsibility, guiding students towards becoming morally upright and socially responsible members of society.*

Ability Enhancement Compulsory Course (AECC): *Ability Enhancement Compulsory Course is designed to enhance students' knowledge and skills; examples include Communicative English and Environmental Science. These courses are obligatory for all disciplines.*

AE-1: Communicative English: This three-credit mandatory course, offered by the Department of English during the first semester of the degree programme, is conducted outside regular class hours.

AE-2: Environmental Science: This one-credit compulsory course, offered during the second semester by the Department of Human Excellence, emphasizes environmental awareness and stewardship.

Allied Optional (AO): *Allied optional course are elective modules that complement the primary disciplines by providing additional knowledge and skills. These courses allow students to explore areas of interest outside their major field of study, broadening their understanding and enhancing their skill set.*

Discipline Specific Elective (DSE): *These courses offer the flexibility of selection of options from a pool of courses. These are considered specialized or advanced to that particular programme and provide extensive exposure in the area chosen; these are also more applied in nature. Four courses are offered, two courses each in semester V and VI*

Note: To offer one DSE, a minimum of two courses of equal importance/weightage is a must. A department with two sections must offer two courses to the students.

Open Elective (OE): *A course chosen from a different discipline or subject area, typically to gain exposure. Students pursuing specific disciplines must select Open Elective courses from the options available across departments as per the college's course offerings. The breadth of Open Elective (OE) Courses is directly linked to the diversity of disciplines offered by the college. Two OE Courses are available, one in each semester V and VI, and are open to students from other departments.*

Self-Learning (SL): *A two-credit course designed to foster students' ability for independent and self-directed learning. There are* Four Self-Learning Courses:

- *Compulsory MOOC on NPTEL-SWAYAM in Semester I or II*
- 'Artificial Intelligence' *as a Self-Learning Course jointly offered by the Departments of CS, AI, IT and Data Science on JosTEL in Semester III*
- *A Department-Specific Self-Learning Course in Semester IV on JosTEL*
- *A Certificate Course in Semester V: Each department will offer ONE certificate Course (45 – 60 hours) that will be creditised in the curriculum.*

Internship (IS): *Following the fourth semester, students are required to undertake an internship during the summer break. Subsequently, they must submit a comprehensive report detailing their internship experience along with requisite documentation. Additionally, students are expected to participate in a viva-voce examination during the fifth semester. Credits for the internship will be reflected in the mark statement for the fifth semester. One of the Core Courses in Sem IV is offered as internship embedded course which contains content related to industry.*

Experiential Learning (EL): *In the sixth semester, students are required to undertake a one credit Project / Industrial visit / Field visit chosen by the department. This component is intended to foster learning by direct experience and application of acquired knowledge to practical settings.*

Comprehensive Examination (CE): *A detailed syllabus consisting of five units to be chosen from the courses offered over the five semesters which are of immense importance and those portions which could not be accommodated in the regular syllabus.*

Extra Credit Courses: *To support students in acquiring knowledge and skills through online platforms such as Massive Open Online Courses (MOOCs), additional credits are granted upon verification of course completion. These extra credits can be availed across five semesters (2 - 6). In line with UGC guidelines, students are encouraged to enhance their learning by enrolling in MOOCs offered by portals like SWAYAM, NPTEL, and others. Additionally, certificate courses provided by the college also qualify for these extra credits.*

Outreach Programme (OR): *It is a compulsory course to create a sense of social concern among all the students and to inspire them to dedicated service to the needy.*

Course Coding

The following code system (11 alphanumeric characters) is adopted for Under Graduate courses:

25	**UXX**	**0**	**0**	**XX**	**00/X**
Year of Revision	UG Department Code	Semester Number	Part Specification	Course Specific Initials	Running Number/with Choice

Course Specific Initials

GL - Languages (Tamil / Hindi / French / Sanskrit)
GE - General English
CC - Core Theory; CP- Core Practical
AC - Allied Course
AP - Allied Practical
SEC - Skill Enhancement Course
VE - Value Education
WS - Workshop
AE - Ability Enhancement Course
AO - Allied Optional
OP - Allied Optional Practical
ES - Discipline Specific Elective
IS - Internship
SL - Self-Learning
OE - Open Elective
PW - Project and Viva Voce
CE - Comprehensive Examination
EL - Experiential Learning
OR - Outreach Programme

EVALUATION PATTERN (UG)

Continuous Internal Assessment

Sl No	Component	Marks Allotted
1	Mid Semester Test	30
2	End Semester Test	30
3	*Two Components (15 + 20)	35
4	Library Referencing	5
	Total	**100**

Passing minimum: 40 marks

* *The first component is a compulsory online test (JosTEL platform) for 15 marks comprising 7 questions (1 mark) at K1 level and 4 questions (2 marks) at K2 level;* The second component is decided by the course in-charge in accordance with the prescribed K levels.

Question Paper Blueprint for Mid and End Semester Tests

Duration: 2 Hours								**Maximum Marks: 60**
Section		**K levels**						**Marks**
		K1	**K2**	**K3**	**K4**	**K5**	**K6**	
A *(compulsory)*		7						7 × 1 = 7
B *(compulsory)*			5					5 × 3 = 15
C *(either…or type)*				3				3 × 6 = 18
D *(2 out of 3)*	Mid Sem				1(2)	1*		2 × 10 = 20
	End Sem				1*	1(2)		
							Total	**60**

***** *Compulsory*

Question Paper Blueprint for Semester Examination

Duration: 3 Hours						**Maximum Marks: 100**
Section	**K levels**					**Marks**
	K1	**K2**	**K3**	**K4**	**K5**	**K6**	
A *(compulsory)*	10						10 × 1 = 10
B *(compulsory)*		10					10 × 3 = 30
C *(either…or type)*			5				5 × 6 = 30
D *(3 out of 5)*				2(3)	1(2)		3 × 10 = 30
						Total	**100**

***** *Compulsory*

Evaluation Pattern for Part IV and One/Two-credit Courses

Title of the Course	**CIA**	**Semester Examination**	**Final**
• One credit Core Course (Sem 1) • Skill Enhancement Course (NCC and Department Specific)	25 + 25 = 50	50 *(Department)*	100
• Self - Learning Course (Dept Specific) • Comprehensive Examination	25 + 25 = 50	50 *(CoE)*	100
• Value Education • Environmental Studies	50	50 *(CoE)*	100
• Skill Enhancement Course: Soft Skills • Self - Learning Course (Common) • Self - Learning Online Course (NPTEL / SWAYAM) • Certificate Course • Internship	100	-	100
• Project / Industrial Visit / Field Visit	100	-	100

Grading System

The marks obtained in the CIA and semester for each course will be graded as per the scheme provided in Table - 1.

From the second semester onwards, the total performance within a semester and the continuous performance starting from the first semester are indicated by Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA), respectively. These two are calculated by the following formulae:

$$SGPA\ and\ CGPA = \frac{\sum_{i=1}^{n} C_i Gp_i}{\sum_{i=1}^{n} C_i}$$

$$WAM = \frac{\sum_{i=1}^{n} C_i M_i}{\sum_{i=1}^{n} C_i}$$

Where,

Ci - credit earned for the Course i

Gpi - Grade Point obtained for the Course i

Mi - Marks obtained for the Course i

*n - Number of Courses **passed** in that semester*

WAM - Weighted Average Marks

Classification of Final Results

- For each of the first three parts in the UG Programme, there shall be separate classification on the basis of CGPA, as indicated in Table - 2.
- For the purpose of declaring a candidate to have qualified for the Degree of Bachelor of Arts / Science / Commerce / Management as Outstanding / Excellent / Very Good / Good / Above Average / Average, the marks and the corresponding CGPA earned by the candidate in Part III alone will be the criterion, provided the candidate has secured the prescribed passing minimum in all the five Parts of the programme.
- Grade in Part IV and Part V shall be shown separately and it shall not be taken into account for classification.
- A pass in SHEPHERD will continue to be mandatory although the marks will not be counted for the calculation of the CGPA.
- Absence from an examination shall not be considered as an attempt.

Table - 1: Grading of the Courses

Mark Range	Grade Point	Corresponding Grade
90 and above	10	O
80 and above and below 90	9	A+
70 and above and below 80	8	A
60 and above and below 70	7	B+
50 and above and below 60	6	B
40 and above and below 50	5	C
Below 40	0	RA

Table - 2: Grading of the Final Performance

CGPA	Grade	Performance
9.00 and above	O	Outstanding*
8.00 to 8.99	A+	Excellent*
7.00 to 7.99	A	Very Good
6.00 to 6.99	B+	Good
5.00 to 5.99	B	Above Average
4.00 to 4.99	C	Average
Below 4.00	RA	Re-appear

**The Candidates who have passed in the first appearance and within the prescribed duration of the UG programme are eligible. If the Candidates Grade is O/A+ with more than one attempt, the performance is considered "Very Good".*

Vision

Forming globally competent, committed, compassionate and holistic persons, to be men and women for others, promoting a just society.

Mission

- Fostering learning environment to students of diverse background, developing their inherent skills and competencies through reflection, creation of knowledge and service.
- Nurturing comprehensive learning and best practices through innovative and value- driven pedagogy.
- Contributing significantly to Higher Education through Teaching, Learning, Research and Extension.

Programme Educational Objectives (PEOs)

- Graduates will be able to accomplish professional standards in the global environment.
- Graduates will be able to uphold integrity and human values.
- Graduates will be able to appreciate and promote pluralism and multiculturalism in working environment.

Programme Outcomes (POs)

1. Graduates will be able to comprehend the concepts learnt and apply in real life situations with analytical skills.
2. Graduates with acquired skills and enhanced knowledge will be employable/ become entrepreneurs or will pursue higher Education.
3. Graduates with acquired knowledge of modern tools communicative skills and will be able to contribute effectively as team members.
4. Graduates are able to read the signs of the time analyze and provide practical solutions.
5. Graduates imbibed with ethical values and social concern will be able to understand and appreciate social harmony, cultural diversity ensure sustainable environment.

Programme Specific Outcomes (PSOs)

1. Understand and analyze the fundamental knowledge in the domain of computer applications.
2. Enhance the logical and analytical thinking to understand the computational systems..
3. Ability to comprehend the structure, development methodologies of software systems and to design the software solutions.
4. Explore the developing areas in the sphere of computer applications and to enrich themselves to be skillful to meet the diverse expectations of the industry.
5. Equip them to be competent to provide optimal and ethical solutions to the technological challenges laid by the professional societies.

BCA					
Programme Structure					
Part	**Semester**	**Specification**	**No. of Courses**	**Hours**	**Credits**
1	1- 4	Languages (Tamil / Hindi / French / Sanskrit)	4	16	12
2	1 - 4	General English	4	20	12
3	1 - 6	Core Course	12	58	39
	1 - 6	Core Practical	8	24	16
	1 & 2	Allied Course	2	12	8
	1 & 2	Allied Practical	-	-	-
	3 & 4	Allied Optional	2	6	4
	3 & 4	Allied Optional Practical	2	6	4
	5 & 6	Discipline Specific Elective	4	16	12
	5	Internship	1	-	1
	6	Project / Industrial Visit / Field Visit	1	-	1
	6	Comprehensive Examination	1	-	2
4	1 - 4	Value Education	4	8	4
	1 & 2	Ability Enhancement Compulsory Course	2	2	3
	2 - 5	Self - Learning	4	-	8
	3 & 4	Skill Enhancement Course	2	4	2
	5 & 6	Open Elective	2	8	4
5	2 - 6	Outreach Programme (SHEPHERD)	-	-	4
	2 - 6	Co-curricular and Extracurricular Activities	-	-	1
	2 - 6	Extra Credit Courses (MOOC) / Certificate Courses	5	-	(15)
		Total	**60**	**180**	**137 (15)**

BCA PROGRAMME PATTERN									
Course Details							Scheme of Exams		
Sem.	Part	Course Code	Course Type	Title of the Course	Hours	Credits	CIA	SE	Final
1	I	25UTA11GL01	GL	General Tamil – 1	4	3	100	100	100
		25UFR11GL01		Language French – 1					
		25UHI11GL01		Language Hindi – 1					
		25USA11GL01		Language Sanskrit – 1					
	II	25UEN12GE01A	GE	**General English – 1:** Pre-Intermediate Stream	5	3	100	100	100
		25UEN12GE01B		**General English – 1:** Intermediate Stream					
	III	25UBC13CC01	CC Major	**Core Course - 1:** C Programming	4	3	100	100	100
		25UBC13CC02		**Core Course - 2:** Digital Computer Fundamentals	6	4	100	100	100
		25UBC13CP01		**Core Practical - 1:** C Programming Lab	3	2	100	100	100
		25UBC13AC01	AC Minor	**Allied Course – 1:** Numerical Methods	6	4	100	100	100
	IV	25UHE14VE01	VE	**Value Education – 1:** Essentials of Humanity*	2	1	50	50	50
		25UEN14AE01	AECC	Communicative English	-	2	100	-	100
				Total	**30**	**22**			
2	I	25UTA21GL02	GL	General Tamil – 2	4	3	100	100	100
		25UFR21GL02		Language French – 2					
		25UHI21GL02		Language Hindi – 2					
		25USA21GL02		Language Sanskrit – 2					
	II	25UEN22GE02A	GE	**General English – 2:** Pre-Intermediate Stream	5	3	100	100	100
		25UEN22GE02B		**General English – 2:** Intermediate Stream					
	III	25UBC23CC03	CC Major	**Core Course - 3:** Relational Database Management System	4	3	100	100	100
		25UBC23CC04		**Core Course - 4:** Data Structures and Algorithms	4	3	100	100	100
		25UBC23CP02		**Core Practical - 2:** Relational Database Management System Lab	3	2	100	100	100
		25UBC23AC02	AC Minor	**Allied Course – 2:** Statistical Methods	6	4	100	100	100
	IV	25UHE24AE02	AECC	Environmental Studies*	2	1	50	50	50
		25UHE24VE02	VE	**Value Education – 2:** Fundamentals of Human Rights*	2	1	50	50	50
		25UBC24SL01	SL	Online Courses: (NPTEL/SWAYAM)	0	2	-	100	100
				Extra Credit Course	0	(3)			
				Total	**30**	**22 (3)**			
3	I	25UTA31GL03	GL	General Tamil – 3	4	3	100	100	100
		25UFR31GL03		Language French – 3					
		25UHI31GL03		Language Hindi – 3					
		25USA31GL03		Language Sanskrit – 3					
	II	25UEN32GE03B	GE	General English – 3: English for Science - 1	5	3	100	100	100
	III	25UBC33CC05	CC Major	**Core Course - 5:** Java Programming	4	3	100	100	100
		25UBC33CC06		**Core Course - 6:** Data Analytics using R programming	4	3	100	100	100
		25UBC33CP03		**Core Practical - 3:** Java Programming Lab	3	2	100	100	100
		25UBC33AO01A	AO Minor	**Allied Optional - 1:** Financial Accounting Package – Tally Prime Basic	3	2	100	100	100
		25UBC33OP01A		**Allied Optional Practical - 1:** Financial Accounting Packages – Tally Prime Basic (Lab)	3	2	100	100	100
		25UBC33AO01B		**Allied Optional - 1:** Accounts - 1	(6)	(4)	100	100	100
	IV	25UHE34VE03A	VE	**Value Education – 3:** Social Ethics – 1*	2	1	50	50	50
		25UHE34VE03B		**Value Education – 3:** Religious Doctrine – 1*					
		25UNC34SE01 / 25USS34SE01	SEC	**Skill Enhancement Course – 1:** Introduction to NCC / **Skill Enhancement Course – 1:** Soft Skills	2	1	100	-	100
		25UAI34SL02	SL	Artificial Intelligence (Online)	0	2	100	-	100
				Extra Credit Course	0	(3)			
				Total	**30**	**22 (3)**			
4	I	25UTA41GL04B	GL	General Tamil – 4: Scientific Tamil (அறிவியல் தமிழ்)	4	3	100	100	100
		25UFR41GL04		Language French – 4					
		25UHI41GL04		Language Hindi – 4					
		25USA41GL04		Language Sanskrit – 4					
	II	25UEN42GE04B	GE	General English – 4: English for Science - 2	5	3	100	100	100
	III	25UBC43CC07	CC Major	**Core Course - 7:** Python Programming	4	3	100	100	100
		25UBC43CC08		**Core Course - 8:** Software Engineering	4	3	100	100	100

				(Internship Embedded Course)					
		25UBC43CP04		**Core Practical - 4:** Python Programming Lab	3	2	100	100	100
		25UBC43AO02A	**AO Minor**	**Allied Optional - 2:** Financial Accounting Package – Tally Prime Advanced	3	2	100	100	100
		25UBC43OP02A		**Allied Optional Practical - 2:** Financial Accounting Packages – Tally Prime Advanced (Lab)	3	2	100	100	100
		25UBC43AO02B		**Allied Optional - 2:** Accounts - 2	(6)	(4)	100	100	100
	IV	25UHE44VE04A	**VE**	**Value Education - 4:** Social Ethics – 2*	2	1	50	50	50
		25UHE44VE04B		**Value Education - 4:** Religious Doctrine – 2*					
		25UNC44SE02 / 25UBC44SE02	**SEC**	**Skill Enhancement Course – 2:** NCC (Special Subject) / **Skill Enhancement Course – 2:** Software Testing	2	1	100	-	100
		25UBC44SL03	**SL**	**Self – Learning:** Computer Networks*	0	2	50	50	50
				Extra Credit Course	0	(3)			
				Total	**30**	**22 (3)**			
5	III	25UBC53CC09	**CC Major**	**Core Course - 9:** ASP.NET	6	4	100	100	100
		25UBC53CC10		**Core Course - 10:** Web Technologies	6	3	100	100	100
		25UBC53CP05		**Core Practical - 5:** ASP .NET Lab	3	2	100	100	100
		25UBC53CP06		**Core Practical - 6:** Web Technologies Lab	3	2	100	100	100
		25UBC53ES01A	**DSE**	**Discipline Specific Elective - 1:** Fundamentals of Internet of Things	4	3	100	100	100
		25UBC53ES01B		**Discipline Specific Elective - 1:** Cloud Computing					
		25UBC53ES02A		**Discipline Specific Elective - 2:** Aptitude and Reasoning	4	3	100	100	100
		25UBC53ES02B		**Discipline Specific Elective - 2:** Cyber Security					
		25UBC53IS01	**IS**	Internship	0	1			
	IV	25UBC54OE01	**OE**	**Open Elective – 1 (WS):** Digital Marketing	4	2	100	100	100
		25UBC54SL04	**SL**	**Certificate Course:** Fundamentals of Multimedia and Animations	0	2	100	-	100
				Extra Credit Course	0	(3)			
				Total	**30**	**22 (3)**			
6	III	25UBC63CC11	**CC Major**	**Core Course - 11:** Full Stack Development	6	4	100	100	100
		25UBC63CC12		**Core Course - 12:** Data Mining and Warehousing	6	3	100	100	100
		25UBC63CP07		**Core Practical - 7:** Full Stack Development Lab	3	2	100	100	100
		25UBC63CP08		**Core Practical - 8:** Data Mining and Ware housing Lab	3	2	100	100	100
		25UBC63ES03A	**DSE**	**Discipline Specific Elective - 3:** Distributed Operating Systems	4	3	100	100	100
		25UBC63ES03B		**Discipline Specific Elective - 3:** Business Analytics					
		25UBC63ES04A		**Discipline Specific Elective - 4:** Ethical Hacking	4	3	100	100	100
		25UBC63ES04B		**Discipline Specific Elective - 4:** Web Mining					
		25UBC63EL01A	**EL**	**Project** /	0	1	100	-	100
		25UBC63EL01B		Industrial Visit /					
		25UBC63EL01B		Field Visit					
		25UBC63CE01	**CE**	Comprehensive Examination*	0	2	50	50	50
	IV	25UBC64OE02	**OE**	**Open Elective - 2:** Web Design	4	2	100	100	100
				Extra Credit Course	0	(3)			
				Total	**30**	**22 (3)**			
	V	25UCW65OR01	**OR**	Outreach Programme		4			
		25UCW65EC01	**EC**	Co - Curricular & Extra Curricular Activities		1			
1-6				**TOTAL**	**180**	**137(15)**			

***For Grade Calculation:** Marks obtained out of 50 will be converted into 100 in the mark statements.

Open Elective - 1 (WS): 5th Semester

School	Course Code	Title of the Course
SCS		
Artificial Intelligence and Machine Learning	25UAI54OE01	Cyber Security
BCA	25UBC54OE01	Digital Marketing
Computer Science	25UCS54OE01	Web User Interface Design
Mathematics	25UMA54OE01	Quantitative Aptitude
Statistics	25UST54OE01	Quality Management and Official Statistics

Open Elective - 2: 6th Semester
Offered to students from other Departments

Department	Course Code	Title of the Course
Artificial Intelligence and Machine Learning	25UAI64OE02	Gen AI tools
Botany	25UBO64OE02	Landscape Designing and Waste Management
Biotechnology	25UBT64OE02	Food Science and Technology
BBA	25UBU64OE02A	Practical Stock trading
	25UBU64OE02B	Export Management
B Com Business Analytics	25UCB64OE02	Personal Investment Planning
B Com Computer Application	25UCC64OE02A	Social Media Marketing
	25UCC64OE02B	Basics of Banking
B Com Strategic Finance	25UCF64OE02	Personal Financial Management
Chemistry	25UCH64OE02	Food & Nutrition
B Com	25UCO64OE02A	Digital Marketing
	25UCO64OE02B	Digital Banking
	25UCO64OE02C	Stock Trading
Computer Science	25UCS64OE02	Design Thinking
BCA	25UBC64OE02	Web Design
Economics	25UEC64OE02	Economics for Competitive Exams
Electronics	25UEL64OE02A	CCTV and Smart Security Systems
	25UEL64OE02B	Entrepreneurial Electronics
English	25UEN64OE02	English for Employability
History	25UHS64OE02	Intellectual Revivalism in Tamil Nadu
Mathematics	25UMA64OE02	Mathematics for Competitive Examinations
Physics	25UPH64OE02A	Laser Technology and its Application
	25UPH64OE02B	Physics of Earth
Statistics	25UST64OE02	Applied Statistics
Tamil	25UTA64OE02	படைப்பிலக்கியம் (Creative writing)
Visual Communication	25UVC64OE02	Digital Media and Production

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	25UTA11GL01	பொதுத்தமிழ் – 1: General Tamil - 1	4	3

கற்றலின் நோக்கங்கள் (Course Objectives)
புதிய இலக்கிய வடிவங்களை அறியும் திறனைப் பெறுதல்
எழுத்து சொல் இலக்கணத்தில் இன்றியமையாமையை உணர்தல்
புதுக்கவிதைகளின் கூறுகளை வாழ்வியலோடு பொருத்திப்பார்த்தல்
தமிழ்க்கவிதைகளைப் பிறமொழிக் கவிதைகளோடு ஒப்பிட்டுப் பார்த்தல்
புதுக்கவிதைகளைப் படைக்கும் திறன் பெறுதல்

அலகு-1 **(12 மணி நேரம்)**

பாரதியார் கவிதைகள் - பாஞ்சாலிசபதம்: சபதச் சருக்கம்
பாரதிதாசன் கவிதைகள் - புரட்சிக்கவி : மன்னனின் சர்வாதிகாரம், கவிஞனின் எழுச்சியுரை, கவிஞனின் மொழிப்பற்று, மக்களாட்சி மலரும் விதம்
இலக்கிய வரலாறு - இருபதாம் நூற்றாண்டுத் தமிழ்க்கவிஞர்கள்
உரைநடை - முதல் மூன்று கட்டுரைகள்

அலகு-2 **(12 மணி நேரம்)**

வெ.இராமலிங்கனார் - தமிழ், அரசியல்
முடியரசனார் - தொழிலாளி, துறைதோறும் தமிழே காண்பீர், மொழியுணர்ச்சி
பெருஞ்சித்திரனார் - என்னென்று சொல்வோம், இனியேனும் ஒன்றிணைவீர்
பட்டுக்கோட்டையார் - என் விருப்பம், ஏட்டில் படித்ததோடு இருந்து விடாதே, அன்னசத்திரம் இருப்பதெதனாலே?
இலக்கிய வரலாறு - புதுக்கவிதை வடிவங்கள்
இலக்கணம் - எழுத்து

அலகு-3 : சமூகக் கவிதைகள் **(12 மணி நேரம்)**

சுரதா - நெஞ்சில் நிறுத்துங்கள், பூம்புகார்
மு. மேத்தா - உன்னுடைய கொடியை
கண்ணதாசன் - ஆணவம் அழியும்
அப்துல் ரகுமான் - பசி
தங்கம் மூர்த்தி - கூடு திரும்புதல் எளிதன்று
ஜெயபாஸ்கரன் - ஒற்றைக் கேள்வியுடன் ஒருவர்
இலக்கிய வரலாறு - சிறுகதை- உரைநடை
சிறுகதை - முதல் மூன்று கதைகள்

அலகு-4 : அரசியல் கவிதைகள் **(12 மணி நேரம்)**

ஈரோடு தமிழன்பன் - எட்டாவது சீர்
யுகபாரதி - பழைய புத்தக வியாபாரி
கனிமொழி - கருவறை வாசனை
அ.வெண்ணிலா - நீரில் அலையும் முகம்
பெருமாள் முருகன் - குழந்தைகளைத் தண்டித்தல்
சீனு ராமசாமி - அகதி
கல்கி சுப்பிரமணியம் - விதியை எழுதினேன்
இலக்கணம் - சொல்

அலகு-5 : அயலகக் கவிதைகள் **(12 மணி நேரம்)**

தஸ்லீமா நஸ்ரின் - கல் உடைக்கும் பெண்
மாயா ஏஞ்சலு - கைத்தட்டுங்கள் கொண்டாடுங்கள்
நானிலு கவிதைகள் - 10 கவிதைகள்
உரைநடை - நான்கு முதல் ஆறு வரை உள்ள கட்டுரைகள்
சிறுகதை - நான்கு முதல் ஆறு வரை உள்ள கதைகள்

கற்பித்தல் அணுகுமுறை Teaching Methodology	விரிவுரை **(Lecture),** காணொளிக் காட்சி **(Videos),** விளக்கக் காட்சி **(PPT presentation)**
மதிப்பீட்டு முறைகள் Assessment methods	நூல் நோக்குத் தேர்வு **(Open Book Test),** இயங்கலைத்தேர்வு **(**Online Test), ஒப்படைவு **(Assignment),** வினாடி வினா **(Quiz),** கருத்துரை **(Seminar)**

பாடநூல்:

பொதுத்தமிழ்-1(2025), தமிழாய்வுத்துறை, தூய வளனார் கல்லூரி

Websites and eLearning Sources:

- *https://www.tamilvu.org/library/nationalized/pdf/35-subbureddiyar/452-panjalisabatham.pdf*
- *https://www.annacentenarylibrary.org - https://shorturl.at/KWZx5*
- *https://eluthu.com/kavithai*
- *https://www.tamilvu.org/courses/degree/p103/p1032/html/p1032614.htm*
- *https://kavithaivaasal.blogspot.com/2017/11/blog-post.html*

Course Outcomes

CO No.	***CO-Statements*** **இப்பாடத்தின் நிறைவில் மாணவர்கள்**	***Cognitive Levels (K –Levels)***
CO–1	இக்கால இலக்கிய வகைகளைக் கண்டறிவர்	***K1***
CO–2	எழுத்து, சொல்லிலக்கணங்களின் அடிப்படைகளை வகைப்படுத்தி அறிவர்.	***K2***
CO–3	அயலகக் கவிதை வடிவங்கள் குறித்த தெளிவான விளக்கங்களைப் பெறுவர்.	***K3***
CO–4	மொழிபெயர்ப்புக் கவிதைகளைக் கற்பதன் வாயிலாகத் திறனாய்வு செய்யும் திறனை வளர்த்தெடுப்பர்.	***K4***
CO–5	புதுக்கவிதை வாயிலாக வெளிப்படும் சமூக, அரசியல் விழுமியங்களை மதிப்பிடுவர்	***K5***

Relationship Matrix											
Semester	***Course Code***			***Title of the Course***						***Hours***	***Credits***
1	***25UTA11GL01***			பொதுத்தமிழ் – *1: General Tamil - 1*						***4***	***3***
Course Outcomes↓	***Programme Outcomes (PO)***					***Programme Specific Outcomes (PSO)***					***Mean Scores of COs***
	PO-1	***PO-2***	***PO-3***	***PO-4***	***PO-5***	***PSO-1***	***PSO-2***	***PSO-3***	***PSO-4***	***PSO-5***	
CO-1	*3*	*3*	*2*	*2*	*3*	*3*	*3*	*2*	*3*	*3*	*2.7*
CO-2	*2*	*2*	*3*	*2*	*2*	*3*	*2*	*3*	*2*	*3*	*2.4*
CO-3	*3*	*2*	*3*	*3*	*3*	*3*	*3*	*3*	*3*	*2*	*2.8*
CO-4	*2*	*2*	*2*	*2*	*1*	*2*	*2*	*3*	*2*	*2*	*2.0*
CO-5	*3*	*2*	*3*	*2*	*2*	*3*	*2*	*2*	*3*	*3*	*2.5*
Mean Overall Score											***2.48 (High)***

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	25UFR11GL01	Language French – 1	4	3

Course Objectives
Familiarize students with the French language through an exploration of francophone culture, traditions, and civilization.
Build fundamental knowledge in listening, speaking, reading, and writing (LSRW) as outlined by the Common European Framework of Reference for Languages (CEFR).
Enable students to understand and use basic grammatical structures and essential vocabulary in context.
Equip students with the skills needed to engage in simple, real-life conversations and interactions in French.
Foster a deeper connection to the language by integrating cultural elements, enhancing motivation and intercultural awareness.

UNIT I **(12 Hours)**

1. Titre - Je Suis
2. Lexique - L'alphabet, les salutations, les loisirs, les nombres
3. Grammaire - Les pronoms personnels sujets, les articles définis et indéfinis, les verbes auxiliaires, les adjectifs de nationalité, l'adjectif interrogatif 'quel'
4. Production orale- se présenter
5. Production écrite - Donner des informations personnelles

UNIT II **(12 Hours)**

6. Titre - Près de moi
7. Lexique – Les lieux, la famille, la situation familiale, les professions
8. Grammaire – les verbes en 'er'au présent, le masculin et le féminin des professions, les adjectifs possessifs
9. Production orale- Demander et dire le lieu d'habitation
10. Production écrite - Présenter et parler de sa famille

UNIT III **(12 Hours)**

11. Titre - Qu'est-ce qu'on mange ?
12. Lexique – les commerces, les commerçants, les aliments, les moyens de paiement
13. Grammaire – le singulier et le pluriel des noms, les prépositions de lieu, les verbes en 'ir'
14. Production orale- faire des courses alimentaires, demander et dire le prix
15. Production écrite - Donner une appréciation, commander au restaurant, créer un menu

UNIT IV **(12 Hours)**

16. Titre - C'est où
17. Lexique – la ville, les monuments, les transports
18. Grammaire – la fréquence, l'impératif, les connecteurs
19. Production orale- demander et indiquer le chemin, se déplacer des transports en commun
20. Production écrite - présenter une ville ou un quartier, créer un guide pour un monument

UNIT V **(12 Hours)**

21. Titre - C'est tendance
22. Lexique – les vêtements, les couleurs, les matières, les objets technologiques, la météo
23. Grammaire – le genre et le nombre des adjectifs, le futur proche, la place des adjectifs, l'adjectif démonstratif
24. Production orale- demander et dire l'utilité d'un produit, parler de la météo
25. Production écrite - Donner une appréciation sur un vêtement, décrire un objet
26. Indian knowledge system- Incorporating hand gestures and expressions to reinforce non-verbal communication in French and assimilating traditional Indian culinary knowledge while learning French food cultures (5%)

Teaching Methodology	Kinesthetic & Multi-Sensory Learning, Rhythm-Based Learning – ex.comptines, Deductive & Explicit Learning- structural approach, oral approach, blended learning, media integration
Assessment Methods	*Oral assessment:* Introduce Oneself – (Rubric –assessed on correct usage of vocabulary, personal pronouns and basic verbs) *TPR activity:* Evaluate comprehension of oral commands like action words. (Rubric –assessed on comprehension, response and reaction time) *Reading comprehension:* Read a simple passage like a personal description, and answer questions. (Rubric –assessed on accuracy of response) *Written assessment:* Write simple structured texts on short personal introduction. (Rubric –Graded on correct grammar, sentence structure, and vocabulary usage)

Books for Study:

1. Mensdorff-Pouilly, L., Opatski, S., Petitmengin, V., Pons, S., Sperandio, C., Djimli, H., &Veldeman-Abry, J. (2022). *Édito A1: Méthode de français* (2nd ed.). Didier FLE, Hatier. (P.1-P.86)

Books for Reference:

1. Dauda, P., Giachino, L., &Baracco, C. (2020). *Génération A1*. Didier.
2. Mérieux, R., &Loiseau, Y. (2012). *Latitudes A1*. Didier.

Websites and e-learning Sources:

1. https://apprendre.tv5monde.com/en
2. https://www.thefrenchexperiment.com
3. https://www.iletaitunehistoire.com
4. https://www.francaisfacile.com
5. https://www.francaisauthentique.com

	Course Outcomes	
CO No.	**CO–Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K –Levels)**
CO1	Recognize and use fundamental vocabulary including greetings, while constructing simple sentences with personal pronouns and basic verbs.	**K1**
CO2	Introduce themselves, ask and answer questions about personal details, express preferences, and engage in role-play conversations related to daily life	**K2**
CO3	Differentiate between definite and indefinite articles, form plural and singular nouns, conjugate regular verbs in the present tense, and use adjectives correctly	**K3**
CO4	Ask for and give directions, order food, discuss weather conditions, describe clothing and objects, and create simple structured texts such as menus, guides, and personal descriptions.	**K4**
CO5	Demonstrate awareness of Francophone culture through language use in real-world scenarios, such as public transport, shopping, dining, and professional settings.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
1	**25UFR11GL01**			Language French – 1					**4**		**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of Cos**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	2	2	1	3	2	1	1	2	3	1.9
CO2	3	2	3	3	1	3	2	3	3	3	2.6
CO3	2	2	2	2	2	2	1	2	2	2	1.9
CO4	3	3	3	3	2	3	2	2	2	3	2.6
CO5	3	2	2	3	3	3	3	2	3	3	2.7
Mean Overall Score											**2.34 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	25UHI11GL01	Language Hindi - 1	4	3

Course Objectives
To understand the basics of Hindi Language
To make the students to be familiar with the Hindi words
To enable the students to develop their effective communicative skills in Hindi
To introduce the socially relevant subjects in Modern Hindi Literature
To empower the students with globally employable soft skills

UNIT I **(12 Hours)**

1. Swar
2. Vyanjan
3. Barah Khadi
4. Shabd aur Vakya

UNIT II **(12 Hours)**

5. Rishtom ke Naam
6. Gharelu Padartho ke Naam
7. Sangya
8. Hindi Ginthi

UNIT III **(12 Hours)**

9. Sapthah ke Din
10. Sarvanam
11. Vilom Shabd
12. Dr. Abdul Kalam

UNIT IV **(12 Hours)**

13. Sal ke Maheene
14. Shareer ke Ang
15. Visheshan
16. Batcheeth - Dookan mein

UNIT V **(12 Hours)**

17. Janvarom ke Naam
18. Rang
19. Dishayem

Teaching Methodology	Peer Instruction Exercise, Videos, PPT, Quiz, Group Discussion
Assessment Methods	Seminar, Quiz, Assignment

Books for Study:

1. *Prathamic Patya Pusthak*, Dakshina Bharath Hindi Prachara Sabha, Thiagaraya Nagar, Chennai, 2022.
2. M. Ravi Chandran, *Concise Trilingual Dictionary,* Lotus Publications, Madurai, 2021.
3. M. kamathaprasad Gupth, *Hindi Vyakaran*, Anand Prakashan, Kolkatta, 2020.
4. *Madyama Patya Pusthak*, Dakshina Bharath Hindi Prachara Sabha, Thiagaraya Nagar, Chennai, 2022.

Books for Reference:

1. Dr. A. P. J. Abdul Kalam, *Mere sapnom ka Bharath*, Prabath Prakashan, Noida, 2020,
2. *Meri Pratham Hindi Sulekh Shabd Gyaan*, Wonder House Books, Noida, 2022.
3. Aravind Kumar, *Sampoorna Hindi Vyakaran our Rachana,* Lucent publisher, 2022.
4. *Adhunik Hindi Vyakaran our Rachana,* Bharati Bhavan Publishers & distributors, 2024.
5. Acharya Ramchandra Shukla, *Hindi Sahitya Ka Itihas*, Prabhat Prakashan, 2023.

Websites and e-Learning Sources:

1. https://learningmole.com/hindi-alphabet-letters-pronunciation-guide/
2. https://www.careerpower.in/hindi-alphabet-varnamala.html
3. https://www.youtube.com/watch?v=b0UvXnIC8qc
4. https://www.importanceoflanguages.com/learn-hindi-language-guide/
5. https://parikshapoint.com/hindi-sahitya/

Course Outcomes		
CO No.	**CO–Statements**	**Cognitive Levels (K –Levels)**
	On successful completion of this course, students will be able to	
CO1	Introduction to Hindi sounds.	**K1**
CO2	Acquisition of Hindi Vocabulary.	**K2**
CO3	Sentence formation in Hindi.	**K3**
CO4	Practical application of grammar.	**K4**
CO5	Justify the social & political conditions of Aadhi Kaal in Hindi Literature.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**				**Hours/week**			**Credits**
1	**25UHI11GL01**			Language Hindi - 1				**4**			**3**
Course Outcomes (COs)	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Scoreof Cos**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	2	1	3	3	3	1	3	2	2.3
CO2	2	3	2	3	1	2	3	3	3	2	2.4
CO3	3	2	2	2	1	3	2	3	2	3	2.3
CO4	3	1	2	3	2	3	2	3	3	2	2.4
CO5	2	3	3	2	3	2	3	3	1	3	2.5
									Mean overall Score		**2.38 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	**25USA11GL01**	Language Sanskrit - 1	**4**	**3**

Course Objectives
To improve knowledge in Sanskrit
To train students in reading Sanskrit words
To introduce the fundamental grammar
To coach ethics and improve self-confident
To train the students to use the tenses in Sanskrit

UNIT I (**12 Hours)**

Introduction to Sanskrit

UNIT II (**12 Hours)**

Subhandha shabda vicaraha (akaara, aakaara, ikaara, iikaara)

UNIT III (**12 Hours)**

Vartamankala lat lakaara vakya prayogaha

UNIT IV (**12 Hours)**

Samskrita sharala vakya paricayaha

UNIT V (**12 Hours)**

Selected verses from good saying in Sanskrit

Teaching Methodology	Videos, PPT, Blackboard, Demonstration, Exercises
Assessment Methods	Seminar, Quiz, Group Discussion.

Books for Study:

Shadhamanjari

Books for Reference:

1. Kulapathy, K.M., Sarala Samkrit Balabodh, Bharatiya Vidya Bhavan, Munushimarg Mumbai – 4000 007 2021
2. R.S. Vadhyar & Sons, Book – Sellers and publishers, Kalpathi. Palagahat 678003, Kerala, South Inida, Shabdha Manjari 2022
3. Balasubramaniam R, Samskrita Akshatra Siksha, Vangals Publications, 14th Main road, JP Nagar, Bangalore – 78 2020

Websites and e-Learning Sources:

1. https://www.learnsanskrit.org/static/pdf/vyakarana.pdf
2. https://archive.org/details/in.ernet.dli.2015.382597
3. https://openpathshala.com/sanskrit-grammar-basic/3

Course Outcomes		
CO No.	**CO–Statements**	**Cognitive Levels (K –Levels)**
	On successful completion of this course, students will be able to	
CO–1	Remember and Recall words relating to objects.	**K1**
CO–2	Understand classified vocabulary.	**K2**
CO–3	Apply nouns and verbs	**K3**
CO–4	Analyze different forms of names and verbs	**K4**
CO–5	Appreciate the good saying of Sanskrit Improve the self-values.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
1	**25USA11GL01**			Language Sanskrit - 1						**4**	**3**
Course Outcomes↓	**Programme Outcomes (PO)**					**Programme Specific Outcomes (PSO)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PS02**	**PSO3**	**PSO4**	**PSO5**	
CO-1	3	1	1	3	2	3	2	3	2	2	2.2
CO-2	2	2	3	3	1	2	2	3	3	2	2.3
CO-3	3	2	2	2	2	2	2	3	3	2	2.3
CO-4	3	2	2	3	2	3	3	3	2	2	2.3
CO-5	3	2	3	2	3	2	2	3	3	3	2.6
Mean Overall Score											**2.34 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	25UEN12GE01A	**General English – 1:** Pre-Intermediate Stream	5	3

Course Objectives (CO)
To develop basic listening, speaking, reading, and writing skills
To improve comprehension and fluency in both oral and written communication
To learn language rules to create meaningful written and spoken communication
To learn and integrate new vocabulary to expand language proficiency
To construct grammatically correct sentences and engage in simple conversations

UNIT I: **(15 Hours)**

Listening:	**(Skill)**	**:**	Listening for familiar words in stories
	(Practice)	**:**	"The City Mouse and the Country Mouse"
Reading:	**(Skill)**	**:**	Reading aloud
	(Practice)	**:**	"The Peacock and the Crane" "The Curious Monkey"
Grammar:	**(Practice)**	**:**	Nouns: Types; Gender
Vocabulary:	**(Practice)**	**:**	Kinship terms
Speaking:	**(Skill)**	**:**	Repetition of Minimal Pairs
	(Practice)	**:**	Pronunciation of words
Writing:	**(Skill)**	**:**	Using capital letters correctly in names, the pronoun 'I,' days, months, languages, nationalities, sentence beginnings, and book titles
	(Practice)	**:**	Capitalisation

UNIT II: **(15 Hours)**

Listening:	**(Skill)**	**:**	Listening to identify phrases and sentences
	(Practice)	**:**	"How to Be Happy in Every Situation"
Reading:	**(Skill)**	**:**	Reading for main ideas
	(Practice)	**:**	"The World is a Mirror"
Grammar:	**(Practice)**	**:**	Countable and Uncountable Nouns; Singular and Plural Nouns; Pronouns
Vocabulary:	**(Practice)**	**:**	Human body vocabulary
Speaking:	**(Skill)**	**:**	Responding to basic questions
	(Practice)	**:**	Simple conversations
Writing:	**(Skill)**	**:**	Writing personal and academic information with correct spelling
	(Practice)	**:**	Using Correct Spelling in Writing

UNIT III: **(15 Hours)**

Listening:	**(Skill)**	**:**	Listening for main ideas
	(Practice)	**:**	"Magic Pot"
Reading:	**(Skill)**	**:**	Identifying the message of the story
	(Practice)	**:**	Zen story: "Carry On" Zen story: "Harmony"
Grammar:	**(Practice)**	**:**	Adjectives, Articles and Verbs
Vocabulary:	**(Practice)**		Vegetables and Fruits
Speaking:	**(Skill)**		Using 'be' verbs and adjectives to describe people, things and pictures
	(Practice)		Describing People, Things and Pictures
Writing:	**(Skill)**	**:**	Practising correct punctuation in writing
	(Practice)	**:**	Punctuation

UNIT IV: **(15 Hours)**

Listening:	**(Skill)**	**:**	Listening for the main ideas in the story and expressing one's views about them
	(Practice)	**:**	"A Glass of Milk"
Reading:	**(Skill)**	**:**	Understanding the central idea of the story and sharing personal views

	(Practice)	**:**	"Birbal: The Wise Man"
Grammar:	**(Practice)**	**:**	Simple Present Tense
Vocabulary:	**(Practice)**	**:**	Plants, Trees and Flowers
Speaking:	**(Skill)**	**:**	Describing daily routines using the simple present tense
	(Practice)	**:**	Describing one's own routine and a friend's routine
Writing:	**(Skill)**	**:**	**Writing simple sentences in response to questions and on a given topic**
	(Practice)	**:**	Writing Simple Sentences

UNIT V: **(15 Hours)**

Listening:	**(Skill)**	**:**	Listening to understand the sequence of ideas
	(Practice)	**:**	A Father and His Son
Reading:	**(Skill)**	**:**	Identifying the implicit idea of the story
	(Practice)	**:**	"The Stone Cutter"
Grammar:	**(Practice)**	**:**	Simple Past Tense
Vocabulary:	**(Practice)**	**:**	Birds, Animals and Insects
Speaking:	**(Skill)**	**:**	Narrating stories, events, or experiences using the simple past tense
	(Practice)	**:**	Narrating a Familiar Story or Past Events
Writing:	**(Skill)**	**:**	Writing a paragraph using a picture by answering questions or describing it.
	(Practice)	**:**	Picture Composition

Teaching Methodology	Lectures, task-based activities, audio-visual listening tasks, guided reading and writing exercises, discussions
Assessment Method	Listening and reading comprehension exercises, verbal presentations, role plays and conversations, writing tasks

Books for Study:
Seeds of English Skills by Dr. M. John Britto, Dr. B. Sam Jerome Sharone, and Dr. S. Sajeev.

	Course Outcomes	
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
CO-1	Recognize basic sounds, words, and simple ideas through listening practice.	**K1**
CO-2	Understand and engage in simple conversations, improving fluency in both oral and written communication.	**K2**
CO-3	Apply grammatical rules to construct meaningful sentences in spoken and written forms.	**K3**
CO-4	Integrate new vocabulary into everyday communication to expand language proficiency.	**K4**
CO-5	Construct grammatically correct sentences and engage in simple conversations, expressing personal experiences and opinions.	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**							**Hours**	**Credits**
1	**25UEN12GE01A**		**General English – 1:** Pre-Intermediate Stream							**5**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PS02**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	3	2	3	2	3	2	3	2	2	**2.4**
CO2	3	2	2	3	2	3	2	3	2	3	**2.5**
CO3	3	2	2	2	3	2	2	3	2	2	**2.3**
CO4	3	2	2	2	2	2	2	2	2	3	**2.2**
CO5	3	2	3	2	3	2	3	2	3	2	**2.5**
Mean Overall Score											**2.38 (High)**

Semester	Course Code	Title of the Course	Hours/ Week	Credits
1	25UEN12GE01B	**General English – 1:** Intermediate Stream	5	3

Course Objectives
To improve students' ability to listen, speak, read, and write in English through interactive and meaningful activities tailored to real-life contexts.
To enable students to use appropriate vocabulary, grammar, and pronunciation to introduce themselves, express opinions, describe people and places, and engage in conversations.
To equip students with reading strategies to comprehend texts, and apply structured writing methods to express ideas coherently.
To develop students' ability to use common grammar structures accurately and expand their vocabulary through word formation techniques.
To help students apply effective learning strategies to enhance their academic and professional success.

Unit 1: What's in a Name? (15 Hours)

1. Listening:	**(Skill)**	Listening for gist
	(Practice)	"Not Good with Names" by Cynthia Win (a TED talk)
2. Reading:	**(Skill)**	Skimming
	(Practice)	"Eli, the Equation"
3. Grammar:	**(Practice)**	Nouns
4. Vocabulary:	**(Practice)**	Forming compound nouns
5. Study Skill:		Using online dictionaries
6. Speaking:	**(Skill)**	Initiating conversations (Greeting – Starting a conversation with new people – Introducing and answering an introduction)
	(Practice)	Introducing oneself and others in conversations
7. Writing:	**(Skill)**	Narrating a personal anecdote – Using capitals and end mark punctuations in sentences
	(Practice)	Guided Composition: The story of my name

Unit 2: Family is Forever! (15 Hours)

1. Listening:	**(Skill)**	Predicting topics
	(Practice)	"Tracing Roots, Telling Stories"
2. Reading:	**(Skill)**	Scanning
	(Practice)	"Home Lost, Family Found"
3. Grammar:	**(Practice)**	Pronouns
4. Vocabulary:	**(Practice)**	Words related to family and relationships
5. Study Skill:		Recognising your learning style
6. Speaking:	**(Skill)**	Talking about your family (family members and relationships, their personalities and your attachment, family routines, and challenges)
	(Practice)	Talking about your family (in conversations)
7. Writing:	**(Skill)**	Narrating events in chronological order – Using punctuations in numbers
	(Practice)	Controlled Composition: My family history

Unit 3: Nothing is Better than a Good Friend (15 Hours)

1. Listening:	**(Skill)**	Listening for main idea
	(Practice)	"Nothing is better than a good friend"
2. Reading:	**(Skill)**	Predicting
	(Practice)	(Jigsaw reading) Fables about friends: (a) "The Hare with Many Friends" – (b) "The Two Fellows and the Bear" – (c) "The Fox and the Stork" – (d) "The Four Friends and a Hunter"
3. Grammar:	**(Practice)**	Adjectives
4. Vocabulary:	**(Practice)**	Forming nouns, adjectives, verbs and adverbs using suffixes
5. Study skill:		Setting and prioritising language learning goals
6. Speaking:	**(Skill)**	Talking about people (Describing people's appearance and their mannerism – Giving your opinion about people – Expressing what you like and dislike

		in a person)
	(Practice)	Delivering a short talk about one's best friend
7. Writing:	**(Skill)**	Describing people (What they wear, how they move and seem to feel, and where they are) Using comma in sentences.
	(Practice)	Controlled composition: Describing people in given pictures

Unit 4: The Inner Me **(15 Hours)**

1. Listening:	**(Skill)**	Listening to understand pronunciation
	(Practice)	"The bare necessities" from *The Jungle Book*
2. Reading:	**(Skill)**	Previewing a text
	(Practice)	"The Surprising Benefits of Being an Introvert"
3. Grammar:	**(Practice)**	Articles and Quantifiers
4. Vocabulary:	**(Practice)**	Forming words with different meanings using prefixes
5. Study skill:		Planning a study schedule
6. Speaking:	**(Skill)**	Asking about feelings – Expressing one's feelings
	(Practice)	Talking about feelings in different situations
7. Writing:	**(Skill)**	Describing character traits (Writing about what characters would say or do) Using quotation marks and apostrophes in sentences
	(Practice)	Controlled Composition: Cruel Cinderella

Unit 5: Hometown Appetite **(15 Hours)**

1. Listening:	**(Skill)**	Listening for supporting details
	(Practice)	"The Village that Raised Me"
2. Reading:	**(Skill)**	Questioning circles for active reading
	(Practice)	"Homecoming"
3. Grammar:	**(Practice)**	Prepositions of time, place and movement
4. Vocabulary:	**(Practice)**	Changing words from one class to another
5. Study skill:		Tracking progress in learning
6. Speaking:	**(Skill)**	Describing a place
	(Practice)	Talking about your hometown
7. Writing:	**(Skill)**	Describing objects – Using colon in sentences
	(Practice)	Controlled Composition: Writing posts for social media, describing your college campus and classroom

Teaching Methodology	Lectures, Demonstrations, Discussions, Peer-Review Tasks, Role-plays, Pair and group activities
Assessment Tools	Listening and reading comprehension tasks, Individual talks, Role plays, Controlled and guided compositions

Books for Study:

M.S. Xavier Pradheep Singh, J. Amalaveenus, and A. Napoleon. *English and Me* by Viva Books, 2025.

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Identify and recall common grammar structures, vocabulary, and pronunciation patterns used in everyday communication.	**K1**
CO2	Demonstrate comprehension of spoken and written texts by summarising key ideas, identifying main points, and making inferences.	**K2**
CO3	Use appropriate vocabulary, grammar, and pronunciation to introduce themselves, express opinions, describe people and places, and engage in meaningful conversations.	**K3**
CO4	Differentiate between various reading and writing strategies, such as skimming, scanning, and structured writing, to effectively interpret and construct texts.	**K4**
CO5	Critically review written and spoken texts for clarity, coherence, and correctness, providing constructive feedback for improvement.	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
1	**25UEN12GE01B**		**General English – 1:** Intermediate Stream						**5**		**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2.5	3	3	2.5	3	3	2.5	2.5	3	2.8
CO2	2.5	3	2.5	2.5	2.5	3	3	2.5	2.5	3	2.7
CO3	3	2.5	2.5	3	3	2.5	2.5	2.5	3	2.5	2.7
CO4	2.5	2.5	2.5	3	2.5	2.5	2.5	3	2.5	2.5	2.6
CO5	3	2.5	2.5	2.5	3	2.5	2.5	2.5	3	2.5	2.65
Mean Overall Score											**2.69 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	25UBC13CC01	**Core Course - 1:** C Programming	4	3

Course Objectives
To understand logic using basic programming constructs.
To implement modular applications using functions.
To develop programs using arrays and strings.
To demonstrate applications using pointers and structures.
To understand input/output and file handling.

UNIT I **(12 Hours)**

Introduction to Programming: Programming Languages, Generation of Programming Languages. Introduction to C: Structure of a C program, Writing the First C Program, Files Used in C Program, Compiling and Executing C Programs, Using Comments, C Tokens, Character Set in C, Keywords, Identifiers, Basic Data Types in C, Variables, Constants, Input/output Statements in C, Operators, Type Conversion and Type Casting.

UNIT II **(12 Hours)**

Decision Control and Looping Statements: Conditional Branching Statements, Iterative Statements, Nested Loops, Break and Continue, goto Statements. Functions: Using Functions, Function Declaration, Function Definition, Function Call, return statements, Passing Parameters to Functions, Storage Classes.

UNIT III **(12 Hours)**

Arrays: Declaration of Arrays, Accessing the Elements of an Array, Storing Values in Arrays, Operations on Arrays, Passing Arrays to functions, Two-dimensional Arrays. Strings: Introduction, Suppressing Input, String Taxonomy, Operations on Strings.

UNIT IV **(12 Hours)**

Structure, Union and Enumerated Data Types: Introduction, Nested Structures, Arrays of Structures, Structures and Functions, Self-referential Structures, Unions. Files: Introduction to Files, Using Files in C, Read Data from Files, Writing Data to Files, Detecting the End-of-file, Accepting Command Line Arguments.

UNIT V **(12 Hours)**

Pointers: Understanding the Computer's Memory, Introduction to Pointers, Declaring Pointer Variables, Pointer Expressions and Pointer Arithmetic, Null Pointers, Passing Arguments to Functions Using Pointers, Pointers and Arrays, Passing an Array to a Function, Pointers to Pointers.

Teaching Methodology	Chart, PPT, chalk and talk
Assessment Methods	Seminar, Snap Test, MCQ

Books for Study:

1. Reema Thareja (2016), *Programming in C*, (2nd Ed) Oxford University Press, Second Edition,

Books for Reference:

1. E. Balagurusamy (2017), *Programming in C*, (7th Ed), Tata McGraw Hill, New Delhi.
2. Yashwant Kanetkar (2020), *Let us C*, (17th Ed), BPB Publications.
3. Pradip Dey, Manas Ghosh (2013), *Computer Fundamentals and Programming in C*, (2nd Ed), Oxford University Press.
4. Ashok N Kamthane (2012), *Programming with ANSI and Turbo C*, (2nd Ed), Pearson Education.

Websites and eLearning Sources:

1. https://codeforwin.org/
2. https://www.geeksforgeeks.org/c-programming-language/
3. http://learn-c.org/
4. https://archive.org/details/ccompletereferen0000schi_e6i4
5. https://archive.org/details/cp_20230112/page/n17/mode/2up?view=theater

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Understand the fundamentals of C programming, including syntax, data types, and control structures.	**K1**
CO2	Demonstrate the decision-making and looping constructs to solve real-world problems.	**K2**
CO3	Implement arrays, strings, and functions to develop modular programs.	**K3**
CO4	Analyze the usage of pointers and dynamic memory allocation for efficient memory management.	**K4**
CO5	Summarize and develop programs using structures, unions, and file handling techniques.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
1	**25UBC13CC01**			**Core Course - 1:** C Programming						**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	2	**2.4**
CO2	2	3	2	3	2	3	2	3	2	1	**2.3**
CO3	2	2	3	2	1	3	3	2	3	1	**2.2**
CO4	3	3	2	3	2	3	3	2	3	2	**2.6**
CO5	2	2	3	2	1	3	2	3	2	1	**2.1**
										Mean Overall Score	**2.32 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	25UBC13CC02	**Core Course – 2:** Digital Computer Fundamentals	6	4

Course Objectives
To understand the Binary number system, logic gates and their functionality.
To understand the basic concept of number conversions, Flip Flops and registers.
To understand importance of basic electronic circuits and combinational logic circuits.
TO provide the difference between D/ A conversion and A/D Conversion.
To provide comprehensive knowledge on Microprocessors, Microcomputers and Assembly Language.

UNIT I **(18 Hours)**

Number Systems and Codes: Binary Number System, Binary-to-decimal Conversion, Decimal-to-binary Conversion, Octal Numbers, Hexadecimal Numbers, The ASCII Code. Arithmetic Circuits: Binary Addition, Subtraction, Unsigned Binary Numbers, Sign-magnitude Numbers, 2's Complement Representation,2's Complement Arithmetic, the Adder, Subtracter, Binary Multiplication and Division.

UNIT II **(18 Hours)**

Digital Logic: The Basic Gates, NOT, OR, AND, Universal Logic Gates-NOR, NAND. Combinational Logic Circuits: Boolean Laws and Theorem, Sum of Product Method - Karnaugh Simplification, Product of Sum Method, Product of Sum Simplifications**.** Data-Processing Circuits: Multiplexers-De-Multiplexers-Decoders:1of16 encoders-BCD to decimal decoders-Seven segment decoders - Encoders, Ex- OR gates.

UNIT III **(18 Hours)**

Flip - Flops: RS Flip - Flops, Gated Flip - Flops, Edge Triggered RS Flip - Flop, Edge Triggered D Flip-Flop, JK Master/Slave. Registers: Types of Registers-Serial In-Serial-Out, Serial-In-Parallel-out, Parallel-In-Serial Out, Parallel-In-Parallel-Out, Universal Shift Register - Applications of Shift Registers.

UNIT IV **(18 Hours)**

Counters: Asynchronous Counters-Synchronous Counters. D/A and A/D Conversions: Variable, Resistor Networks- D/A Converters, A/D-converter Simultaneous Conversion. Memory: Magnetic Memory-Optical Memory –Memory Addressing-ROMs, PROMs, and EPROMs – RAMs.

UNIT V **(18 Hours)**

Microprocessors, Microprocessor Instruction Set and Computer Languages. Introduction to 8085 Assembly Language Programming: The 8085 Programming Model, Instruction Classification, Instruction, Data Format and Storage - Data Format - Simple Assembly Language Program.

Teaching Methodology	Chart, PPT, chalk and talk
Assessment Methods	Seminar, Snap Test, MCQ, Quiz

Books for Study:

1. Donald, P. L, & Albert, P.M. (2011). *Digital Principles and Applications*, (7th Ed.). Tata McGraw-Hill Education Pvt. Ltd
2. Ramesh, G. (2007). *Microprocessor Architecture, Programming and Applications with the8085.* (5th Ed.). Penram International Publishing Private Limited.

Books for Reference:

1. Thomas, C.B. (1985). *Digital Computer Fundamentals*. (6th Ed.). McGraw-Hill.
2. Thomas, L.F. (2015). *Digital Fundamentals*. (11th Ed.). Pearson Education.
3. Reema, T. (2019). *Fundamentals of Computers*. (2nd Ed.). Oxford University Press.

Websites and eLearning Sources:

1. DIGITAL PRINCIPLES AND APPLICATION BY LEACH & MALVINO.pdf
2. https://www.shahucollegelatur.org.in/Department/Studymaterial/sci/it/BCA/FY/digielec.pdf
3. https://mrajacse.wordpress.com/wp-content/uploads/2013/09/digital-principles-and-logic-design- by-a- saha-n-manna.pdf
4. https://bmsit.ac.in/public/assets/pdf/ece/studymaterial/18EC34%20-%20Hamsavahini%20R.pdf
5. https://mrcet.com/downloads/digital_notes/IT/DIGITAL%20LOGIC%20DESIGN%20(R17A0461). pdf
6. https://prep.missouri.edu/index.jsp/Resources/4030136/Microprocessor_Architecture_Programming_And_Applications_With_The_8085_Ramesh_S_Gaonkar.pdf

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, students will be able to	
CO1	List the number systems and functionalities of various gates in a Digital computer.	**K1**
CO2	Solve the expressions using Karnaugh Map to design the simplified circuits	**K2**
CO3	Utilize the concepts of Flip-Flops, Registers and Counters in the design of memory.	**K3**
CO4	Distinguish the Type of Memories used in Digital Computers	**K4**
CO5	Comprehend the fundamental principles of Digital Electronics Circuits used in Arithmetic Operations and 8085Assembly Language programs.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
1	**25UBC13CC02**			**Core Course - 2:** Digital Computer Fundamentals						**6**	**4**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	3	1	3	2	3	3	2	2	2	**2.4**
CO2	3	3	1	3	3	3	3	2	2	2	**2.5**
CO3	3	3	2	2	1	3	3	3	2	1	**2.3**
CO4	3	3	2	2	2	3	3	2	2	2	**2.4**
CO5	3	3	3	2	1	3	3	3	2	2	**2.5**
Mean Overall Score											**2.42 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	25UBC13CP01	**Core Practical - 1:** C Programming Lab	3	2

Course Objectives
To familiarize students with the basic syntax, structure, and execution of C programs.
To develop problem-solving skills using decision-making and looping constructs.
To implement arrays, strings, and functions for modular programming.
To understand and apply the concepts of pointers and dynamic memory allocation.
To use structures, unions, and file handling techniques for efficient data management.

List of Exercises:

1. Simple Programs
2. Branching Structures
3. Looping Structures
4. Arrays
5. Functions
6. String Handling
7. Pointers
8. Structures &Union
9. Stack Operation
10. Queue Operation
11. Reading and Writing a File
12. Command Line Arguments

Teaching Methodology	Hands-on Lab session
Assessment Methods	Practical Test, Note Evaluation, Viva-voce

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, the students will be able to	**Cognitive Levels (K-Level)**
CO1	Understand the fundamentals of C programming, including syntax, data types, and control structures.	**K1**
CO2	Demonstrate the decision-making and looping constructs to solve real-world problems.	**K2**
CO3	Implement arrays, strings, and functions to develop modular programs.	**K3**
CO4	Analyze the usage of pointers and dynamic memory allocation for efficient memory management.	**K4**
CO5	Summarize and develop programs using structures, unions, and file handling techniques.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
1	**25UBC13CP01**			**Core Practical - 1:** C Programming Lab						**3**	**2**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO 4**	**PSO 5**	
CO1	3	2	3	2	2	3	3	2	3	2	**2.5**
CO2	2	3	2	3	2	3	3	3	2	2	**2.5**
CO3	2	2	3	2	1	3	3	2	3	2	**2.3**
CO4	3	3	2	3	2	3	3	2	3	2	**2.6**
CO5	2	2	3	2	1	3	2	3	2	1	**2.1**
Mean Overall Score											**2.5 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	25UBC13AC01	**Allied Course - 1:** Numerical Methods	6	4

Course Objectives
To introduce the various topics in Numerical methods.
To make understand the fundamentals of algebraic equations
To apply interpolation and approximation on examples
To solve problems using numerical differentiation and integration
To solve linear systems, numerical solution of ordinary differential equations

UNIT I **(18 Hours)**

Solution of algebraic and transcendental equations-Bisection method - Method of successive Approximations or iteration method -The method of False Position- Newton Raphson

UNIT II **(18 Hours)**

Simultaneous linear algebraic equations - Gauss elimination method - Gauss Jordan method Iterative methods - Gauss Jacobi method - Gauss Seidel method.

UNIT III **(18 Hours)**

Interpolation with equal intervals - Newton's forward and backward difference formulae - Approximation of derivatives using interpolation polynomials- Interpolation with unequal intervals - Divided differences- Newton's divided interpolation formula for unequal intervals - Lagrange's interpolation.

UNIT IV **(18 Hours)**

Numerical integration - Trapezoidal rule - Romberg's Method - Simpson's 1/3 -Single step methods - Taylor's series method

UNIT V **(18 Hours)**

Euler's method - Modified Euler's method – Runge Kutta method for solving equations - Milne's Predictor Corrector formulae.

Teaching Methodology	Chart, PPT, chalk and talk
Assessment Methods	Seminar, Snap Test, MCQ

Books for Study:

1. Venkataraman, M. K. (2000). *Numerical Methods in Science and Engineering*, (5th Ed.). National Publishing Company.
   Unit I: Chapter 3 (Sec: 2, 3,4,5)
   Unit II: Chapter 4 (Sec: 2, 6)
   Unit III: Chapter 6 (Sec: 3, 4), Chapter 8 (Sec:1,3, 4)
   Unit IV: Chapter 9 (Sec: 7, 8, 9, 10), Chapter 11 (Sec 6)
   Unit V: Chapter 11 (Sec 10, 12, 13,20)

Books for Reference:

1. Singaravelu, A. (1992). Numerical methods. Meenakshi Publications
2. Kandasamy, P., Thilagavathy, K., & Gunavathi, K. (2008). Numerical methods. S. Chand & Company Ltd.
3. Jain, M. K., Iyengar, S. R. K., & Jain, R. K. (2007). Numerical methods for scientific and engineering computation. New Age Pvt. Publishers.

Websites and eLearning Sources:

1. https://onlinecourses.nptel.ac.in/noc23_ma94/preview

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Acquire the knowledge on various problems on numerical methods	**K1**
CO2	Understand to solve numerical related problems.	**K2**
CO3	Apply appropriate numerical methods to solve the given problems and evaluate their solutions	**K3**
CO4	Analyze the best approximated value of the root of the given function using various numerical methods.	**K4**
CO5	Evaluate various numerical problems using of ordinary differential equations and integration	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**							**Hours**	**Credits**
1	**25UBC13AC01**		**Allied Course - 1:** Numerical Methods							**6**	**4**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	2	**2.4**
CO2	2	3	2	3	2	3	2	3	2	1	**2.3**
CO3	2	2	3	2	1	3	3	2	3	1	**2.2**
CO4	3	3	2	3	2	3	3	2	3	2	**2.6**
CO5	2	2	3	2	1	3	2	3	2	1	**2.1**
										Mean Overall Score	**2.4 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	25UHE14VE01	**Value Education - 1:** Essentials of Humanity	2	1

Course Objectives
To identify one's own potentials, strengths and weaknesses
To identify various challenges (physical, emotional and social) in adolescence
To consciously overcome one's challenges and move towards self-esteem
To maximize one's own potential in enabling holistic development
To assimilate human values comprehensively

UNIT I: Value Education (6 Hours)

Introduction to values - Characteristics and Roots of Values - Value Education & Value Clarification - Moral Characters - Kinds of Values - Objectives of Values

UNIT II: Human Personality (6 Hours)

Personality: Introduction, Traits, Theories, Integration & Factors influencing the development of personality - Discovering self - Defense Mechanism -Power of positive thinking - Why worry?

UNIT III: Human Development (6 Hours)

Areas of Development: Physical, Intellectual, Emotional, Social Development, Moral & Spiritual development – Practical Sessions on Health and Wellness

UNIT IV: Responsible Parenthood (6 Hours)

Human Sexuality - Marriage and Family - Sex and Love - Characteristics of Responsible parent - Causes of Marriage disharmony - Art of wise parenting

UNIT V: Gender Equality and Empowerment (6 Hours)

Historical perspective - Women in Independence struggle - Women in Independent India - Education & Economic development - Crimes against Women - Women rights - Time-line of Women achievements in India

Teaching Methodology	Power point
Assessment Methods	Seminars, Reports, Group Discussion, Online Tests, Assignments

Books for Study:

1. Department of Human Excellence. (2023). *Essentials of Humanity.* St. Joseph's College.

Books for Reference:

1. Alex, K. (2009). *Soft Skills.* S. Chand.
2. Norman Vincent Peale (1952). *The Power of Positive Thinking Norman Vincent Peale.* New York Times
3. Kalam, A.A. P. J. (2012). *You Are Unique.* Punya Publishing.

Websites and eLearning Sources:

1. http://livingvalues.net. Accessed 05 March 2021.
2. https://www.psychologytoday.com/us/basics/defense-mechanisms.Accessed 12 March 2025.
3. http://www.apa.org/topics/personality#. Accessed 05 March 2021.
4. http://www.peacecorps.gov/educators/resources/global-issues-gender-equaligy-and-womens-empowerment/. Accessed 05 March 2021.
5. https://www.nextias.com/blog/women-empowerment/Accessed 12 March 2025.

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K - Level)**
	On successful completion of this course, students will be able to	
CO1	Recall the prescribed values and the dimensions.	**K1**
CO2	Examine themselves by learning the developmental changes happening in the course of their lifetime.	**K2**
CO3	Apply the trained values in the day-to-day life.	**K3**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
1	**25UHE14VE01**			**Value Education - 1:** Essentials of Humanity						**2**	**1**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	3	3	3	2	3	3	2	3	3	**2.8**
CO2	3	2	2	3	3	2	3	3	2	2	**2.5**
CO3	2	3	3	3	2	3	3	3	3	3	**2.8**
Mean Overall Score											**2.7 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	25UTA21GL02	பொதுத்தமிழ் – 2: General Tamil - 2	4	3

கற்றலின் நோக்கங்கள் (Course Objectives)
காப்பியங்களின் தோற்றம், வரையறை, வகைகள் ஆகியவற்றை அறிந்து கொள்ளல்
பெருங்காப்பியம், சிறுகாப்பியம் இடையேயான வேறுபாட்டைக் கண்டறிதல்
சைவ வைணவ சமயப் பாடல்களில் சிறப்பினை ஒப்பிடுதல்
காப்பியங்கள் வெளிப்படுத்தும் விழுமியங்களையும் உணர்தல்
சமூகத்திற்கும், காப்பியத்திற்குமான பிணைப்புகள் குறித்துத் தெரிந்துகொள்ளுதல்

அலகு-1 **(12 மணி நேரம்)**

சிலப்பதிகாரம் - ஆய்ச்சியர் குரவை
மணிமேகலை – ஊர் அலர் உரைத்த காதை
இலக்கிய வரலாறு – சைவம் வளர்த்த தமிழ் முதல் புராணங்கள் முடிய
இலக்கணம் – அகப்பொருள் இலக்கணம்

அலகு-2 **(12 மணி நேரம்)**

திருநாவுக்கரசர் – திருவதிகை வீரட்டானம்
(கூற்றாயினவாறு எனத் தொடங்கும் முதல் 10 பாடல்கள்)
திருவாசகம் - அடைக்கலப்பத்து
(செழுக்கமலத் திரளனநின் எனத் தொடங்கும் முதல் 10 பாடல்கள்)
திருமந்திரம் – மாகேசுர பூசை (11 பாடல்கள்)
சிவவாக்கியர் பாடல்கள் (15 பாடல்கள்)
பாடல் எண்கள் – 16,22,27,33,34,35,37,38,47,81,91,225,237,242,495

அலகு-3 **(12 மணி நேரம்)**

பெரியாழ்வார் திருமொழி – திருப்பல்லாண்டு – தாலப்பருவம் (10 பாடல்கள்
திருமங்கையாழ்வாரின் பெரிய திருமொழி – திருவரங்கம் -1 (10 பாடல்கள்)
கம்பராமாயணம் – கங்கை காண் படலம் - (தேர்ந்தெடுக்கப்பட்ட 35 பாடல்கள்)
பாடல் எண்கள்: 1, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 22, 24, 25, 26, 27, 29, 30, 32,33,35,39,40,41,42,43,47,62,64,65,67,69,70
நற்றமிழ்க் கோவை – முதல் மூன்று கட்டுரைகள்.

அலகு-4 **(12 மணி நேரம்)**

சீறாப்புராணம் – நதி கடந்த படலம் – 1 முதல் 31 முடிய உள்ள பாடல்கள்
கள்வரை நதிமறித்த படலம் – 1 முதல் 16 முடிய உள்ள பாடல்கள்
இலக்கணம் – புறப்பொருள் இலக்கணம்
இலக்கிய வரலாறு – தமிழ் இலக்கண நூல்கள் முதல் சிற்றிலக்கியங்கள் முடிய

அலகு-5 **(12 மணி நேரம்)**

வீரமாமுனிவரின் தேம்பாவணி – (காசா) காசை சேர் படலம்
(1 முதல் 50 முடிய உள்ள பாடல்கள்)
சீனயி (சீனாய்) - மாமலை காண்படலம் -(1 முதல் 56 முடிய உள்ள பாடல்கள்)
நற்றமிழ்க் கோவை – இறுதி மூன்று கட்டுரைகள்.

கற்பித்தல் முறை (Teaching Methods)	விரிவுரை **(Lecture),** காணொளிக் காட்சி **(Videos),** விளக்கக் காட்சி **(PPT presentation)**
மதிப்பீட்டு முறைகள் (Assessment Pattern)	இயங்கலைத்தேர்வு **(Online Test),** நூல் நோக்குத் தேர்வு (open book test) ஒப்படைவு **(Assignment),** வினாடி வினா **(Quiz),** கருத்துரை **(Seminar)**

பாடநூல்கள்:

1. பொதுத்தமிழ் (2025), தமிழாய்வுத்துறை, தூய வளனார் கல்லூரி
2. நற்றமிழ்க் கோவை - கட்டுரைத்தொகுப்பு (2025), தமிழாய்வுத்துறை வெளியீடு, தூய வளனார் கல்லூரி

Websites and eLearning Sources:

1. https://www.tamiluniversity.ac.in/english/library2-/digital-library/
2. https://www.tamilvu.org/ta/library-l3100-html-l3100pl1-132372
3. https://www.tamilvu.org/ta/courses-degree-p202-p2021-html-p202121-28011
4. https://www.chennailibrary.com/vaishnava/naalayiradivyaprabhandham.html

5. https://www.tamilvu.org/ta/library-l4310-html-l4310por-141616
6. https://www.tamilvu.org/slet/l4100/l4100pd2.jsp?bookid=80&pno=287

Course Outcomes

CO No.	CO–Statements இப்பாடத்தின் நிறைவில் மாணவர்கள்	Cognitive Levels (K –Levels)
CO–1	பழந்தமிழர் வாழ்வியலையும் பன்முக ஆளுமைகளையும் அறிவர்	K1
CO–2	தமிழரின் பல்துறை அறிவு, மரபு போன்றவற்றை அறிந்து கொள்வர்.	K2
CO–3	பெருங்காப்பிய மரபிற்குள் வரும் இலக்கியங்களை அடையாளம் காண்பதோடு அவற்றை விளக்கும் திறனையும் பெறுவர்.	K3
CO–4	புராண இதிகாச மரபுகளிலிருந்து, காப்பியம் என்னும் புதிய இலக்கிய வடிவம் உருவான விதத்தை மதிப்பிடுவர்.	K4
CO–5	இலக்கிய வரலாறு, இலக்கணம், காப்பியங்கள் ஆகியவற்றைக் கற்பதன் வழி போட்டித் தேர்வுகளை எதிர்கொள்ளும் திறன் பெறுவர்	K5

Relationship Matrix											
Semester	Course Code			Title of the Course						Hours	Credits
2	25UTA21GL02			பொதுத்தமிழ் – 2: General Tamil - 2						4	3
Course Outcomes↓	Programme Outcomes (PO)					Programme Specific Outcomes (PSO)					Mean Scores of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO-1	2	3	2	3	3	3	3	3	3	3	2.8
CO-2	3	2	2	2	2	3	3	3	2	2	2.4
CO-3	2	3	1	3	1	3	3	3	1	2	2.2
CO-4	3	3	2	3	1	3	3	3	1	3	2.5
CO-5	3	3	2	2	3	3	3	2	2	2	2.5
Mean Overall Score											2.48 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	**25UFR21GL02**	Language French – 2	**4**	**3**

Course Objectives
Develop Communicative Competence in French enabling students to engage in simple, real-life conversations and interactions
Master Fundamental Grammar and Vocabulary by understanding and applying essential grammatical structures in context
Explore Francophone Culture and Civilization by integrating cultural elements of French-speaking regions
Enhance Practical Language Use in Everyday Situations
Express Ideas in Different Contexts Using Appropriate Tenses

UNIT I **(12 Hours)**

1. Titre - Qu'est-ce qu'on fait aujourd'hui ?
2. Lexique –l'heure, les activités quotidiennes, la description physique
3. Grammaire –les verbes pronominaux au présent, le passé récent, la fréquence
4. Production orale- demander l'heure, proposer une sortie
5. Production écrite - présenter ses activités quotidiennes, décrire une personne

UNIT II **(12 Hours)**

6. Titre - Chez -moi
7. Lexique – le logement, les meubles, les pièces, l'équipement
8. Grammaire – le passe compose avec avoir, les pronoms COD
9. Production orale- s'informer sur un logement
10. Production écrite - expliquer un problème domestique, écrire une annonce pour un logement

UNIT III **(12 Hours)**

11. Titre - En forme
12. Lexique – les parties du corps, les maladies, les médicaments, les sports
13. Grammaire –Le passé composé avec être, le pronom 'y',
14. Production orale- parler de sa santé, exprimer une émotion positive
15. Production écrite - Donner un conseil, exprimer son accord ou son désaccord

UNIT IV **(12 Hours)**

16. Titre - Bonne vacances
17. Lexique – les destinations, l'hébergement, la réservation, la nature
18. Grammaire – la comparaison, les verbes impersonnels à l'imparfait comme c'était
19. Production orale- réserver une chambre a l'hôtel, décrire une ville ou un paysage
20. Production écrite - réaliser une brochure touristique, écrire une carte postale

UNIT V **(12 Hours)**

21. Titre - Au travail
22. Lexique – les études, les disciplines, les lieux de travail, les taches
23. Grammaire – la durée, les pronoms relatifs
24. Production orale- parler de ses études et son projet professionnel
25. Production écrite - comparer le système scolaire français et indien
26. Indian knowledge system–Highlighting on Gurukulam Education System that focuses on traditional teacher-student relationships, oral learning methods, and holistic education while discussing education systems in India vs. France (5%)

Teaching Methodology	Visual-Linguistic Learning, Descriptive & Interpretative Learning, experiential learning, The Lexical Approach, Differentiated Instruction
Assessment Methods	*Role -play:* A mock phone call on hotel reservation, discuss daily routines, housing, and health. (Rubric – graded on grammatical accuracy, and use of appropriate vocabulary) *Picture description activity:* Describe a landscape or travel destination shown in a picture. (Rubric – Assessed on descriptive abilities and vocabulary use) *Experimental learning task:* Doctor-patient conversation about a health issue, Conduct a mock interview about career plans. (Rubric – Assessed on real-life application of language skills) *Project based assessment*: Create a travel brochure for a French-speaking destination, make a poster comparing education in France and India (Rubric – Assessed on Application of language skills in a creative way) *Written assessment*: Write a short daily routine using time expressions, write a postcard describing a recent trip (Rubric – Assessed on ability to write structured texts related to themes)

Books for Study:

1. Mensdorff - Pouilly, L., Opatski, S., Petitmengin, V., Pons, S., Sperandio, C., Djimli, H., & Veldeman - Abry, J. (2022). *Édito A1: Méthode de français* (2nd ed.). Didier FLE, Hatier. (p.87-p.165)

Books for Reference:

1. Dauda, P., Giachino, L., & Baracco, C. (2020). *Génération A1*. Didier.
2. Mérieux, R., &Loiseau, Y. (2012). *Latitudes A1*. Didier.

Websites and eLearning Sources:

1. https://www.podcastfrancaisfacile.com
2. https://www.flevideo.com
3. https://savoirs.rfi.fr/fr
4. https://www.french4me.net/
5. https://apprendre.tv5monde.com/en

Course Outcomes		
CO No.	**CO–Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K –Levels)**
CO1	Talk about daily routines, tell the time, describe people, and propose social outings using appropriate vocabulary and verb structures.	**K1**
CO2	Inquire about housing, describe household items, explain domestic issues, and write advertisements or announcements for accommodations.	**K2**
CO3	Describe body parts, discuss health conditions, give advice, express emotions, and use past tense structures to narrate past experiences.	**K3**
CO4	Make hotel reservations, describe destinations and landscapes, compare experiences, and write postcards or travel brochures.	**K4**
CO5	Discuss education, career plans, and workplace responsibilities while comparing educational systems in France and India.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
2	**25UFR21GL02**			Language French – 2					**4**		**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of Cos**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	2	1	1	2	2	2	3	2	2	1.9
CO2	2	2	2	3	1	3	3	2	3	3	2.4
CO3	2	3	2	1	2	2	1	3	2	1	1.9
CO4	3	2	2	2	2	3	2	1	2	3	2.2
CO5	3	3	3	2	3	2	3	2	3	2	2.6
Mean Overall Score											**2.2 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	25UHI21GL02	Language Hindi - 2	4	3

Course Objectives
To understand the basics of Hindi Language
To make the students to be familiar with the Hindi words
To enable the students to develop their effective communicative skills in Hindi
To introduce the socially relevant subjects in Modern Hindi Literature
To empower the students with globally employable soft skills

UNIT I **(12 Hours)**

1. Moun hi Manthra Hay
2. Letter Writing - Chutti Patra
3. Bakthikal - Namakarn
4. Sarkari Kariyalayom Ka Naam

UNIT II **(12 Hours)**

5. Baathcheeth - Aspathal Mein
6. Letter Writing - Rishthedarom ko Patra
7. Bakthikal - Samajik Paristhithiyam
8. Kriya

UNIT III **(12 Hours)**

9. Premchand
10. Kriya visheshan
11. Letter Writing - Naukari Keliye Avedan Patra
12. Bakthikal - Sahithyik Paristhithiyam

UNIT IV **(12 Hours)**

13. Kabeer ke Dohae
14. Samas
15. Letter Writing - Kitab Maangne Keliye Patra
16. Bakthikal - Salient Features, Main Division

UNIT V **(12 Hours)**

17. Anuvad
18. Sandhi
19. Bakthikal - Visheshathayem
20. Apathit Gadyansh

Teaching Methodology	Peer Instruction Exercise, Videos, PPT, Quiz, Group Discussion
Assessment Methods	Group Discussion, Seminar, Snap Test

Books for Study:

1. Viswanath Tripaty. *(2021). Kuchh Kahaniyan*, Rajkamal Prakashan Pvt. Ltd.
2. Kamathaprasad Gupth, M. (2020). *Hindi Vyakaran*. Anand Prakashan.
3. Dr. Sadananth Bosalae. *(2020). kavya sarang*, Rajkamal Prakashan.

Books for Reference:

1. Acharya Ramchandra Shukla. (2021). *Hindi Sahitya Ka Itihas*. Prabhat Prakashan.
2. Krishnakumar Gosamy. (2023). *Anuvad vigyan ki Bhumika*. Rajkamal Prakashan.
3. Aravind Kumar. (2022). *Sampoorna Hindi Vyakaran our Rachana*, Lucent publisher.
4. Lakshman Prasad Singh. (2021). *Kavya ke sopan*. Bharathy Bhavan Prakashan.

Websites and e-Learning Sources:

1. https://hindigrammar.in/sandhi.html
2. https://www.successcds.net/class10/hindi/samas-in-hindi

3. https://mycoaching.in/kriya-ke-bhed-verb-in-hindi
4. https://namastesensei.in/adverb-in-hindi-examples/
5. https://viahindi.in/hindi-vyakaran/sandhi-paribhasha-prakar-or-udaharan

Course Outcomes		
CO No.	**CO–Statements** On successful completion of the course, the student will acquire thelisted skills	**Cognitive Levels (K-Levels)**
CO1	Find out the Terms & Expressions related to letter writing.	**K1**
CO2	Providing knowledge of Letter writing in Hindi.	**K2**
CO3	Complete the sentences in Hindi using basic grammar.	**K3**
CO4	Analyze the social & political conditions of Devotional period in Hindi Literature.	**K4**
CO5	Justify the human values stressed on the works of Hindi writers	**K5**

Relationship Matrix											
Semester	**Course code**			**Title of the Course**				**Hours/ week**		**Credits**	
2	**25UHI21GL02**			Language Hindi – 2				**4**		**3**	
Course Outcomes (Cos)	**Programme Outcomes (Pos)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of Cos**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	3	3	2	2	3	3	3	2	2	2.5
CO2	1	3	1	2	2	3	3	3	2	3	2.3
CO3	3	2	3	2	2	3	2	3	2	2	2.4
CO4	2	3	3	1	3	2	3	2	1	2	2.2
CO5	3	2	2	2	3	2	3	2	3	2	2.4
								Mean Overall Score			**2.36 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	**25USA21GL02**	Language Sanskrit - 2	**4**	**3**

Course Objectives
To bring out the salient aspects of classical Sanskrit poetry
To introduce court epics in Sanskrit
To train students in declensions of pronouns in Sanskrit
To coach the students in the conjugation patterns of verbs in Sanskrit
To offer coaching in morpho-phonemic rules and their applications in Sanskrit

UNIT I **(12 Hours)**

Asmathi usmath tat kim (MFN) sarva naama sabdaha

UNIT II **(12 Hours)**

Sandhi Niyamaah Abhyaash (Guna, Visarga, Dirgha, Vrddhi)

UNIT III **(12 Hours)**

Lang lakaarah Kriyapadaani Prayoga Vivaranam

UNIT IV **(12 Hours)**

Raguvamsaha Pratama sargaha (1 –15 slokas)

UNIT V **(12 Hours)**

Suvacanani Vakya Prayoga Vivaranam

Teaching Methodology	Videos, PPT, Blackboard, Demonstration, Exercises
Assessment Methods	Seminar, Quiz, Group Discussion.

Books for Study:

1. Saralasamkritham Siksha ,2021
2. Dhaatu Rupa Manjari ,2021

Books for Reference:

1. Paindrapuram Ashram, Srirangam – 620 006 Gopalavimshanthi 2021
2. R. S. Vadhyar & Sons book – Seller and Publishers, Kalpathi, Palghat – 678 003, Kerala, South Inida, shabdha manjari
3. Kulapthy, K.M Saral sankrit Balabodh, Bharathiys Vidya Bhavan, Munshimarg Mumbai – 400007, 2020

Websites and eLearning Sources:

1. https://www.meritnation.com
2. https://www.aplustopper.com
3. https://mycoaching.in/lang-lakar
4. https://sanskritdocuments.org/sites/giirvaani/giirvaani/rv/sargas/01_rv.htm
5. https://resanskrit.com/blogs/blog-post/sanskrit-shlok-popular-quotes-meaning-hindi-english

Course Outcomes		
CO No.	**CO–Statements**	**Cognitive Levels (K –Levels)**
	On successful completion of this course, students will be able to	
CO–1	Remembering names of different objects, remembering different verbal forms and sandhi	**K1**
CO–2	Contrast different verbal forms Explain good sayings, Relate good saying to life.	**K2**
CO–3	Apply and build small sentences	**K3**
CO–4	Analyze different forms of Verbs and nouns	**K4**
CO–5	Appreciate subhashitas and Sanskrit poetry	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
2	**25USA21GL02**			Language Sanskrit - 2						**4**	**3**
Course Outcomes↓	**Programme Outcomes (PO)**					**Programme Specific Outcomes (PSO)**					**Mean Scores of Cos**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO-1	2	1	3	2	2	2	3	3	2	1	2.1
CO-2	3	2	3	2	2	3	2	3	3	2	2.5
CO-3	2	2	3	2	2	2	2	3	3	1	2.1
CO-4	3	2	3	3	1	2	3	3	3	1	2.4
CO-5	3	2	2	2	3	2	2	3	3	1	2.3
Mean Overall Score											**2.28 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	25UEN22GE02A	**General English – 2:** Pre-Intermediate Stream	5	3

Course Objectives (CO)
To strengthen listening and speaking skills for identifying key ideas and details
To improve reading comprehension and analyze different texts
To express ideas clearly in conversations and presentations, using correct grammatical structures.
To develop writing skills by creating clear and structured texts
To assess and improve language use in both spoken and written communication

UNIT I: **(15 Hours)**

Listening:	**(Skill)**	**:**	Listening to respond to story-based questions
	(Practice)	**:**	"The Hare and His Friends"
Reading:	**(Skill)**	**:**	Understanding and interpreting proverbs
	(Practice)	**:**	"Necessity is the Mother of Invention"
Grammar:	**(Practice)**	**:**	Present Continuous Tense; Past Continuous Tense
Vocabulary:	**(Practice)**	**:**	Weather and Seasons
Speaking:	**(Skill)**	**:**	Describing on-going actions in the present and the past to describe real-life situations and activities
	(Practice)	**:**	Ongoing Actions: Present & Past
Writing:	**(Skill)**	**:**	Writing a biography of a famous personality using given details
	(Practice)	**:**	Writing a Biography

UNIT II: **(15 Hours)**

Listening:	**(Skill)**	**:**	Listening to identify factual details
	(Practice)	**:**	Recycling
Reading:	**(Skill)**	**:**	Reading to convert a story into a meaningful dialogue
	(Practice)	**:**	The Shepherd and the Stranger
Grammar:	**(Practice)**	**:**	Future Expressions: Simple Future & 'Going to'; Simple Present, Present Continuous and Future Continuous Tenses
Vocabulary:	**(Practice)**	**:**	Groceries
Speaking:	**(Skill)**	**:**	Developing conversational fluency by practising conversations on familiar and everyday topics
	(Practice)	**:**	Conversations on Familiar and Everyday Topics
Writing:	**(Skill)**	**:**	Writing clear, respectful and relevant online comments
	Practice	**:**	Writing Online Comments

UNIT III: **(15 Hours)**

Listening:	**(Skill)**	**:**	Listening for specific information
	(Practice)	**:**	Telephonic Conversation
Reading:	**(Skill)**	**:**	Reading a news report
	(Practice)	**:**	Iron Age in Tamil Nadu Began 5,300 Years Ago
Grammar:	**(Practice)**	**:**	Present Perfect Tense; Past Perfect Tense
Vocabulary:	**(Practice)**	**:**	Kitchen Utensils and Household Appliances
Speaking:	**(Skill)**	**:**	Using polite expressions in conversations to request, seek permission, grant or refuse permission, and apologise
	(Practice)	**:**	Polite Expressions in Conversations
Writing:	**(Skill)**	**:**	Expressing short reflective ideas in writing
	(Practice)	**:**	Thought for the Day

UNIT IV: **(15 Hours)**

Listening:	**(Skill)**	**:**	Predicting content and vocabulary before listening
	(Practice)	**:**	Our Earth
Reading:	**(Skill)**	**:**	Identifying direct and indirect speech
	(Practice)	**:**	Birbal story: "Hot Iron Test"

Grammar:	**(Practice)**	**:**	Active and Passive Voice
Vocabulary:	**(Practice)**	**:**	Human Diseases
Speaking:	**(Skill)**	**:**	Using polite expressions in conversations to interrupt, make suggestions, and agree or disagree
	(Practice)	**:**	Polite Expressions in Conversations
Writing:	**(Skill)**	**:**	Writing a report on a given topic
	(Practice)	**:**	Report Writing

UNIT V: **(15 Hours)**

Listening:	**(Skill)**	**:**	Listening to understand formal speeches
	(Practice)	**:**	"A Tryst with Destiny" by Jawaharlal Nehru
Reading:	**(Skill)**	**:**	Reading to understand an essay
	(Practice)	**:**	"Secularism"
Grammar:	**(Practice)**	**:**	Adverbs; Prepositions
Vocabulary:	**(Practice)**	**:**	**Occupations**
Speaking:	**(Skill)**	**:**	Delivering a short prepared speech on a familiar or inspiring topic
	(Practice)	**:**	Delivering a Short Speech
Writing:	**(Skill)**	**:**	Writing a clear and well-structured essay on a given topic
	(Practice)	**:**	Essay Writing

Teaching Methodology	Lectures, task-based activities, audio-visual listening tasks, guided reading and writing exercises, discussions
Assessment Method	Listening and reading comprehension exercises, verbal presentations, role plays and conversations, writing tasks

Books for Study:

Dr. M. John Britto, Dr. B. Sam Jerome Sharone, and Dr. S. Sajeev. *Nurturing English Skills*. Emerald Publishers, 2025.

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Recognize key ideas and details in spoken and written texts, demonstrating effective listening and comprehension skills.	**K1**
CO2	Understand and interpret different types of texts, enhancing reading comprehension and critical thinking abilities.	**K2**
CO3	Apply correct grammatical structures to express ideas clearly in conversations and presentations.	**K3**
CO4	Analyze and organize ideas to write clear, coherent, and well-structured texts for various purposes.	**K4**
CO5	Evaluate and improve language use, refining both spoken and written communication.	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**							**Hours**	**Credits**
2	**25UEN22GE02A**		**General English – 2:** Pre-Intermediate Stream							**5**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PS02**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	3	2	3	2	3	2	3	2	2	**2.4**
CO2	3	2	2	3	2	3	2	3	2	3	**2.5**
CO3	3	2	2	2	3	2	2	3	2	2	**2.3**
CO4	3	2	2	2	2	2	2	2	2	3	**2.2**
CO5	3	2	3	2	3	2	3	2	3	2	**2.5**
Mean Overall Score											**2.38 (High)**

Semester	Course Code	Title of the Course	Hours/ Week	Credits
2	25UEN22GE02B	**General English – 2:** Intermediate Stream	5	3

Course Objectives
To develop students' ability to listen, speak, read, and write effectively in English through interactive and contextualised activities.
To improve students' understanding and application of essential grammar concepts, including verb usage, auxiliary verbs, modals, adverbs, and sentence structures.
To equip students with strategies to deduce meanings of unfamiliar words using contextual clues.
To foster students' ability to brainstorm, organise information using graphic organisers, and structure written communication effectively for academic and professional contexts.
To enable students to engage in discussions, express opinions, seek and provide information, and navigate real-life situations confidently through role plays.

Unit 1: My College & Studies **15 Hours**

1. Listening:	**(Skill)**	Distinguishing between main ideas and supporting details
	(Practice)	"A Day in the Life of a College Student" (A conversation)
2. Reading:	**(Skill)**	Recognising the structure of written texts
	(Practice)	"Enter to learn, leave to serve"
3. Grammar:	**(Practice)**	Main Verb
4. Vocabulary:	**(Practice)**	Using synonyms as contextual clues to guess the meaning of unfamiliar words
5. Study skill:		Brainstorming to gather ideas in a group
6. Speaking:	**(Skill)**	Asking for, giving and refusing permission – Requesting – Communication repair: Finding about pronunciation, spelling and meaning.
	(Practice)	Role Play
7. Writing:	**(Skill)**	Writing an outline
	(Practice)	Controlled composition: Writing an outline for a given passage

Unit 2: Travel **15 Hours**

1. Listening:	**(Skill)**	Listening for specific details
	(Practice)	"A Perfect Vacation" (A conversation)
2. Reading:	**(Skill)**	Identifying main ideas and supporting details
	(Practice)	"An Unforgettable Ride"
3. Grammar:	**(Practice)**	Auxiliary Verbs
4. Vocabulary:	**(Practice)**	Using antonyms as contextual clues to guess the meaning of unfamiliar words
5. Study skill:		Mind mapping to visually organise information
6. Speaking:	**(Skill)**	Asking for and giving directions – Asking for and giving information
	(Practice)	Role Play
7. Writing:	**(Skill)**	Writing effective paragraphs
	(Practice)	Free-writing composition: An adventurous journey

Unit 3: My Social Network **15 Hours**

1. Listening:	**(Skill)**	Understanding the sequence of ideas
	(Practice)	"My Virtual Friends" (A conversation)
2. Reading:	**(Skill)**	Comprehending infographics
	(Practice)	"Social Media Etiquette
3. Grammar:	**(Practice)**	Modal Auxiliary Verbs
4. Vocabulary:	**(Practice)**	Using definitions and restatements as contextual clues to guess the meaning of unfamiliar words
5. Study skill:		Using graphic organisers (sequence of events chain, timeline, and storyboard)
6. Speaking:	**(Skill)**	Asking for and giving advice – Asking if someone agrees – Agreeing and disagreeing – Warning someone
	(Practice)	Role Play

7. Writing:	**(Skill)**	Developing stories from hints
	(Practice)	Controlled composition: Developing a story from given hints

Unit 4: Shopping **15 Hours**

1. Listening:	**(Skill)**	Detecting signposts
	(Practice)	"Let's go shopping!" (A conversation)
2. Reading:	**(Skill)**	Recognising transition of ideas
	(Practice)	"Adventures of the Grocery Store"
3. Grammar:	**(Practice)**	Adverbs and WH Question Words
4. Vocabulary:	**(Practice)**	Using examples and illustrations as contextual clues to guess the meaning of unfamiliar words
5. Study skill:		Using graphic organisers (Venn diagram, and cause-and-effect map)
6. Speaking:	**(Skill)**	Offering and accepting help – Asking for and giving opinions – Asking for and saying one's preference – Suggesting – Complaining
	(Practice)	Role Play
7. Writing:	**(Skill)**	Describing actions in a story
	(Practice)	Guided composition: Narrating a story in a comic strip

Unit 5: Ceremonies **15 Hours**

1. Listening:	**(Skill)**	Listening to intonations
	(Practice)	"Happy Birthday to You!" (A conversation)
2. Reading:	**(Skill)**	Understanding moods in a reading passage
	(Practice)	"The Light has Gone out" by Jawaharlal Nehru
3. Grammar:	**(Practice)**	Sentences
4. Vocabulary:	**(Practice)**	Using root words as clues to guess the meaning of words
5. Study skill:		Using graphic organisers (idea wheel, idea web, and concept map)
6. Speaking:	**(Skill)**	Using intonations for different types of sentences – Expressing your feelings and emotions – Congratulating and wishing someone – Expressing sympathy
	(Practice)	Role Play
7. Writing:	**(Skill)**	Expressing emotions in narrative writing
	(Practice)	Controlled composition: Describing emotions and feelings conveyed in a picture story

Teaching Methodology	Lectures, Demonstrations, Discussions, Peer-Review Tasks, Role-plays, Pair and group activities
Assessment Tools	Listening and reading comprehension tasks, Individual talks, Role plays, Controlled and guided compositions

Books for Study:

M.S. Xavier Pradheep Singh, Amalaveenus, and A. Napoleon. English and My World, 2025.

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Identify key ideas, supporting details, and organisational patterns in spoken and written texts.	**K1**
CO2	Explain the meaning of conversations and passages by recognising their structure, tone, and purpose.	**K2**
CO3	Use appropriate language functions such as requesting, suggesting, and expressing opinions effectively in real-life interactions.	**K3**
CO4	Compare different communication styles and linguistic features in various types of texts and conversations.	**K4**
CO5	Assess the effectiveness of spoken and written communication, providing constructive feedback for improvement.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
2	**25UEN22GE02B**			**General English – 2:** Intermediate Stream						**5**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Scores of Cos**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO-1	3	2.5	2.5	2.5	2.5	3	2.5	2.5	2.5	3	2.65
CO-2	2.5	3	2.5	2.5	2.5	3	3	2.5	2.5	3	2.7
CO-3	3	2.5	2.5	3	2.5	2.5	2.5	2.5	3	2.5	2.65
CO-4	2.5	2.5	2.5	3	2.5	2.5	2.5	3	2.5	2.5	2.6
CO-5	3	2.5	2.5	2.5	3	2.5	2.5	2.5	3	2.5	2.65
Mean Overall Score											**2.65 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	25UBC23CC03	**Core Course - 3:** Relational Database Management Systems	4	3

Course Objectives
To provide the fundamental concepts of relational databases and their management.
To create Entity-Relationship diagrams to model real-world scenarios.
To understand decomposing relational schemas.
To understand the principles of transaction management.
To understand advanced PL/SQL concepts.

UNIT I **(12 Hours)**

Introduction: Database System Applications, Purpose of Database Systems, View of Data, Database Languages, Introduction to the Relational Model: Structure of Relational Databases, Database Schema, Keys, Schema Diagrams, Relational Query Languages.

UNIT II **(12 Hours)**

Introduction to SQL: Overview of the SQL Query Language, SQL Data Definition, Basic Structure of SQL Queries, Additional Basic Operations, Set Operations, Null Values, Aggregate Functions, Nested Subqueries, Join Expressions, Views.

UNIT III **(12 Hours)**

Database Design Using the E-R Model: The Entity-Relationship Model, Complex Attributes, Primary Key, Features of Good Relational Designs, Removing Redundant Attributes in Entity Sets, and Alternative Notations for Modeling Data.

UNIT IV **(12 Hours)**

Relational Database Design: Decomposition Using Functional Dependencies, Normal Forms, Functional- Dependency Theory, Decomposition Using Multivalued Dependencies, Atomic Domains and First Normal Form. Transaction Management: A Simple Transaction Model, Storage Structure, Transaction Atomicity and Durability, Concurrency Control: Lock-Based Protocols, Deadlock Handling.

UNIT V **(12 Hours)**

Language Fundamentals: PL/SQL Block Structure, The PL/SQL Character Set, Identifiers, Literals, The PRAGMA Keyword, PL/SQL Program Structure: IF Statements, CASE Statements and Expressions, The GOTO Statement, The NULL Statement, The WHILE Loop, The Numeric FOR Loop, The Cursor FOR Loop, Exception-Handling Concepts and Terminology, Defining Exceptions, Raising Exceptions, Raising Exceptions. Advanced SQL: Cursor, Functions and Procedures, and Triggers.

Teaching Methodology	PPT, chalk and talk, Hands-on Practice, Case Studies
Assessment Methods	Seminar, Written Exams, MCQ, Assignments

Books for Study:

1. Abraham, S., Henry F. K., & Sudarshan, S. (2020). *Database System Concepts*, (7th Ed.). McGraw- Hill Education.
2. Steven, F., & Bill, P. (2014). *Oracle PL/SQL Programming*. (6th Ed.). O'Reilly Media, Inc.

Books for Reference:

1. Rajeeb, C. C. (2012). *Learning Oracle SQL and PL/SQL: A simplified Guide.* PHI.
2. Gill, P. S. (2019). *Database Management Systems.* Dream Tech Press.
3. Deshpande, P. S. (2017). *SQL & PL/SQL for Oracle 10g.* Dream Tech Press.
4. Ramez, E., & Navathe, S. B. (2017). *Fundamentals of Database Systems*. (7th Ed.). Pearson.

Websites and eLearning Sources:

1. https://mrce.in/ebooks/Database%20System%20Concepts%207th%20Ed.pdf
2. https://ocw.mit.edu/courses/6-830-database-systems-fall-2010/pages/lecture-notes/
3. https://www.lkouniv.ac.in/site/writereaddata/siteContent/20200329162108510 1sanjeev_rdbms_unit- III_pl-sql_bba_ms_4_sem.pdf
4. https://ndcwk.ac.in/userfiles/DBMS%20UNIT%20V.pdf
5. https://people.vts.su.ac.rs/~peti/Baze%20podataka/Literatura/Silberschatz - Database%20System%20Concepts%206th%20ed.pdf

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Understand the fundamentals of database systems, relational models, and database languages.	**K1**
CO2	Demonstrate proficiency in SQL for data definition, querying concepts.	**K2**
CO3	Design databases using the Entity-Relationship (E-R) model and apply good relational design principles.	**K3**
CO4	Apply normalization techniques and functional dependencies for relational database design.	**K4**
CO5	Understand transaction management, concurrency control, and PL/SQL programming.	**K5**

Relationship Matrix											
Semester	**Course Code**	**Title of the Course**								**Hours**	**Credits**
2	**25UBC23CC03**	**Core Course - 3:** Relational Database Management Systems								**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	3	3	2	3	2	2	2	2	3	2.5
CO2	2	3	2	3	2	3	2	3	2	3	2.5
CO3	2	2	3	2	2	3	3	2	2	2	2.3
CO4	3	2	2	3	2	3	3	2	2	2	2.4
CO5	3	2	3	2	3	3	2	2	2	3	2.5
										Mean Overall Score	**2.44 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	25UBC23CC04	**Core Course - 4:** Data Structures and Algorithms	4	3

Course Objectives
To introduce fundamental concepts of data structures and their applications.
To develop problem-solving skills using linear and non-linear data structures.
To implement various searching and sorting algorithms for efficient data processing.
To understand the importance of algorithm design techniques in problem solving.
To apply data structures and algorithms in real-world software development.

UNIT I **(12 Hours)**

Introduction and Overview: Basic Terminology, Elementary Data Organization, Data Structures, Data Structure Operations. Strings: Basic Terminology, Storing Strings. Arrays: Introduction, Linear Arrays, Representation, Traversing Insertion and Deletion. Searching Linear Search, Binary Search.

UNIT II **(12 Hours)**

Linked Lists: Introduction, Linked Lists, Representation of Linked List in Memory, Traversing a Linked List, Searching a Linked List, Memory Allocation, Garbage Collection, Insertion into a Linked List, Deletion from a Linked List.

UNIT III **(12 Hours)**

Stacks: Introduction, Stacks, Array Representations of Stacks, Arithmetic Expressions, Polish Notation, Recursion: Factorial Function and Fibonacci sequence. Queues: Representation of Queues, Array Representation of Queues.

UNIT IV **(12 Hours)**

Trees: Introduction, Binary Trees, Representing Binary Tress in Memory, Traversing Binary Trees, Binary Search Tree, Searching and Inserting in Binary Search Trees, Deleting in Binary Search Trees. Sorting: Introduction, Insertion Sort, Selection Sort, Merge Sort, Heap Sort, Shell Sort, Quick Sort.

UNIT V **(12 Hours)**

Algorithms: Algorithm Specification, Pseudo code Convention. Divide and Conquer: General Method, Finding the Maximum and Minimum. Greedy Method: General Method, Knapsack Problem, Job Sequencing with Deadlines.

Teaching Methodology	PPT, chalk and talk
Assessment Method	Seminar, Test, Quiz

Books for Study:

1. Lipschutz, S. (2014). *Data Structures.* Tata McGraw-Hill Publishing Company Limited.
2. Ellis Horowitz, Sartaj Sahni. (2007) *Fundamentals of Computer Algorithms*, Galgotia Publication, New Delhi.

Books for Reference:

1. Karumanchi, N. *(2016). Data Structures and Algorithms Made Easy: Data Structures and Algorithmic Puzzles,*
(1st Ed.). Career Monk Publisher.
2. Heineman, G. T., Pollice, G., & Selkow, S. (2016). *Algorithms in a Nutshell*, (2nd Ed.). O′Reilly Publication
3. Salaria, R.S. (2018). Data Structures & Algorithms Using C, (5th Ed.). Khanna Publishing House.
4. Mark Allen Weiss. (2017). *Data Structures and Algorithm Analysis in C++* (4th Ed.). Pearson Education

Websites and eLearning Sources:

1. https://www.youtube.com/watch?v=o4bAoo_gFBU
2. https://www.coursera.org/specializations/algorithms
3. https://www.coursera.org/specializations/algorithms
4. https://www.geeksforgeeks.org/merge-sort/
5. https://www.mta.ca/~rrosebru/oldcourse/263114/Dsa.pdf

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Extend the logical thinking through the use of Linked List, Stack, Queue and Trees.	**K1**
CO2	Recall the fundamental concepts of Data Structures	**K2**
CO3	Apply the suitable data structures and techniques for appropriate problems	**K3**
CO4	Analyze various operations, searching methods, sorting techniques and different types of algorithms to provide industry level software solutions.	**K4**
CO5	Examine different algorithms and data structures to design Business Solutions.	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**							**Hours**	**Credits**
2	**25UBC23CC04**		**Core Course - 4:** Data Structures and Algorithms							**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	3	1	2	3	2	3	3	3	2	**2.4**
CO2	2	3	2	3	3	2	3	3	2	1	**2.4**
CO3	3	2	2	2	2	3	3	3	3	2	**2.5**
CO4	3	3	2	3	3	2	3	2	3	2	**2.6**
CO5	3	2	3	3	2	3	2	3	3	2	**2.6**
										Mean Overall Score	**2.5 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	25UBC23CP02	**Core Practical - 2:** Relational Database Management System Lab	3	2

Course Objectives
To introduce students to the fundamental concepts of relational database management systems.
To provide hands-on experience in designing, implementing, and managing relational databases.
To enable students to write and optimize SQL queries for data manipulation and retrieval.
To enable students to write and execute PL/SQL blocks, procedures, functions, and triggers.
To familiarize students with cursor management and dynamic SQL in PL/SQL.

List of Exercises:

SQL

1. DDL, DML, and DCL Queries
2. Aggregate functions
3. Set Operations
4. Joins and Relationships
5. Subqueries and Nested queries
6. Views and Stored Procedures

PL/SQL

7. Control Structures and Exception Handling
8. Cursors
9. Procedures and Functions
10. Triggers

Teaching Methodology	Hands-on Lab session
Assessment Methods	Practical Test, Note Evaluation, Viva-voce

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Choose the need, role, importance, and uses of databases in application development.	**K1**
CO2	Analyze the relational model and relational algebra operations	**K2**
CO3	Understand the structure and features of PL/SQL.	**K3**
CO4	Write and execute PL/SQL blocks, procedures, functions, and triggers.	**K4**
CO5	Handle exceptions, cursors, and dynamic SQL for advanced database operations.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
2	**25UBC23CP02**			**Core Practical - 2:** Relational Database Management System Lab						**3**	**2**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	2	2.4
CO2	2	3	2	2	2	3	2	3	1	2	2.2
CO3	2	2	3	2	2	3	3	2	3	2	2.4
CO4	3	3	2	1	2	3	3	2	3	2	2.4
CO5	2	2	3	1	2	3	2	3	1	2	2.1
										Mean Overall Score	**2.3 (High)**

Semester	Course Code	Title of the Course	Hours/ Weeks	Credits
2	25UBC23AC02	**Allied Course - 2:** Statistical Methods	6	4

Course Objectives
To make students understand the concepts of probability, statistical measures and theoretical Distributions.
To apply probability and statistical measures concepts in real life problems.
To impart knowledge on coefficient of skewness and coefficient of correlation.
To interpret the relationship between variables.
To apply the theoretical distributions and discuss the expected results in real life problems.

UNIT I: Measures of Central Tendency (average) (18 Hours)

Arithmetic mean: Discrete series, Continuous series - Open end classes - Median: Discrete series, Continuous series - Quartiles - Mode: Discrete series, Continuous series

UNIT II: Dispersion and skewness (18 Hours)

Concept of Variation - Methods of Measuring Dispersion: Range, Inter quartile range, Mean deviation, Standard deviation - Mean deviation: Individual series, Discrete series, Continuous series - Standard deviation: Individual series, Discrete series, Continuous series - Coefficient of variation - Skewness - Relative measure of skewness: Karl Pearson's coefficient of skewness

UNIT III: Correlation and regression (18 Hours)

Correlation - Properties of coefficient of correlation - Karl Pearson's coefficient of correlation - Rank correlation coefficient - Regression: Regression of Y on X - Deviation taken from arithmetic mean of X on Y - Deviation Taken from assumed mean.

UNIT IV: Probability (18 Hours)

Mathematical Preliminaries - Permutation and Combination - Measurement of Probability - Bayes Theorem.

UNIT V: Theoretical distribution (18 Hours)

Binominal distribution: Properties of Binominal distribution - Fitting a Binominal distribution - Poisson distribution: Fitting a Poisson distribution - Normal distribution.

Note: No derivations problems only.

Teaching Methodology	Teaching Methodology Chalk and Talk method, Problem solving
Assessment Methods	Seminar, Snap Test, MCQ

Books for Study:

1. Pillai, R. S. N. & Bagavathi. (2009). Statistics Theory and Practice. (7th Ed.). S. Chand and Company Ltd.
   Unit I: Chapter 9 (Pages 125-134,136-139,145-154,156-159, 166-172).
   Unit II: Chapter 10 (Pages 241-268, 278-290), Chapter 11 (Pages 338-347)
   Unit III: Chapter 12 (Pages 396-410,415-420), Chapter 13 (Pages 465-472,479-480)
   Unit IV: Chapter 18 (Pages 726-759)
   Unit V: Chapter 19 (Pages 769-800)

Books for Reference:

1. 1. Gupta, S. C. & Kapoor, V. K. (2002). Fundamentals of Mathematical Statistics. (11th Ed.). Sultan Chand & Sons.
2. Gupta, S. P. (2005). Statistical method. (33rd Ed.). Sultan Chand & Sons.
3. Vittal, P. R. (2004). Mathematical Statistics. Margham Publications.
4. Kapur, J. N. & Saxena, H. C. (2010). Mathematical Statistics., (20th Ed.). S. Chand & Co Ltd.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K-Level)**
CO1	Acquire knowledge of probability and statistical methods, theoretical distributions.	**K1**
CO2	Understand the fundamental concepts of measures of central tendency, dispersion, correlation and theoretical distributions	**K2**
CO3	Construct appropriate mathematical model to solve a variety of practical problems.	**K3**
CO4	Accurate and efficient use of different methods such as measures of central tendency, dispersion, correlation and theoretical distributions	**K4**
CO5	Demonstrate the competency in solving problems related to probability and statistics.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
2	**25UBC23AC02**			**Allied Course - 2:** Statistical Methods						**6**	**4**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	2	2	1	3	3	2	2	3	**2.2**
CO2	2	3	2	1	2	3	3	2	2	3	**2.3**
CO3	1	2	3	3	3	2	3	2	3	2	**2.3**
CO4	1	2	2	2	1	2	3	2	2	3	**2.1**
CO5	1	2	2	2	3	1	3	2	2	3	**2.1**
										Mean Overall Score	**2.2 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	25UHE24AE02	**Ability Enhancement Compulsory Course - 2:** Environmental Studies	2	1

Course Objectives
To enable students connect themselves with nature
To Impart knowledge of the concept of Biodiversity
To create awareness of the causes and consequences of various pollution
To help them recognize the available natural resources and the need to sustain them
To enable them to Identify the environmental problems and offer alternatives by making interventions both individually and collectively

UNIT I: Introduction to Environmental Studies (6 Hours)

Introduction -Subsystems of Earth - Scope and Importance - Various Recycling Methods - Environmental Movements in India – Eco- Feminism - Public awareness - Suggestions to conserve environment

UNIT II: Natural Resources (6 Hours)

Introduction - Food Resources - Land Resources - Forest resources - Mineral Resources - Water Resources - Energy Resources

UNIT III: Ecosystems, Biodiversity and Conservation (6 Hours)

Kinds of Ecosystem - General structure of ecosystem - Functions of Ecosystem - Energy flow and Ecological pyramids - Levels of Biodiversity - Biodiversity at Global Level- Hot spots of Biodiversity - Endangered and Endemic Species - Value of Biodiversity - Threats to Biodiversity - Conservation of Biodiversity

UNIT IV: Environmental Pollution (6 Hours)

Air Pollution - Water Pollution - Oil Pollution - Soil Pollution - Marine Pollution - Noise Pollution - Thermal Pollution - Radiation Pollution

UNIT V: Environmental Organizations and Treatise (6 Hours)

United Nations Environment Program (UNEP) - International treaties on Environmental protection - Ministry of Environment, Forest and Climate Change - Important National Environmental Acts and rules- Environmental Impact assessment

Teaching Methodology	Power point and Field visit
Assessment Methods	Seminar, Group Discussion.

Books for Study:

1. Department of Human Excellence, (2025). *Environmental Studies.*

Books for Reference:

1. Rathor, V.S. & Rathor B. S. (2013). *Management of Natural Resources for Sustainable Development*. Daya Publishing House.
2. Sharma P.D. (2010). *Ecology and Environment*, (8th Ed.). Rastogi Publications.
3. Agrawal, A &Gibson, C.C. (2001). *Introduction: The Role of Community in Natural Resource Conservation.* Rutgers University Press.

Websites and eLearning Sources

1. https://www.unep.org/
2. http://moef.gov.in/en/
3. https://www.ipcc.ch/reports/

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K - Level)**
	On successful completion of this course, students will be able to	
CO1	Identify the concepts related to global ecology and the environment	**K1**
CO2	Comprehend the natural resources and environmental organizations	**K2**
CO3	Apply the acquired knowledge to sensitize individuals and public about the environmental crisis	**K3**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
2	**25UHE24AE02**		**Ability Enhancement Compulsory Course - 2:** Environmental Studies						**2**		**1**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	1	2	2	3	2	2	2	2	**2.1**
CO2	3	2	1	2	2	3	2	2	2	2	**2.1**
CO3	3	2	2	2	2	2	3	2	1	2	**2.1**
Mean Overall Score											**2.1 (Medium)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	25UHE24VE02	**Value Education - 2:** Fundamentals of Human Rights	2	1

Course Objectives
To sensitize students about various human rights and their importance
To empower them with the right understanding of human rights
To enable them to understand the Fundamental rights and the duties in the constitution of India
To help them comprehend the background, principles and the articles of UDHR
To make them involved in activities to defend human rights

UNIT I: Human Rights - An Introduction (6 Hours)

Introduction- Classification of Human Rights- Scope of Human Rights-Characteristics of Human Rights - Challenges for Human Rights in the 21st Century.

UNIT II: Historical Development of Human Rights (6 Hours)

Human Rights in Pre-World War Era- Human Rights in Post-World War Era- Evolution of International Human Rights Law - the General Assembly Proclamation- Institution Building, Implementation and the Post- Cold War Period. The ICC.

UNIT III: India and Human Rights (6 Hours)

Introduction-Preamble to Indian Constitution - Classification of Fundamental Rights-Salient Features of Fundamental Rights-and Fundamental Duties.

UNIT IV: Human Rights of Women and Children (6 Hours)

Women's Human Rights- Issues related to women's rights - and Rights of Women's and Children

UNIT V: Human Rights Violations and Organizations (6 Hours)

Human Rights Violations - Human Rights Violations in India - the Human Rights Watch Report - Human Rights Organizations - NHRC - SHRC.

Teaching Methodology	Power point, Handouts and Group discussion
Assessment Methods	Seminars, Group Discussion, Assignments.

Books for Study:

1. Department of Human Excellence, (2021). *Techniques of Social Analysis: Fundamentals of Human Rights.*

Books for Reference:

1. Venkatachalem. (2005). The *Constitution of India, Giri Law House.*
2. Naik, V. &Shany, M. (2011). *Human rights education and training*, Crescent Publishing Corporation.
3. Neera, B. (2011). *Human Rights Content and Extent.* Swastika Publications.

Websites and eLearning Sources:

1. https://www.un.org/en/universal-declaration-human-rights/
2. https://www.ilo.org/global/lang--en/
3. https://www.amnesty.org/en/

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K - Level)**
	On successful completion of this course, students will be able to	
CO1	Identify the importance and the values of human rights	**K1**
CO2	Understand the historical background and the development of Human Rights and the related organizations	**K2**
CO3	Apply the provisions of National and International human rights to themselves and the society	**K3**

Relationship Matrix											
Semester	**Course Code**	**Title of the Course**								**Hours**	**Credits**
2	**25UHE24VE02**	**Value Education - 2:** Fundamentals of Human Rights								**2**	**1**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	1	2	2	3	2	2	2	2	**2.1**
CO2	3	2	1	2	2	3	2	2	2	2	**2.1**
CO3	3	2	2	2	2	2	3	2	1	2	**2.1**
Mean Overall Score											**2.1 (Medium)**

Semester	Course Code	Title of the Course	Hours/ Week	Credits
3	25UTA31GL03	பொதுத்தமிழ் – 3: General Tamil - 3	4	3

கற்றலின் நோக்கங்கள் (Course Objectives)
சங்க இலக்கியங்களின் இன்றியமையாமையை அறிந்து கொள்ளுதல்
இலக்கியத்தினை நுட்பமாக அறிதலின் வழியாக ஆற்றுப்படுத்தும் திறன் பெறுதல்
இலக்கிய அறநெறிகளைத் தற்கால வாழ்வியலில் பயன்படுத்தும் திறன் பெறுதல்
திணை, துறைகளைப் பகுத்தாராயும் அறிவு பெறுதல்
இலக்கிய இலக்கண நுட்பங்களை வாழ்வியலோடு ஒப்பிடுதல்

அலகு – 1 : **(12 மணி நேரம்)**

குறுந்தொகை: குறிஞ்சித் திணை - பரணர் பாடல் (199), முல்லை - ஔவையார் பாடல் (99), மருதம் - கொல்லிக்கண்ணனார் பாடல் (34), நெய்தல் - கச்சிப்பேட்டு நன்னாகையார் பாடல் (172), பாலை - வெண்பூதி பாடல் (174)

நற்றிணை: குறிஞ்சி - கபிலர் பாடல் (194), முல்லை - இடைக்காடனார் பாடல் (142), மருதம் – உறையூர்க் கதுவாய்ச் சாத்தனார் பாடல் (370), நெய்தல் - அறிவுடைநம்பி பாடல் (15), பாலை - கணக்காயனார் பாடல் (24)

ஐங்குறுநூறு: குறிஞ்சி - அன்னாய் வாழிப் பத்து - அன்னாய் வாழி வேண்டன்னை நம் படப்பை (203), முல்லை - செவிலி கூற்றுப் பத்து - மறியிடைபடுத்த மான்பிணைபோல (401), மருதம் - வேட்கைப் பத்து - வாழி ஆதன் வாழி அவினி (01), நெய்தல் - வெள்ளாங்குருகுப் பத்து - வெள்ளாங் குருகின் பிள்ளை (157), பாலை - உடன்போக்கின் கண் இடைச் சுரத்து உரைத்த பத்து - அறம்புரி அருமறை நவின்ற (387)

புறநானூறு: பிசிராந்தையார் (67), அரிசில் கிழார் (146), காக்கைப்பாடினி (278), அள்ளூர் நன்முல்லையார் (306), பரணர் (352)

அலகு – 2 : **(12 மணி நேரம்)**

சிறுபாணாற்றுப்படை

இலக்கணம் - யாப்பு

அலகு – 3 : **(12 மணி நேரம்)**

கலித்தொகை: குறிஞ்சிக்கலி – திருந்திழாய்! கேளாய் எனத் தொடங்கும் பாடல் (64), முல்லைக்கலி – கண் அகன் இரு விசும்பில் எனத் தொடங்கும் பாடல் (101), மருதக்கலி - நறவினை வரைந்தார்க்கும் எனத் தொடங்கும் பாடல் (98), நெய்தல்கலி - இவர்திமில் எறிதிரை எனத் தொடங்கும் பாடல் (135) பாலைக்கலி - அறனின்றி அயல்தூற்றும் எனத் தொடங்கும் பாடல் (2)

பதிற்றுப்பத்து: குமட்டூர்க் கண்ணனாரின் புண் உமிழ் குருதி (11), பாலைக் கௌதமனாரின் கயிறு குறு முகவை (22)

இலக்கிய வரலாறு: சங்க இலக்கியங்கள், சங்க இலக்கியங்களின் தனித்தன்மைகள்

அலகு – 4 : **(12 மணி நேரம்)**

அகநானூறு: அளிநிலை பொறாது அமரிய முகத்தள் எனத் தொடங்கும் பாடல் (5) , திதலை மாமை தளிர்வனப்பு எனத் தொடங்கும் பாடல் (135), திருந்துஇழை நெகிழ்ந்து எனத் தொடங்கும் பாடல் (387)

தனிப்பாடல் திரட்டு:- பிறவிக் குணமும் பழக்கமும் (196), கொடியது (242), பெரியது (244), அரியது (245), இதுவே நலம் (223)

இலக்கிய வரலாறு: பதினெண்கீழ்க்கணக்கு நூல்கள்

அலகு – 5 : **(12 மணி நேரம்)**

திருக்குறள்: இனியவை கூறல் (10), நட்பு ஆராய்தல் (80)

பழமொழி நானூறு: ஆற்றவும் கற்றார் அறிவுடையார் எனத் தொடங்கும் பாடல் (40), வைத்தனை வைப்பென்று எனத் தொடங்கும் பாடல் (95), உடைப்பெருஞ் செல்வத்து எனத் தொடங்கும் பாடல் (154), தத்தமக்குக் கொண்ட எனத் தொடங்கும் பாடல் (276), நோக்கி அறிகல்லா எனத் தொடங்கும் பாடல் (337)

இனியவை நாற்பது:- முதல் பத்து பாடல்கள் (1-10)

இலக்கணம் - அணி

நாடகம் - விந்தனின் வாழப்பிறந்தவன்

கற்பித்தல் அணுகுமுறை (Teaching Methodology)	**விரிவுரை** (Lecture), **காணொளிக் காட்சி** (Videos), **விளக்கக் காட்சி** (PPT presentation)
மதிப்பீட்டு முறைகள் (Assesment methods)	**கருத்துரை**(Seminar), **குழுக் கலந்துரையாடல்** (Group Discussion), **உடனடித்தேர்வு** (Snap Test), **ஒப்படைவு** (Assignment)

பாடநூல் :

1. பொதுத்தமிழ்-3(2025), தமிழாய்வுத்துறை, தூய வளனார் கல்லூரி

பார்வை நூல்கள்:

1. சுப்பிரமணியன். ச. வே (உ.ஆ.), (2003), சங்க இலக்கியம் , கோவிலூர் மடாலயம்

2. கன்னியப்பன்.சிவ (உ.ஆ.), (2004),தனிப்பாடல் திரட்டு, முல்லை நிலையம்

Websites and eLearning Sources:

- *https://learnsangamtamil.com/*
- *https://www.tamilvu.org/library/*

Course Outcomes		
CO No.	***CO-Statements*** ***இப்பாடத்தின் நிறைவில் மாணவர்கள்***	***Cognitive Levels (K-Level)***
CO1	சங்க இலக்கியத்தின் தனித்தன்மைகளை அறிவர்	***K1***
CO2	ஆற்றுப்படை இலக்கியங்களைக் கற்பதன் வழி ஆற்றுப்படுத்தும் முறையை இனங்காண்பர்	***K2***
CO3	இலக்கிய நெறிகளை நடப்பியலில் பயன்படுத்துவர்	***K3***
CO4	திணை துறைகளை நன்கு கற்பதன் வாயிலாகப் பாடல்களைப் பகுப்பாய்வர்	***K4***
CO5	யாப்பு, அணியைக் கற்பதன் வாயிலாகப் புதிய இலக்கிய வடிவங்களைப் படைக்கும் திறன் பெறுவர்.	***K5***

Relationship Matrix												
Semester	***Course Code***			***Title of the Course***							***Hours***	***Credits***
3	***25UTA31GL03***			பொதுத்தமிழ் - *3: General Tamil - 3*							***4***	***3***
Course Outcomes	***Programme Outcomes (POs)***					***Programme Specific Outcomes (PSOs)***					***Mean Score of COs***	
	PO1	***PO2***	***PO3***	***PO4***	***PO5***	***PSO1***	***PSO2***	***PSO3***	***PSO4***	***PSO5***		
CO1	*1*	*2*	*2*	*2*	*1*	*3*	*3*	*2*	*3*	*2*	*2.1*	
CO2	*3*	*2*	*1*	*3*	*2*	*3*	*2*	*2*	*3*	*1*	*2.2*	
CO3	*3*	*2*	*1*	*3*	*2*	*3*	*2*	*2*	*3*	*2*	*2.3*	
CO4	*1*	*3*	*2*	*1*	*2*	*3*	*2*	*2*	*2*	*3*	*2.1*	
CO5	*2*	*3*	*2*	*2*	*1*	*3*	*2*	*2*	*2*	*2*	*2.1*	
										Mean Overall Score	***2.16 (High)***	

Semester	Course Code	Title of the Course	Hours/Week	Credits
3	**25UFR31GL03**	Language French – 3	**4**	**3**

	Course Objectives
1	Remember and Construct Narratives applying the *passé composé* with time indicators to recount past events
2	Understand and express personal memories using the *imparfait* in spoken and written communication to articulate likes, dislikes, and past events.
3	Analyze and interpret different housing options and engage in role-play scenarios to negotiate effectively.
4	Describe physical appearance and personality traits using appropriate adjectives, possessives, and comparatives to describe oneself
5	Evaluate future possibilities in science and communication, expressing hopes and possibilities using the *futur simple* and *conditionnel*

UNIT – I **(12 Hours)**

1. Titre - Nouvelles vies
2. Lexique – Parcours de vie, la vie personnelle, scolaire et professionnelle
3. Grammaire – le passé composé -formation, la phrase négative, les indicateurs de temps
4. Production orale- exprimer son intention de faire quelque chose
5. Production écrite - organiser une activité de loisir

UNIT – II **(12 Hours)**

6. Titre - Je me souviens
7. Lexique – le souvenir : la mémoire, les paysages : à la mer, à la montagne
8. Grammaire – l'imparfait -formation, les pronoms 'y' et 'en', la place de l'adjectif
9. Production orale- exprimer le fait d'aimer et de ne pas aimer
10. Production écrite - raconter un souvenir

UNIT – III **(12 Hours)**

11. Titre - Comme à la maison
12. Lexique – le logement et la location, les frais et les services, le cadre de vie
13. Grammaire – les pronoms relatifs, la comparaison, la condition
14. Production orale- jeu de rôle – louer un logement
15. Production écrite - Décrire un logement

UNIT – IV **(12 Hours)**

16. Titre - Tous pareils, tous différents
17. Lexique – l'apparence physique, les traits de caractère
18. Grammaire – les adjectifs indéfinis, les pronoms possessifs, la comparaison
19. Production orale- faire un compliment
20. Production écrite - faire le portrait physique de quelqu'un

UNIT – V **(12 Hours)**

21. Titre - En route vers le futur
22. Lexique – les sciences et les techniques, les technologies de communication
23. Grammaire – le futur simple, la condition avec 'si', le pronom 'on'
24. Production orale- exprimer un espoir – imaginer à l'avenir
25. Production écrite - Décrire l'utilité d'un objet
26. Indian knowledge system - Analyzing narrative structures in Indian epics vs. French literature by comparing the Mahabharata's moral stories especially the Panchatantra stories to French fables. Practicing French future tense by making simple predictions about personal life by referencing Indian astrology (5%)

Teaching Methodology	Project-Based Chronological Learning (PBL), Digital Media Integration, Genre-Specific Writing Approach, Scenario-based learning (SBL)
Assessment Methods	*Podcast creation:* Students record a short podcast episode on "Childhood Memory". (Rubric – assessed on ability to construct narratives using past tenses and expressing experiences. *Debate:* Debate on "Apartment vs. House: Students must compare housing options, rental costs, and services. (Rubric – evaluated on analytical skills through structured argumentation) *Timeline narrative activity:* Create a timeline about "A Typical College Day" (Rubric – Assessed on the ability to recall and construct a chronological narrative using past) *Letter writing:* Write a letter to a friend describing personal experiences. Write a formal inquiry to a landlord about an apartment (Rubric – Assessed on formal and informal written communication skills)

Books for Study:

1. Fafa, C., Gajdosova, F., Horquin, A., Pasquet, A., Perrard, M., Petitmengin, V., Sperandio, C., Dodin, M., &Veldeman-Abry, J. (2022). *Édito A2: Méthode de français* (2nd ed.). Didier FLE, Hatier. (p.13 – p.77)

Books for Reference:

1. Dauda, P., Giachino, L., &Baracco, C. (2016). *Génération A2*. Didier.
2. Girardet, J., &Pecheur, J. (2017). *Écho A2* (2nd ed.). CLE International

Websites and eLearning Sources:

1. https://www.bbc.co.uk/bitesize/subjects/zc7xpv4
2. https://conjuguemos.com/
3. https://www.busuu.com/en/course/learn-french-online
4. https://www.duolingo.com/learn
5. https://www.newsinslowfrench.com/

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K-Level)**
CO1	Recall using vocabulary related to personal, academic, and professional life, and compose narratives using the *passé composé* and time indicators.	**K1**
CO2	Express experiences and preferences using *imparfait*to recount memories, express likes and dislikes accurately in spoken and written communication.	**K2**
CO3	Comparedifferent housing options and interpret rental-related expenses and services, and engage in role-play scenarios to negotiate accommodations.	**K3**
CO4	Characterise personal traits by describing physical appearance and personality traits, apply possessive and indefinite adjectives, and formulate comparisons effectively.	**K4**
CO5	Discuss advancements in science and communication, express hopes and possibilities using the *futur simple* and *conditionnel*structures.	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
3	**25UFR31GL03**		Language French – 3						**4**		**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	3	2	3	2	3	1	3	3	3	2.5
CO2	3	2	3	3	1	2	2	2	2	2	2.2
CO3	3	1	3	3	2	2	2	2	1	1	2.0
CO4	2	2	2	2	2	1	2	1	1	1	1.6
CO5	2	3	3	2	2	2	3	3	3	3	2.6
Mean Overall Score											**2.18 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
3	25UHI31GL03	Language Hindi - 3	4	3

Course Objectives
To appreciate the features of Modern Hindi Prose
To understand the Hindi literature in association with the contemporary requirements
To enable the students to develop their effective communicative skills in Hindi
To strengthen the language competence among the students
To empower the students with globally employable soft skills

UNIT I **(12 Hours)**

1. Tera Sneh na Khovoom
2. Samband Bodak
3. Reethikal - Namakarn
4. Chitra Varnan (Basic)

UNIT II **(12 Hours)**

5. Paribakshik Shabdavali
6. Smuchaya Bodak
7. Reethikal - Samajik Paristhithiya
8. Vachan Badalo

UNIT III **(12 Hours)**

9. Vismayadi Bodak
10. Reethikal - Sahithyik Paristhithiyam
11. Beerbal ki Chadurai
12. Patra-Patrikao mein Prakashit Gadyansho ka Patan(Basic)

UNIT IV **(12 Hours)**

13. Avikary Shabdh
14. Reethikal - Main Divisions
15. Ling Badalo
16. Karak

UNIT V **(12 Hours)**

17. Reethikal - Visheshathayem
18. Anuvad
19. Bahu Ki Vidha (One Act Play)
20. Bathcheeth - Kaksha mein

Teaching Methodology	Videos, PPT, Quiz, Group Discussion, Case Based Problem Solving
Assessment Methods	Quiz, Seminar, Assignment

Books for Study:

1. Dr. Sanjeev Kumar Jain. (2023). *Anuwad: Siddhant Evam Vyavhar*. Kailash Pustak Sadan.
2. Kamathaprasad Gupth, M. (2021). *Hindi Vyakaran*, Anand Prakashan.
3. Dr. Sadananth Bosalae. (2020). *kavya sarang*. Rajkamal Prakashan.

Books for Reference:

1. Ramdev. (2021). *Vyakaran Pradeep*. Hindi Bhavan.
2. Lakshman Prasad Singh. (2022). *Kavya Ke Sopan*. Bharathy Bhavan Prakashan.
3. Acharya Ramchandra Shukla. (2021). *Hindi Sahitya Ka Itihas*, Prabhat Prakashan.
4. Krishnakumar Gosamy. (2023). *Anuvad vigyan ki Bhumika*. Rajkamal Prakashan.

Websites and eLearning Sources:

1. https://www.hindwi.org/poets/jaishankar-prasad/all
2. https://youtu.be/e9wK-pYfVPc

3. https://www.amarujala.com/kavya/sahitya/sumitranandan-pant-best-hindi-poems
4. https://mycoaching.in/samuchchay-bodhak-kya-hai
5. https://www.subhshiv.in/2021/06/avikari-shabd.html

Course Outcomes		
CO No.	**CO-Statements** On successful completion of the course, the student will acquire thelisted skills	**Cognitive Levels (K-Level)**
CO1	Categorize the poetics in some selective poems.	**K1**
CO2	Practical application of grammar.	**K2**
CO3	Justify the social & political conditions of Riti Kaal in Hindi Literature.	**K3**
CO4	Find out the dialects of Hindi language.	**K4**
CO5	Illustrate the importance given to family ethics by the youth in the modern period according to "Bahoo Ki vidha" One Act play.	**K5**

Relationship Matrix											
Semester	**Course Code**	**Title of the Course**								**Hours**	**Credits**
3	**25UHI31GL03**	Language Hindi - 3								**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	3	2	3	2	1	3	2	2.4
CO2	3	2	3	2	2	3	2	3	2	3	2.5
CO3	3	2	2	3	1	3	2	3	2	3	2.4
CO4	2	3	3	2	3	2	3	3	2	1	2.4
CO5	3	2	2	3	3	2	1	3	2	3	2.4
Mean Overall Score											**2.42 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
3	**25USA31GL03**	Language Sanskrit - 3	**4**	**3**

Course Objectives
To introduce simple poetry in Sanskrit
To give an exposure to the Vedas and Vedangas
To acquaint students with epics and puranas
To train students in conjugation of verbs in future tense
To introduce Upasarga-s and their role in verb formations

UNIT I **(12 Hours)**

Ramodantam, Balakandam (1-15 verses)

UNIT II **(12 Hours)**

Ramodantam, Balakandam (15-30 verses)

UNIT III **(12 Hours)**

Vedas – Vedangas vivaranam

UNIT IV **(12 Hours)**

Asta dasha Purana and Dashopanishads

UNIT V **(12 Hours)**

Upasargas and Bhavishyat Kaalah Vakya Prayoga

Teaching Methodology	Videos, PPT, Blackboard, Demonstration, Exercises
Assessment Methods	Seminar, Quiz, Group Discussion.

Books for Study:

1. VEDIC LITERATURE
2. RAMODANTAM

Books for Reference:

1. Parameshwara, Ramodantam, LIFCO Chennai 2020
2. R. S. Vadhyar & Sons, Book – sellers and publishers, Kalpathu, Palaghat – 678003, Kerala, south India, History of Sanskrit Literature 2021
3. Kulapathy, K.M Saral Sanskrit Balabodh, Bharathita vidya bhavan, Munshimarg Mumbai – 400 007 2020

Websites and eLearning Sources:

1. https://www.scribd.com/doc/210917188/Sri-Ramodantam-Sanskrit-Text-With-English-Translation
2. http://www.sushmajee.com/ms-ppp/text/ved-notes.pdf
3. https://occr.org.in/publication/Vedanga.pdf
4. https://www.forgottenbooks.com/en/download/TheThirteenPrincipalUpanishadsTranslatedFromtheSanskrit_10017247.pdf
5. https://www.learnsanskrit.org/guide/uninflected-words/the-upasarga/

Course Outcomes		
CO No.	**CO–Statements**	**Cognitive Levels (K –Levels)**
	On successful completion of this course, students will be able to	
CO1	Remember Characters and events of Ramayana	**K1**
CO2	Understand social ethics and moral duties.	**K2**
CO3	Apply the values learnt, in day-to-day life	**K2**
CO4	Appreciate the Vedic Philosophy	**K3**
CO5	Evaluate and create new words with upasargas	**K4**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
3	**25USA31GL03**			Language Sanskrit - 3					**4**		**3**
Course Outcomes	**Programme Outcomes (PO)**					**Programme Specific Outcomes (PSO)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	1	2	2	3	3	3	3	3	2	1	2.3
CO2	3	3	2	3	3	2	2	3	3	3	2.7
CO3	3	3	1	3	3	1	1	3	3	3	2.4
CO4	2	2	1	2	3	2	2	3	2	1	2.0
CO5	3	3	2	3	2	2	3	3	3	2	2.6
Mean Overall Score											**2.4 (High)**

Semester	Course Code	Title of the Course	Hours/ Weeks	Credits
3	25UEN32GE03B	**General English - 3:** English for Science – 1	5	3

Course Objectives
To enable the students to comprehend the local and global issues through the lessons.
To enable the students to do the tasks centering on Skill Development and Grammar.
To empower the students with interactive skills.
To enhance their taste for reading that will naturally develop their vocabulary power and sentence structures
To develop the listening, speaking and writing skills of students through the prescribed texts.

UNIT I: Encounter Between Humans and Aliens (15 Hours)

1. "They're Made Out of Meat" by Terry Bisson
2. Vocabulary in Context: Meat Words
3. Writing: Informal Letter Writing
4. Speaking: Role Play
5. Grammar: Present Perfect Tense

UNIT II: Life After Death (15 Hours)

6. "The Egg" by Andy Weir
7. Vocabulary in Context: Cide Words
8. Writing: Formal Letter Writing
9. Speaking: Description of a Picture
10. Grammar: Present Perfect Continuous Tense

UNIT III: In Communion with Nature (15 Hours)

11. "A Tiger in the House" by Ruskin Bond
12. Vocabulary in Context: Animals and their babies
13. Writing: Job Application Writing (Writing Covering Letter and Curriculum Vitae)
14. Speaking: Description of an Advertisement
15. Grammar: Past Perfect Tense

UNIT IV: Mystery of Venus (15 Hours)

16. "All Summer in a Day" by Ray Bradbury
17. Vocabulary in Context: Rain Words
18. Writing: Drafting Invitation and Brochure
19. Speaking: Short Academic Presentation
20. Grammar; Past Perfect Continuous

UNIT V: Think Before You Trash (15 Hours)

21. "My Frog Recycles All His Trash" by Kenn Nesbitt
22. Vocabulary in Context: Ecological Words
23. Writing: Preparing an Advertisement
24. Speaking: Welcome Address and Vote of Thanks
25. Grammar: Future Perfect Tense and Future Perfect Continuous Tense

* Speaking Components are meant only for internal tests

Teaching Methodology	Lecture, Multimedia Presentations, Discussion and Enacting
Assessment Methods	Speaking, reading, listening and written tests

Books for Study:

1. Francis, V., Dr. D.R. Edwin Christy and Dr. D. Loyola Innaci. *Lingua Science – I*, St. Joseph's College (Autonomous), Tiruchirappalli.

Books for Reference:

1. Wilfred, D. Best. *Students Companion*. HarperCollins Publishers, 2020.

2. Wren & Martin. *Middle School English Grammar and Composition,* S Chand Publishing, 2023.
3. Carnegie, Dale. *The Quick and Easy Way to Effective Speaking*, Rupa Classics, 2013.

Websites and eLearning Sources:

1. https://jerrywbrown.com/wp-content/uploads/2020/02/They-are-made-out-of-meat-Bisson-Terry.pdf
2. https://www.are.na/block/12921440
3. https://pdfcoffee.com/andy-weir-the-egg-pdf-pdf-free.html
4. https://mrsdelcarmen.weebly.com/uploads/3/0/9/0/30908551/a_tiger_in_the_house_by_ruskin_bond.pdf
5. https://poetry4kids.com/poems/my-frog-recycles-all-his-trash/
6. https://www.stcypriansprimaryacademy.co.uk/wp-content/uploads/2021/01/All-Summer-in-a-Day-by-Ray-Bradbury.pdf

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, students will be able to	
CO1	Identify and comprehend the local and global issues through the lessons	**K1**
CO2	Use interactive skills	**K2**
CO3	Develop the Listening and Reading Skills of the learners through teacher-led reading practice	**K3**
CO4	Enhance their Listening, Reading, Speaking, and Writing Skills	**K4**
CO5	Develop their Creative and Critical Thinking and Speaking Skills	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
3	**25UEN32GE03B**			**General English - 3:** English for Science - 1						**5**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	3	2	2	3	2	3	2	3	2	2.4
CO2	2	2	3	2	3	3	2	3	2	2	2.3
CO3	2	3	2	3	2	2	3	2	3	2	2.4
CO4	2	2	3	2	3	3	2	3	2	3	2.5
CO5	2	2	2	3	2	2	2	3	2	2	2.2
Mean Overall Score											**2.36 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
3	25UBC33CC05	**Core Course - 5:** Java Programming	4	3

Course Objectives
To grasp the fundamentals of Java programming.
To develop an understanding of object-oriented programming concepts and apply them to problem- solving.
To explain the principles of inheritance and polymorphism and illustrate their role in designing abstract classes
To implementation of packages, interface and multithreading.
To familiarize students with database and java server page concepts.

UNIT I **(12 Hours)**

Introduction to Java: Primaries, Control Statements, Classes and Objects: General form of class, Creation of Objects, Usage of Constructors, 'this' keyword, Constructor Overloading, copy constructors, Static Data Members, Static Methods, 'finalize ()' Method.

UNIT II **(12 Hours)**

Inheritance and Polymorphism: Inheriting Variables in a Class, Inheriting Methods in a Class, Inheritance and Constructors, Abstract Classes, Final Classes; Interfaces and Packages: Interfaces, Structure of an Interface, Implementation of an Interface, Interface Inheritance. Packages, Placing the Classes in a Package, Package Hierarchy, Access Control Modifiers.

UNIT III **(12 Hours)**

Abstract Windowing Toolkit: Events, Listeners, Event Handling Methods, Inheritance Hierarchy of Control Classes, Windows and Frames, Menus, Dialogs, Mouse Events and their Listeners, Exception Handling; Default Exception Handling, Exception and Error Classes, Catch Block Searching Pattern, 'Throw' Statement, 'Throws' Clause, Custom Exceptions.

UNIT IV **(12 Hours)**

Threads and Networking: Life Cycle of a Thread, Creating and Running Threads, Methods in the Thread Class, Setting the priority of a thread, I/O Streams; Input Stream and Output Stream classes - Reader and Writer classes - Data Output Stream and Data Input Stream Classes; TCP Server Socket Class, TCP Socket Class, UDP Datagram Socket and Datagram Packet Classes.

UNIT V **(12 Hours)**

JSP and Database: Java Server Page-Java Server Page Tag-Java Server Page Request, Java Server Page Response; Database Connectivity, Java Data Base Connection, Object Data Base Connectivity,

Teaching Methodology	Videos, PPT, Quiz.
Assessment Methods	Snap Test, MCQ, Seminar

Books for Study:

1. Muthu, C. (2011). *Programming with JAVA, (*2nd Ed.). Vijay Nicole Imprints Private Limited.
2. Karthik P. *(2018), Web Application using JSP, (*1st Ed*),* BPB Publications.

Books for Reference:

1. Herbert, S. (2017). *The Complete Reference Java 2.0*. (9th Ed). Tata McGraw Hill.
2. Balagurusamy, E. (2019). *Programming with Java.* (6th Ed). McGraw-Hill.
3. Kanetkar, Y. P. (2019). *LET US JAVA: Strong Foundation for JAVA Programming*. (7th Ed). BPB Publications.

Websites and eLearning Sources:

1. https://www.tpointtech.com/jsp-tutorial
2. https://www.w3schools.com/java/
3. https://www.geeksforgeeks.org/java/
4. https://www.pvpsiddhartha.ac.in/dep_it/lecture%20notes/WT/unit5.pdf
5. https://dducollegedu.ac.in/Datafiles/cms/ecourse%20content/JSP_tutorial.pdf

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K - Level)**
	On successful completion of this course, students will be able to	
CO1	Explain the principles and practices of object-oriented programming.	**K1**
CO2	Demonstrate the use of inheritance and packages for module reusability.	**K2**
CO3	Apply AWT components and exception handling techniques in Java.	**K3**
CO4	Develop proficiency in working with threads and I/O stream techniques in Java.	**K4**
CO5	Effectively utilize JSP for building database connectivity.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
3	**25UBC33CC05**			**Core Course - 5:** Java Programming						**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	2	2	3	2	3	3	2	2	3	**2.4**
CO2	2	3	2	2	2	2	3	3	2	2	**2.4**
CO3	2	2	3	2	3	2	2	2	3	2	**2.4**
CO4	3	2	2	3	2	2	3	2	3	2	**2.4**
CO5	3	3	2	3	2	2	3	2	2	3	**2.5**
Mean Overall Score											**2.42 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
3	25UBC33CC06	**Core Course – 6:** Data Analytics using R programming	4	3

Course Objectives
To understand the fundamental concepts and process of business analytics.
To analyze between business intelligence and data engineering and their roles.
To explore basic techniques and summarize data to identify patterns and trends.
To identify data and its types, to write a simple R program.
To implement in business analytics projects.

UNIT I **(12 Hours)**

Business Analytics: Introduction to business analytics, business analytics process, identifying data, types and stages of data analytics with an example for each business intelligence and data engineering, exploratory data analytics, communicating business analytics results.

UNIT II **(12 Hours)**

Asking Data Science Questions: good question, critical thinking, reasoning, weak sense critical thinking and strong sense critical thinking, question meetings, question types, key areas of questioning, challenging evidence, statistical inference, Advanced Analytics: Exploring Strategies and Applications, Introduction to advanced analytics.

UNIT III **(12 Hours)**

Unveiling R for Data Analysis An overview of R, Vectors, factors, and univariate time series, Data frames and matrices, functions, operators, and loops. Graphics in R: Graphical user interfaces to R, working directories, workspaces, R system configuration, Data input and output, functions and operators, factors, Missing values, Matrices and arrays, Manipulations with lists, data frames, matrices, and time series, Classes and methods.

UNIT IV **(12 Hours)**

Knowing about a data Styles of data analysis, Revealing views of the data, Data summary, Statistical Distributions: models for the random component, document preparation, sweave() and xtable(), Inference concepts Basic concepts of estimation, Confidence intervals and tests of hypotheses, Contingency tables, Response curves, data with a nested variation structure.

UNIT V **(12 Hours)**

Regression with a single predictor & Multiple linear regression Fitting a line to data, Outliers, influence, and robust regression, Standard errors and confidence intervals. Graphs in R Hardcopy graphics devices, plotting characters, symbols, line types, and colors, Formatting and plotting of text and equations.

Teaching Methodology	Chart, PPT, chalk and talk
Assessment Methods	Seminar, Snap Test, MCQ

Book for Study:

1. Bag, D, (2016). *Business Analytics*. (1st ed.), Taylor and Francis, Routledge.
2. Marc, J.S. Schniederjans, D.G., & Starkey, C.M. (2022), *Business Analytics Principles, Concepts, and Applications: What, Why, and How,* (1st ed.), Pearson Education.
3. Stephenson, D. (2018). *Big Data Demystified: How to use big data, data science and AI to make better business decisions and gain competitive advantage,* (1st ed.), FT Publishing International.
4. John Maindonald & W. John Braun, (2010), *Data Analysis and Graphics Using R – an Example-Based Approach,* Third Edition, Cambridge University Press.
5. Garrett Grolemund and Hadley Wickham, (2017), *R for Data Science,* Hadley Wickham and Garrett Grolemund, Oreilly.

Books for Reference:

1. Anil Mahehswari, (2023*), Data Analytics Made Accessible*, Mc Graw.
2. Paul Teetor, (2011), *R Cookbook*, O'Reilly.

Websites and eLearning Sources:

1. ebook/epub 9781315464671 PDF 9781315464688
2. https://online.hbs.edu/blog/post/prescriptive-analytics
3. https://online.hbs.edu/Documents/a,beginners,guide,to,data,and,analytics.pdf?_gl=1*1x2nmip*_ gcl_au*MTM4ODU0MTYzMC4xNzQxNTA5NTc5
4. https://dokumen.pub/qdownload/data-analytics-made-accessible-t-8692526.html
5. https://www.geeksforgeeks.org/data,wrangling,in,r,programming,working,with,tibbles/
6. www.google.co.in/books/edition/Data_Wrangling_with_R/w9aGDQAAQBAJ?hl=en&gbpv=
7. www.google.co.in/books/edition/Hands_On_Programming_with_R/uk4bbaaaqbaj?Hl=en&gbpv=1&pg=PT18&printsec=frontcover.
8. https://datapot.vn/wp,content/uploads/2023/12/datapot.vn,data,analytics,made,accessible.pdf?srsl tid=AfmBOop27DVWMhRa067wYhx5,axGgwxR9OXWAfNMZSpTpcRUyJ07NSO3
9. https://r4ds.had.co.nz/introduction.html

Course Outcomes		
CO No.	**CO Statements** On successful completion of this course, the students will be able to	**Cognitive Levels (K - Level)**
CO1	Recall business analytics and statistical techniques using R to explore, analyze, business analytical applications.	**K1**
CO2	Explain the critical thinking skills, apply it into business model,	**K2**
CO3	Apply R programming language for data manipulation and visualization.	**K3**
CO4	Perform data analysis and basic statistical inference using R programming.	**K4**
CO5	Data analytics reports, visualize technical findings into actionable business insights. and interpret linear regression models.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
3	**25UBC33CC06**			**Core Course – 6:** Data Analytics using R programming						**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	2	**2.4**
CO2	2	3	3	2	2	2	2	2	2	1	**2.3**
CO3	3	2	3	3	3	2	2	3	2	3	**2.6**
CO4	3	2	3	2	2	3	3	1	3	2	**2.4**
CO5	2	2	1	2	3	3	2	1	2	3	**2.1**
										Mean Overall Score	**2.36 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
3	25UBC33CP03	**Core Practical - 3:** Java Programming Lab	3	2

Course Objectives
To develop programs using abstract classes.
To solve real-world problems using the Java Collection Framework.
To implement multithreaded programming in Java.
To create GUI applications using Swing controls.
To Gain hands-on experience in Java Programming.

List of Exercises:

1. Simple Programs
2. Classes & Objects
3. Constructors
4. Inheritance
5. Packages
6. Interfaces
7. Exception Handling
8. Threads
9. AWT controls
10. Networking
11. Java Server Page
12. JDBC Connection

Teaching Methodology	Hands-on Lab session
Assessment Methods	Practical Test, Note Evaluation, Viva-voce

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive ls (K - Level)**
	On successful completion of this course, students will be able to	
CO1	Demonstrate applications utilizing object-oriented programming concepts.	**K1**
CO2	Develop well-structured Java applications.	**K2**
CO3	Implement applications using multithreading, exception handling, and I/O ms	**K3**
CO4	Configure and manage java server page	**K4**
CO5	Establish database connections using JDBC for web-based applications.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
3	**25UBC33CP03**			**Core Practical - 3:** Java Programming Lab					**3**		**2**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	2	2	2	3	3	3	2	2	3	**2.4**
CO2	2	3	2	2	2	3	2	2	3	3	**2.4**
CO3	3	2	3	2	2	2	3	3	3	2	**2.5**
CO4	3	2	3	3	2	2	2	3	2	2	**2.4**
CO5	2	2	3	2	3	2	3	2	2	2	**2.3**
										Mean Overall Score	**2.4 (High)**

Semester	Course Code	Title of the Course	Hours	Credits
3	25UBC33AC03A	**Allied Optional - 1:** Financial Accounting Package – Tally Prime Basic	3	2

Course Objectives
To Gain a thorough knowledge of the concept, to create Vouchers and Final Accounts adjustments
To Generate MIS reports and GST-filing Reports
To Equip with skills of entering transactions in the appropriate accounting vouchers and creation and application of cost centers.
To Acquaint with creation of inventory masters and use various inventory features.
To Work in the real time computerized business environment as an accountant or a store keeper.

UNIT-I: **(9 Hours)**

Need and Importance – Book –Keeping – Accounting – Accountancy- Accounting and Book-Keeping – Users of Accounting Information – Branches of Accounting – Basic accounting terms- Rules for Debiting and crediting – Books of original entry – Journal – Ledger – Trail balance

UNIT-II: **(9 Hours)**

Getting Started with Tally Prime – Mouse/Keyboard Conventions – Company creation – Shut a Company – Select a Company – Alter Company Details – Company Features and Configuration – Ledger – Group

UNIT-III: **(9 Hours)**

Parts of final accounts – Trading account – profit and loss account – balance sheet – preparation of final accounts – without adjustments.

UNIT-IV: **(9 Hours)**

Voucher Entry in Tally Prime – Accounting Vouchers – Types of Vouchers – Contra, Payment, Receipt, Journal, Sales, Purchase, Credit note,
debit note, reversing journals, Memo Voucher Transactions – Display.

UNIT-V: **(9 Hours)**

Inventory Masters In Tally Prime – Creating inventory masters – creating Inventory Masters – Creation of Stock Group – Creation of Units of Measure – Creation of Stock Item – Creation of Go down – Defining of Stock Opening Balance in Tally Prime - Stock Category – Reports.

Teaching Methodology	Lecture & Concept Explanation, Practical Demonstration Interactive Learning
Assessment Methods	Seminar, Snap Test, MCQ

Books for Study:

1. Lal, Jawahar and Seema Srivastava, (2019), Financial Accounting, 4th edition, Himalaya Publishing House, New Delhi.
2. Monga, J.R., (2018), Financial Accounting: Concepts and Applications,3rd edition, Published by Mayoor Paper Backs, New Delhi.
3. Shukla, M.C., T.S. Grewal and S. C. Gupta, (2020), Advanced Accounts. Vol.-I. Published by S. Chand & Co., New Delhi.

Books for References:

1. Maheshwari S. N., Financial Accounting, (2020), 5th edition, Vikas Publication, New Delhi.
2. Grewal T.S, (2018), Introduction to Accounting, 4th edition, Published by S. Chand and Co., New Delhi.
3. Compendium of Statements and Standards of Accounting. The Institute of Chartered Accountants of India, New Delhi

Course Outcomes		
CO. No.	**CO- Statement** On completion of this course, the students will be able to	**Cognitive Level (K- level)**
CO-1	Remembering the role of a Computerized General Ledger System in modern accounting.	**K1**
CO-2	Understanding the characteristics of Tally software by creating a company, configuring security controls, managing accounts information, creating ledgers, and recording various types of vouchers.	**K2**
CO-3	Apply and interpret financial reports generated by Tally, including the balance sheet, audit trial, profit and loss account, and ratio analysis.	**K3**
CO-4	Analyzing practical approaches to inventory handling using Tally, including the creation of stock groups, categories, items, godowns, and units of measure.	**K4**
CO-5	Evaluating Tally in specialized accounting scenarios, such as handling accounts in banking companies and departmental accounting.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
3	**25UBC33AC03A**			**Allied Optional - 1:** Financial Accounting Package – Tally Prime Basic						**3**	**2**
Course Outcomes↓	**Programme Outcomes (PO)**					**Programme Specific Outcomes (PSO)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO-1	2	1	3	3	1	2	3	2	1	2	2.2
CO-2	3	1	2	3	2	1	3	3	1	3	2.4
CO-3	2	3	2	3	2	2	2	3	2	1	2.3
CO-4	3	3	3	2	2	1	2	3	2	1	2.4
CO-5	2	3	3	2	1	2	3	1	3	2	2.2
Mean Overall Score											**2.3 (High)**

Semester	Course Code	Title of the Course	Hours	Credits
3	25UBC33OP1A	**Allied Optional Practical - 1:** Financial Accounting Packages – Tally Prime Basic (Lab)	3	2

Course Objectives
To Extract profit and loss account and balance sheet through ledger account balances and adjustment entries.
To Pass entries for transactions in accounting vouchers with or without stock items.
To Carry out order processing and maintain accounting records along with inventory records and generate reports.
To Work as an accountant or a storekeeper in the computerized environment of business organizations.
To Pass entries for transactions requiring special features such as Single and multiple Ledger creations.

Exercises

1. Company creation, alteration and deletion of companies and user defined Accounting groups
2. Creation, alteration and deletion of ledgers and final accounts and Balance sheet Preparations.
3. F11: Company Features, F12: Configuration
4. Single Ledger Creation, Multi Ledger Creation
5. Altering and Displaying Ledgers
6. Group Creation, Single Group Creation, Multiple Group Creation
7. Displaying Groups an Ledgers
8. Creation of Stock Item, Go down
9. Trading and Profit and Loss Account, Balance sheet
10. Types of Assets and Liabilities included in a Balance Sheet

Teaching Methodology	Lab practical

Course Outcomes		
CO. No	**CO- Statement** On completion of this course, the students will be able to	**Cognitive Level (K- level)**
CO-1	Remembering the ability to create, alter, and delete a company in Tally. Understand the steps involved in selecting a company and shutting down a company.	**K1**
CO-2	Understanding to create, alter, and display single and multiple ledgers in Tally. Create and manage accounting groups, including primary and secondary groups.	**K2**
CO-3	Apply Tally to generate financial statements, including Trading and Profit and Loss Account and Balance Sheet	**K3**
CO-4	Analyzing advanced features of Tally for voucher entry, including handling entry problems in both double-entry and single-entry modes.	**K4**
CO-5	Evaluating Tally for managing various taxation aspects, including TDS, VAT, CST, Excise, and GST.	**K5**

Relationship Matrix

Semester	Course Code	Title of the Course	Hours	Credits
3	25UBC33OP1A	**Allied Optional Practical - 1:** Financial Accounting Packages – Tally Prime Basic (Lab)	3	2

Course Outcomes↓	Programme Outcomes (PO)					Programme Specific Outcomes (PSO)					Mean Scores of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO-1	2	3	3	3	2	2	2	3	3	2	2.5
CO-2	3	2	3	2	3	2	2	3	3	2	2.5
CO-3	1	3	2	1	3	2	1	2	2	3	2
CO-4	3	1	3	3	1	3	2	3	3	1	2.3
CO-5	1	3	2	1	3	2	3	2	3	2	2.2
									Mean Overall Score		2.3 High

Semester	Course Code	Title of the Course	Hours/ Week	Credits
3	25UBC33AO01B	**Allied Optional - 1:** Accounts - 1	(6)	(4)

Course objectives:
To facilitate the students to understand systematic and scientific methods of Book keeping
To provide the practical knowledge about the preparation of financial statements such as Income statements and balance sheet
To give practical understanding regarding the process of preparation of final accounts of non-trading organizations
To make the students to understand the concept of single-entry system of book keeping and its conversion into double entry system of book keeping
To offer clear insight about the process of rectification of errors and preparation of Banking reconciliation statement

UNIT – I Introduction of Financial Accounting (18 Hours)

Accounting- Different types – Financial accounting - Book Keeping –Meaning – objectives - Principles, Concepts and Conventions – Type of accounts – Golden rules of recording – Journal Subsidiary Books (purchase book, sales book, purchase return book, sale return book & Cash book –Ledger.

UNIT – II Accounts for Sole Trader (18 Hours)

Trial balance–Trading, Profit and Loss Accounts, Balance Sheet of Sole Trader (closing stock, outstanding expenses, prepaid expenses, income receivable, income received in advance, depreciation and provision for bad debts.

UNIT – III Accounts for non-trading concerns (18 Hours)

Accounts for non-trading concerns- Receipts and payment account Vs Income and Expenditure account- Preparation of Income and Expenditure Account from Receipts and Payment Accounts (simple adjustments).

UNIT – IV Single Entry System (18 Hours)

Single Entry System-Defects of single - entry system – Double entry system Vs single entry system – Calculation of profit/loss-net worth method conversion method

UNIT – V Rectification of Errors (18 Hours)

Errors –Classification- Rectification- Suspense Account- - Preparation of Bank Reconciliation Statement.

Teaching Methodology	Chalk & Talk, Videos, PPTs, Demonstration and Creation of Models
Assessment Method	Snap Test, Quiz, Open Book test

Theory 20% and Problems 80%

Books for Study

1. R.L. Gupta & M. Radhaswamy, "Financial Accounting", Sultan Chand & Sons, New Delhi (2017)

Books for Reference:

1. SP. Jain &K.L. Narang, "Advanced Accountancy", Volume I, Kalyani Publishers, New Delhi (2015)
2. Reddy TS and Murthy, Financial Accounting (2020), Margham Publications, Chennai (2020)

Websites and eLearning Sources:

1. https://www.coursera.org/learn/wharton-accounting
2. https://www.coursera.org/courses?query=financial%20accounting
3. https://onlinecourses.nptel.ac.in/noc23_mg65/preview

Course Outcomes		
CO No.	**CO – Statements**	**Cognitive Levels (K – Level)**
	On successful completion of this course, students will be able to	
CO1	Describe the accounting concepts, conventions and rules used in journalizing business transactions	**K1**
CO2	Prepare Trial Balance, Final Accounts and Bank Reconciliation Statement	**K2**
CO3	Calculate surplus / deficit of Non-Profit Organizations through Income and Expenditure Account	**K3**
CO4	Differentiate Single Entry from Double Entry system of accounting	**K4**
CO5	Classify and rectify errors by applying accounting rules	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours/Week**	**Credits**
3	**25UBC33AO01B**			**Allied Optional - 1:** Accounts - 1						**(6)**	**(4)**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	2	3	2	2	2	2	2	2	**2.2**
CO2	3	2	2	2	2	2	3	2	3	3	**2.4**
CO3	2	3	2	3	2	3	2	3	3	3	**2.6**
CO4	2	2	2	1	2	2	2	1	2	2	**1.8**
CO5	3	2	3	3	1	3	1	3	2	1	**2.2**
										Overall Mean Score	**2.2**
											High

Semester	Course Code	Title of the Course	Hours/Week	Credits
3	25UHE34VE03A	**Value Education - 3:** Social Ethics - 1	2	1

Course Objectives
To gain a comprehensive understanding of the principles advocated in social ethics.
To examine the different types of political systems in a thorough manner.
To comprehend the role and obligations of the educated youth.
To evaluate the conduct of the elected representatives in a detailed manner.
To thoughtfully analyze the various forms of cyber-crime.

UNIT I: Introduction to Social Ethics (6 Hours)

Social ethics, social ethics and social responsibility, social ethics play an important role on the areas, religion influences social changes and vice versa, secularism. Social ethics and corporate dynamics, forms of social ethics.

UNIT II: The Economic and Political System of Today (6 Hours)

Planned economy and communism - market economy and capitalism- socialism - mixed economy -the emerging market economy - political system- totalitarian system- oligarchic system.

UNIT III: Integrity in Public Life National Integration (6 Hours)

What is Integrity, Public Life, Integrity and Public Life, Integrity in a Democratic State, India as Democratic State, Behavior of a elected representative of India, Noticeable degradation acts of elected Representatives, Suggestions to stem this rot, Types of integrity, Transparency can be a guarantee for integrity.

UNIT IV: Cyber Crime (6 Hours)

Business Ethics, Business ethics permeates the whole organization, measuring business ethics, The Vital factors highlighting the importance of business ethics, Cyber-crime, Strategies in committing Cyber Crimes, Factors aiding Cyber Crime, computer Hacking, Cyber Bullying, Telecommunications piracy, Counter Measures to Cyber Crime, Ethical Hacking.

UNIT V: Social Integration (6 Hours)

Global challenges, the future is with the Educational Youth, Cost of the Sacrifice, Crusaders against corruption, Responsibility of the Educated Youth, Positive Global Scenario, right to Education, Eradicating gender inequality, Sustainable Human Development, Social Integration, Elimination Crime, Integration with Global Market

Teaching Methodology	Lecture, PPT, Power point
Assessment Methods	Online Test, Group Discussions

Books for Study:

1. Department of Human Excellence. (2021). *Formation of Youth*, St Joseph's College (Autonomous), Tiruchirappalli.

Books for Reference:

1. Arora, R.K. (2014). *Ethics, Integrity and Values*. Public Service Paperback.
2. Cunningham, D. (2004). *There's something happening here: The new left, the Klan, and FBI counterintelligence*. Berkeley: University of California Press.
3. Mali, P. (2017). *Cyber law & Cyber Crimes simplified*. Cyber Info Media Paperback.
4. Richardson, M. (2019). *Cyber Crime: Law and Practice Hardcover - Import*.

Websites and eLearning Sources:

1. https://cybercrime.gov.in/
2. https://open.lib.umn.edu/sociology/chapter/14-2-types-of-political-systems/
3. https://www.esv.org/resources/esv-global-study-bible/social-ethics/
4. https://en.wikipedia.org/wiki/Political_system

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K - Level)**
	On successful completion of this course, students will be able to	
CO1	Know the responsibility of the educated youth.	**K1**
CO2	Understand the values prescribed under social ethics.	**K2**
CO3	Apply their minds critically to the various types of cyber-crime.	**K3**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours/Week**		**Credits**
3	**25UHE34VE03A**		**Value Education - 3:** Social Ethics - 1						**2**		**1**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	3	3	3	2	3	2	2	3	3	**2.7**
CO2	3	2	2	2	3	2	2	3	2	2	**2.3**
CO3	2	3	3	3	2	3	3	3	3	3	**2.8**
										Mean Overall Score	**2.6 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
3	25UHE34VE03B	**Value Education - 3:** Religious Doctrine - 1	2	1

Course Objectives
To impart knowledge to students about Salvation History
To familiarize students with the life and mission of Jesus Christ
To help Students understand the Holy Spirit
To empower students on Gospel Values
To equip the students about Mother Mary

UNIT I **(6 Hours)**

God of salvation

UNIT **(6 Hours)**

Life & Mission of Jesus Christ

UNIT III **(6 Hours)**

The Holy Spirit

UNIT IV **(6 Hours)**

Gospel Values

UNIT V **(6 Hours)**

Mary, the mother of God

Teaching Methodology	Power point, Assignment and Group discussion
Assessment Methods	Online Test, Group Discussions

Books for Study:

1. Department of Human Excellence. (2022). *Fullness of Life.* St. Joseph's College, Tiruchirappalli.

Books for Reference:

1. (1994). *Compendium: Catechism of the Catholic Church.* Bengaluru: Theological Publications in India.
2. Holy Bible (NRSV).

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K - Level)**
	On successful completion of this course, students will be able to	
CO1	Understand the Salvation History	**K1**
CO2	Grasp to the life and purpose of Jesus Christ	**K2**
CO3	Live out the teachings of the Gospel	**K3**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours/Week**		**Credits**
3	**25UHE34VE03B**			**Value Education - 3:** Religious Doctrine - 1					**2**		**1**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	3	3	3	2	3	2	2	3	3	**2.7**
CO2	3	2	2	2	3	3	3	3	2	2	**2.5**
CO3	2	2	3	3	2	2	3	3	3	3	**2.6**
										Mean Overall Score	**2.6 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
3	25USS34SE01	**Skill Enhancement Course - 1:** Soft Skills	2	1

Course Objectives
To help students understand, practice, and improve their communication skills
To enable students with effective presentation skills
To help students attend interviews confidently and participate effectively in group discussions
To make students realise their potential and excel on personal as well as professional grounds
To develop the thinking skills of students for better performance in competitive exams, interviews and u discussions

UNIT I Communication Skills (6 Hours)

Basics of Communication: Importance of Good Communication Skills, Types of Communication Skills, Verbal Communication, Non-verbal Communication, Tips for Improving Nonverbal Communication, Communication Styles, Barriers to Communication, Ways To Improve Communication Skills, Practicum. *Professional Grooming*: How to Create the Impact for that First Impression, Presentation Skills, Developing Handouts, Developing Notes, Adding Visual and Audio Effects, Practicum

UNIT II Resume Writing & Interview Skills (6 Hours)

*Resume Writing***:** The Purpose of a Resume, Finding a Job & Making a Career, Length of Resume, Order of Resume, Tailoring the Resume, What your Resume should include, Some Tips for Listing a Bachelor's degree on Your Resume, What NOT to put on your Resume, Formatting Resume, Difference between Resume, Biodata and Curriculum Vitae, Preparation of a Resume *Interview Skills***:** Meaning of Interview, Types of Interviews, How to get ready for the big day?, Appropriate Attire, Etiquette, Mastering the Art of Meet and Greet, Resume - Points to Remember, Practicum *Group Discussion:* Why is GD Essential?, Factors that influence GD, Outcome of GD, Tips for participation in a GD, Useful phrases for GD, Success Tips in GD, Practicum.

UNIT III Personal Effectiveness (6 Hours)

Self-Discovery: Characteristics of Personality, Kinds of Self, Who am I?, Personality Inventory Table *Goal Setting*: Why do Goal Setting?, Goal Setting Process, Smart Goals

UNIT IV Numerical Ability (6 Hours)

Average, Simple Interest, Compound Interest, Profit and Loss, Area, Volume and Surface Area

UNIT V (6 Hours)

Verbal Reasoning: Series Completion, Analogy. *Non-Verbal Reasoning.*

Teaching Methodology	Chart, PPT, chalk and talk, Video Presentation

Books for Study:

1. Balaiah, J., & Joy, J. L. (2024). Straight from the Traits: Securing Soft Skills, (Revised 3rd Ed.). St. Joseph's College, Tiruchirappalli.

Books for Reference:

1. Aggarwal, R.S. (2010). A Modern Approach to Verbal and Non-Verbal Reasoning, S. Chand.
2. Balaiah, J. & Joy, J. L. (2018). Winners in the Making: A primer on soft skills. St. Joseph's College, Tiruchirappalli.
3. Covey S. R. (2004). The 7 Habits of Highly Effective People: Restoring the Character Ethic (Rev. ed.). Free Press.
4. Egan, G. (1994). The Skilled Helper (5th Ed.). Pacific Grove, Brooks/Cole.
5. Khera, S. (2014). You Can Win. Macmillan Books.
6. Martin, Y. (2005). Hiring the Best: A Manager 's Guide to Effective Interviewing and Recruiting, (5th Ed.). Adams Media.
7. Sankaran, K., & Kumar, M. (2010). Group Discussion and Public Speaking, (5th Ed.). M.I. Publishers.
8. Trishna. (2012). How to do well in GDS & Interviews, (3rd Ed.). Pearson Education.

Websites and eLearning Sources:

1. https://www.indeed.com/career-advice/resumes-cover-letters/communication-skills
2. https://www.seek.com.au/career-advice/article/50-communication-skills-for-the-workplace-your-resume
3. https://southeast.iu.edu/career/files/power-phrases.pdf
4. https://dese.ade.arkansas.gov/Files/20201209124449_Professional-Communication.docx
5. https://www.dol.gov/sites/dolgov/files/ETA/publications/00-wes.pdf
6. https://www.tmu.ac.in/other_websites/cdoe.tmu.ac.in.old/study-material/28-08-2024/COMMON/SEMESTER_2/MAIN_SOFT_SKILLS.pdf
7. https://byjus.com/maths/profit-and-loss-questions/
8. https://www.indiabix.com/

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Analyse problems directed at testing their cognitive abilities	**K1**
CO2	Present the best of themselves as job seekers and communicate effectively in all contexts	**K2**
CO3	Assess themselves, set goals, and manage conflicts that are expected of a good leader	**K3**
CO4	Enhance numerical ability required for the employees for various transactions	**K4**
CO5	Develop aptitude skills required by the employers	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
3	**25USS34SE01**			**Skill Enhancement Course - 1:** Soft Skills						**2**	**1**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	3	3	2	2	2	2	3	2	3	2.5
CO2	2	3	3	2	3	3	2	3	2	2	2.5
CO3	2	2	3	3	2	3	3	3	2	2	2.5
CO4	2	2	3	3	2	3	3	3	2	2	2.5
CO5	2	2	3	3	2	3	3	3	2	2	2.5
Mean Overall Score											**2.5 (High)**

Semester	Course Code	Title of the Course	Hours	Credits
4	25UTA41GL04B	General Tamil – 4: அறிவியல் தமிழ் (Scientific Tamil)	4	3

கற்றலின் நோக்கங்கள் (Course Objectives)
அன்றாட வாழ்வில் அறிவியலின் செல்வாக்கை அறிந்துகொள்ளுதல்
பண்டைத்தமிழர் வாழ்வில் இடம்பெற்ற அறிவியல்கூறுகளைக் கண்டறிதல்
திரைப்படம், நூல் போன்றவற்றைத் திறனாய்வு நோக்கில் ஆராய்தல்
தமிழர்தம் பண்பாடும் அறிவியலும் கொண்ட தொடர்பைப் புலப்படுத்துதல்
படைப்பாற்றல் திறனைக் கண்டறிந்து அறிவியல் படைப்புகளை உருவாக்கல்

அலகு - 1 **(12 மணி நேரம்)**

கணிதவியல்: பார்ப்பார்க்கு அல்லது பணிபு அறியலையே(பதிற்றுப்பத்து : 63) - விசும்பில் ஊழி - ஊழ்-ஊழ் செல்லக் (பரிபாடல் : திருமால் : 4-15) - கண்ணுங்கால் கண்ணும் கணிதமே (சிறுபஞ்சமூலம் :92) - உண்ணாது வைக்கும் பெரும்பொருள் (இன்னா நாற்பது -16)

உயிரியல்: தொல்காப்பியம் : மரபியல் : (27-33) - சிறுவீ ஞாழல் (நற்றிணை 195) - நீடுவெயில் உழந்த (அகநானூறு 335) - வள் இதழ் ஒண் செங்காந்தள் (குறிஞ்சிப்பாட்டு 61-98) -வாள்வரி வயமான் (அகநானூறு 99) -புல்லாகிப் பூடாய்ப் புழுவாய் மரமாகிப் (திருவாசகம்- சிவபுராணம் 26-32

உரைநடைக்கட்டுரை: வியக்க வைக்கும் தமிழரின் அறிவியல்

பயன்முறை கற்றல்: வலைப்பூக்கள் உருவாக்கம்- அறிவியல்கலைச்சொல்லாக்கம்

அலகு - 2 **(12 மணி நேரம்)**

நீரியல்: அம்ம வாழி தோழி (குறுந்தொகை 287) -அம்ம வாழி, தோழி கைம்மிக (அகம் 141: 1-11) -முழங்கு முந்நீர் முழுவதும் வளைஇப் (புறநானூறு-18) -வீங்கு விளிம்பு உரீஇய விசை அமை நோன் சிலை (அகநானூறு-175) -விசும்பு ஆடு பறவை வீழ் பதிப் படர (குறிஞ்சிப்பாட்டு 46-53)- **திருக்குறள்** வான்சிறப்பு - **பதார்த்த சிந்தாமணி :** குளத்து சலந்தானே கொடிதான (27) - ஏரிசலம் வாதமிகு மதுவே (31) -அருவிநீர் மேக மகற்நுங் (39)

ஆழிப்பேரலை: வாழ்க எம் கோ மன்னவர் (சிலப்பதிகாரம் -காடுகாண் காதை15-22)- தீங்கனி நாவல் ஓங்கும்இத் தீவிடை (மணிமேகலை-பீடிகை கண்டு பிறப்புணரந்த காதை (17-22)

உரைநடைக்கட்டுரை: தமிழர்களின் மருத்துவ அறிவியல்

புதினம்: இரா.நடராசன் : சர்க்கஸ்.காம்

அலகு - 3 **(12 மணி நேரம்)**

உலகியல்: நிலம் தீ நீர் வளி விசும்போடு (தொல்.பொருள் 635) - நிலம் நீர் வளி விசும்பு என்ற நான்கின் (பதிற்று 14:1-4) - மண் திணித்த நிலனும் (புறம் 2 1-6)

வானியல்: செஞ்ஞா யிற்றுச் செலவும் (புறம் 30 1-7) - ஆடு இயல் அழல் குட்டத்து புறநானூறு (229) - நெடுவயின் ஒளிறு மின்னுப் பரந்தாங்கு (பதிற்று 24:1-26)

உரைநடைக்கட்டுரை: தமிழ் இலக்கியங்களில் வெளிப்படும் நீர் மேலாண்மையியல்

பயன்முறை கற்றல்: நூல் – திறனாய்வு

அலகு - 4 **(12 மணி நேரம்)**

மருத்துவம்: திருக்குறள்: மருந்து - இரும்பனம் புடையல் ஈகை வான்கழல் (பதிற்றுப்பத்து -42) – ஏற்றி இறக்கி இருகாலும் பூரிக்கும் – (திருமந்திரம் 571) - இல்லையே வாதம் எழில்நடை கோழியாம் (கர்ப்ப வாகடத் திரட்டு-23)

அணு இயற்பியல்: மணிமேகலை : சமயக் கணக்கர் தந்திறங் கேட்ட காதை (105-165) - மேவிய சீவன் வடிவது சொல்லிடில் (திருமந்திரம் –ஏழாம் தந்திரம் 29:1) - அணுவில் அணுவினை ஆதிபிரானை (திருமந்திரம் –ஏழாம் தந்திரம் 28:2) - அண்டப் பகுதியின் உண்டைப் பிறக்கம் (திருவாசகம்- திருவண்டப் பகுதி 106) - அண்டங்கள் எல்லாம் அணுவாக (திருவிளையாடல் புராணம் –அணுவியல் (பாயிரம்-6) - செகத்தையெல்லாம் அணுவளவுஞ் சிதறா வண்ணஞ் (தாயுமானவர் – தந்தை தாய் 6)

உரைநடைக்கட்டுரை: தமிழில் அறிவியல் புனைவுகள்

பயன்முறை கற்றல்: திரைப்படத் திறனாய்வு- ஆவணப் படத்திறனாய்வு

அலகு - 5 **(12 மணி நேரம்)**

கட்டடவியல்: வானம் ஊன்றிய மதலை போல (பெரும்பாண் : 346-351) - விரி கதிர் பரப்பிய வியல் வாய் மண்டிலம் (நெடுநல்வாடை 72-88) - காடுகொன்று நாடாக்கி (பட்டினப்பாலை 283-288) - பெருக்காறு சடைக்கணிந்த பெருமான் சேரும் (தேவாரம் 2801)

பகுத்தறிவியல்: ஓசை உள்ள கல்லை (சிவவாக்கியர் -412)- நட்டகல்லைத் தெய்வமென்று (சிவவாக்கியர்-482)

உரைநடைக்கட்டுரை: அறிவியல் தமிழின் வளர்ச்சி நிலைகள்;

பயன்முறை கற்றல்: பழமொழிகளில் அறிவியல், மூலிகைகளைக் கண்டறிதல்

கற்பித்தல் அணுகுமுறை *(Teaching Methodology)*	விரிவுரை ***(Lecture),*** காணொளிக் காட்சி ***(Videos),*** விளக்கக் காட்சி ***(PPT presentation)***
மதிப்பீட்டு முறைகள் *(Assesment methods)*	வலைப்பூ உருவாக்கம், திரைப்படத் திறனாய்வு, மூலிகை சேகரிப்பு, நூல் திறனாய்வு

பாட நூல்கள்:

1. தமிழாய்வுத்துறை (2025), அறிவியல் தமிழ், தூய வளனார் தன்னாட்சிக் கல்லூரி
2. இரா.நடராசன்; (2010), சர்க்கஸ்.காம், Books for Children
3. மூர்த்தி அ.கி. (2001), அறிவியல் கலைச்சொல் அகராதி, மணிவாசகர் பதிப்பகம்.

பார்வை நூல்கள்:

1. அரிமாப்பாமகன். ஆ (2017), சங்க இலக்கியத்தில் சூழலியல், இராசகுணா பதிப்பகம்
2. குழந்தைசாமி. வா. செ., (2001), அறிவியல்தமிழ், பாரதி பதிப்பகம்

Websites and eLearning Sources:

- https://www.tamilcomputingjournal.org/?page_id=2622
- https://archive.org/details/dli.jZY9lup2kZl6TuXGlZQdjZl3lMyv
- https://thamizhiyal.com/?p=2775
- https://www.valaitamil.com/jan-month-Article_19160.html

Course Outcomes

CO No	***CO–Statements*** **இப்பாடத்தின் நிறைவில் மாணவர்கள்**	***Cognitive Levels (K –Levels)***
CO -1	அன்றாட வாழ்வில் அறிவியலின் செல்வாக்கை அறிந்துகொள்வர்	***K1***
CO -2	பண்டைத்தமிழர் வாழ்வில் இடம்பெற்ற அறிவியல்கூறுகளைக் கண்டறிவர்	***K2***
CO -3	திரைப்படம், நூல் போன்றவற்றைத் திறனாய்வு நோக்கில் ஆராய்வர்	***K3***
CO -4	தமிழர்தம் பண்பாடும் அறிவியலும் கொண்ட தொடர்பைப் புலப்படுத்துவர்	***K4***
CO -5	படைப்பாற்றல் திறனைக் கண்டறிந்து அறிவியல் படைப்புகளை உருவாக்கும் திறன் பெறுவர்	***K5***

Relationship Matrix											
Semester	***Course Code***			***Title of the Course***						***Hours***	***Credits***
4	***25UTA41GL04B***			*General Tamil – 4: அறிவியல் தமிழ் (Scientific Tamil)*						***4***	***3***
Course Outcomes↓	***Programme Outcomes (PO)***					***Programme Specific Outcomes (PSO)***					***Mean Scores of COs***
	PO-1	***PO-2***	***PO-3***	***PO-4***	***PO-5***	***PSO-1***	***PSO-2***	***PSO-3***	***PSO-4***	***PSO-5***	
CO-1	*3*	*2*	*3*	*2*	*2*	*3*	*3*	*2*	*2*	*2*	*2.4*
CO-2	*2*	*3*	*3*	*2*	*3*	*2*	*3*	*2*	*3*	*2*	*2.5*
CO-3	*3*	*2*	*2*	*3*	*3*	*3*	*2*	*3*	*3*	*3*	*2.7*
CO-4	*2*	*3*	*3*	*2*	*2*	*3*	*2*	*3*	*3*	*2*	*2.5*
CO-5	*3*	*1*	*2*	*3*	*2*	*2*	*3*	*2*	*3*	*3*	*2.4*
										Mean Overall Score	***2.5 (High)***

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	25UFR41GL04	Language French – 4	4	3

Course Objectives
Express preferences and opinions with precision using quantity expressions, and pronouns to convey satisfaction or dissatisfaction.
Describe Health Conditions and provide medical advice using appropriate grammatical structures to engage in meaningful discussions
Communicate Effectively in Social and Professional Settings by expressing desires and requests and using polite expressions
Exchange Travel Information and construct well-structured narratives to recount journeys
Enhance communication through structured language with contextually appropriate statements across various topics

UNIT – I **(12 Hours)**

1. Titre - En cuisine
2. Lexique – les aliments, la restauration, les goûts et les sensations
3. Grammaire – les quantités et le pronom ‘en’, la restriction ‘ne…que’, l’obligation
4. Production orale- communiquer au restaurant
5. Production écrite - exprimer sa satisfaction et son insatisfaction

UNIT – II **(12 Hours)**

6. Titre - A votre sante
7. Lexique – les corps et la sante, la médecine et les urgences
8. Grammaire – les pronoms COD et COI, le superlatif, les pronoms interrogatifs
9. Production orale- parler des problèmes de santé
10. Production écrite - Donner un conseil pour une condition médicale

UNIT – III **(12 Hours)**

11. Titre - Dans les médias
12. Lexique – les médias audios et les réseaux sociaux
13. Grammaire – la cause et la conséquence, le subjonctif, la place des pronoms
14. Production orale- exprimer son intérêt et sa préférence
15. Production écrite - faire une critique positive et négative

UNIT – IV **(12 Hours)**

16. Titre - Consommer responsable
17. Lexique – la consommation, les catégories de produits, le travail manuel
18. Grammaire – le conditionnel présent – formation et emploi, le gérondif
19. Production orale- demander et proposer un service
20. Production écrite - exprimer un souhait ou un désir

UNIT – V **(12 Hours)**

1. Titre - Envies d’ailleurs
2. Lexique – le voyage, l’hébergement, le séjour, le tourisme
3. Grammaire – le passé composé et l’imparfait dans le récit, les pronoms démonstratifs
4. Production orale- demander des renseignements sur un voyage
5. Production écrite - parler d’une visite touristique
6. Indian knowledge system - Writing travel narratives based on ancient Indian pilgrimage sites and comparing with French monuments. Using French quantity expressions and pronouns to describe Ayurvedic food portions and dietary balance and offering Ayurvedic-based medical advice**.** (5%)

Teaching Methodology	L'approche communicative (Communicative Language Teaching -CLT), Genre-Based Approach, Experimental learning, Flipped Classroom Approach
Assessment Methods	*Role-Play:* Restaurant Experience: waiter and customer ordering food and expressing opinions on the meal. (Rubric – graded on usage of expressions related to food and grammatical accuracy) *Written assessment:* Write a short critique of a social media platform, movie, or advertisement. (Rubric – assessed on ability to express opinions and logical argumentation) *Travel Blog or Postcard Writing:* Write a blog post or postcard describing a recent travel experience, using descriptive language (Rubric – assessed on structured narrative writing in a travel context and usage of past tenses) *Group Debate:* Media & Society: Debate the impact of social media on education. (Rubric – graded on critical thinking, Argument clarity and participation

Books for Study:

1. Fafa, C., Gajdosova, F., Horquin, A., Pasquet, A., Perrard, M., Petitmengin, V., Sperandio, C., Dodin, M., &Veldeman-Abry, J. (2022). *Édito A2: Méthode de français* (2nd ed.). Didier FLE, Hatier. (p.83 – p.152)

Books for Reference:

1. Dauda, P., Giachino, L., & Baracco, C. (2016). *Génération A2*. Didier.
2. Girardet, J., &Pecheur, J. (2017). *Écho A2* (2nd ed.). CLE International

Websites and eLearning Sources:

1. https://cuisine-facile.com/
2. https://www.france.fr/en/
3. https://www.sncf-connect.com/
4. https://www.routard.com/
5. https://sante.lefigaro.fr/

Course Outcomes		
CO No.	**CO–Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K –Levels)**
CO1	Apply vocabulary related to food by using quantity expressions and pronoun to communicate satisfaction or dissatisfaction in oral and written contexts.	**K1**
CO2	Identify and describe health conditions, construct superlative forms, and formulate medical advice using appropriate grammatical structures.	**K2**
CO3	Express opinions, preferences, and critiques about various media platforms, apply cause-and-consequence structures	**K3**
CO4	Utilize vocabulary related to consumption, express desires and requests effectively in professional and social interactions.	**K4**
CO5	Request and provide travel-related information and describe tourist experiences using demonstrative pronouns and structured narratives.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
4	**25UFR41GL04**			Language French – 4					**4**		**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of Cos**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	1	2	2	1	3	2	1	2	2	1.8
CO2	2	2	2	3	1	2	2	2	2	2	2.0
CO3	2	3	2	3	3	2	2	3	1	1	2.2
CO4	3	3	3	2	3	3	1	2	2	2	2.4
CO5	3	2	2	3	2	2	2	1	1	2	2.0
Mean Overall Score											**2.08 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	**25UHI41GL04**	Language Hindi - 4	**4**	**3**

Course Objectives
To strengthen the language competence among the students
To equip students with cinematic perspective by comparative studies of Hindi literature
To enable the students to develop their effective communicative skills in Hindi
To strengthen the language competence among the students
To incept research-oriented aspirations among students

UNIT I **(12 Hours)**

1. Prathyay
2. Char Bhai
3. Adhunik Kaal - Introduction
4. Adhunik Kal – Namakarn

UNIT II **(12 Hours)**

5. Chitra Varnan (Advanced)
6. Paryayvachy Shabdh
7. Bathcheeth - Hotel mein
8. Adhunik Kal - Samajik Paristhithiyam

UNIT III **(12 Hours)**

9. Upasarg
10. Thulsi ke Dhoe
11. Apathit Gadyansh
12. Adhunik Kal – Sahithyakar

UNIT IV **(12 Hours)**

13. Review- Book/Film
14. Paryavaran Pradookshan
15. Adhunik Kal - Main Divisions
16. Anuvad

UNIT V **(12 Hours)**

17. Kaal
18. Patra-Patrikao mein Prakashit Gadyansho ka Patan (Advanced)
19. Sapnom Kee Home Delivery (Novel)
20. Adhunik Kal - Visheshathayem

Teaching Methodology	Debate Participation, Videos, PPT, Quiz, Project Work
Assessment Methods	Quiz, Snap Test, Group Discussion

Books for Study:

1. Dr. Sadananth Bosalae. (2022). *kavya sarang*. Rajkamal Prakashan.
2. Kamathaprasad Gupth, M. (2021). *Hindi Vyakaran*. Anand Prakashan.
3. Dr. Sanjeev Kumar Jain. (2022). *Anuwad: Siddhant Evam Vyavhar*. Kailash Pustak Sadan.

Books for Reference:

1. Rajeswar Prasad Chaturvedi. (2021). *Hindi vyakarana*. Upakar Prakashan.
2. Ramdev. (2021). *Vyakaran Pradeep*. Hindi Bhavan.
3. Krishnakumar Gosamy. (2023). *Anuvad vigyan ki Bhumika*. Rajkamal Prakashan.
4. Acharya Ramchandra Shukla. (2021). *Hindi Sahitya Ka Itihas*, Prabhat Prakashan.
5. Mamta Kaliya. (2022). *Sapno Ki Home Delivery*. Lokbharti Prakashan.

Websites and eLearning Sources:

1. https://youtu.be/xmr-DaQ3LhA

2. https://mycoaching.in/adhunik-kaal
3. https://m.sahityakunj.net/entries/view/bhartiya-sahitya-mein-anuvad-kee-bhoomika
4. https://mycoaching.in/upsarg-in-hindi
5. https://kalingaliteraryfestival.com/speakers/mamta-kalia/

Course Outcomes		
CO No.	**CO–Statements** On successful completion of the course, the student will acquire the listed skills.	**Cognitive Levels (K –Levels)**
CO1	List out the social conditions prevailed in Modern Period which are depicted in Hindi Literature.	**K1**
CO2	Discuss the dialects of Hindi language.	**K2**
CO3	Illustrate the works of some eminent Hindi Writers related to society.	**K3**
CO4	Evaluate the film & Literary works in Hindi.	**K4**
CO5	Analyze the human values expressed in life and literature of Hindi Novelist "Mamatha Kaliya".	**K5**

Relationship Matrix											
Semester	**Course code**			**Title of the Course**					**Hours / week**		**Credits**
4	**25UHI41GL04**			Language Hindi – 4					**4**		**3**
Course Outcomes (COs)	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of Cos**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	3	2	3	3	2	3	2	3	1	2.4
CO2	3	2	3	3	2	3	2	3	1	2	2.4
CO3	3	2	2	3	2	2	1	3	2	3	2.3
CO4	3	2	3	1	3	3	2	3	3	2	2.5
CO5	3	2	2	3	3	2	3	2	3	3	2.6
										Mean Overall Score	**2.44 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	**25USA41GL04**	Language Sanskrit - 4	**4**	**3**

Course Objectives
To give an exposure to Sanskrit drama in general
To showcase the structure of pre-kalidasan plays in Sanskrit
To coach students in Sanskrit morphology
To acquaint students with the structures of Sanskrit syntax
To impart communicative skills in Sanskrit by training in the functional aspects of the language

UNIT I **(12 Hours)**

Samskrita Vyavahara sahasri vakiya Prayogaha

UNIT II **(12 Hours)**

Lot Lakaarah, Prayaogh Kartari Vaakyaani

UNIT III **(12 Hours)**

Naatakasya Itihaasah Vivaranam, Thuva and Tum Suffixs

UNIT IV **(12 Hours)**

Karnabhaaram, Naatakasya Visistyam

UNIT V **(12 Hours)**

Samskrita Racanani Vubhavoga

Teaching Methodology	Videos, PPT, Blackboard, Demonstration, Exercises
Assessment Methods	Seminar, Quiz, Group Discussion.

Books for Study:

1. Karnabhavam & Literature Language
2. Dhaatu Manjari
3. Samskrita Vyavahara Sahasri (A Collection of One Thousand Sentances),Samskrita Bharati, Delhi,2021

Books for Reference:

1. R. S. Vadhyar & Sons, Book – sellers and publishers, Kalpathu, Palghat – 678 003, Kerala, south India, History of Sanskrit Literature 2021
2. Kulapathy, K.M Saral Sanskrit Balabodh, Bharathita vidya bhavan, Munshimarg Mumbai – 400 007 2020
3. Samskrita Bharathi, Aksharam 8 th cross, 2nd phase Giri nagar Bangalore Vadatu sanskritam – Samaskara Binduhu 2021

Websites and eLearning Sources:

1. https://sanskritdocuments.org/doc_z_misc_major_works/daily.pdf
2. https://www.learnsanskrit.org/guide/verbs-1/karmani-and-bhave-prayoga/
3. https://ia902903.us.archive.org/7/items/in.ernet.dli.2015.102820/2015.102820.The-Sanskrit-Drama-In-Its-Origin-Development-Theory-And-Practice.pdf
4. https://archive.org/details/oafI_karna-bharam-karnas-burden-of-bhasa-with-dr.-sudhakar-malaviya-gokuldas-sanskrit
5. https://sanskritwisdom.com/composition/essays/sanskrit-language/

Course Outcomes		
CO No.	**CO–Statements**	**Cognitive Levels (K –Levels)**
	On successful completion of this course, students will be able to	
CO1	Understand human behaviors by studying dramas	**K1**
CO2	Remember and identifying Mahabharata characters and events	**K2**
CO3	Apply the morals learnt in day-to-day life	**K2**
CO4	Appreciate ancient Sanskrit dramas	**K3**
CO5	Create new conversational sentences and to Improve self-character (Personality Development)	**K4**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
4	**25USA41GL04**			Language Sanskrit - 4						**4**	**3**
Course Outcomes	**Programme Outcomes (PO)**					**Programme Specific Outcomes (PSO)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	2	2	2	3	3	3	3	3	2	2.4
CO2	2	2	3	3	2	3	2	3	3	2	2.5
CO3	3	3	2	3	2	1	1	3	3	3	2.4
CO4	2	2	3	2	3	3	3	3	2	3	2.6
CO5	2	3	3	3	2	1	3	3	3	2	2.5
Mean Overall Score											**2.48 (High)**

Semester	Course Code	Title of the Course	Hours/ Weeks	Credits
4	25UEN42GE04B	**General English - 4:** English for Science - 2	5	3

Course Objectives
To expand vocabulary by learning and using context-specific words.
To improve writing through practice in reports, reviews, and social media posts.
To master grammar by focusing on question tags and subject-verb agreement.
To enhance speaking skills through debates and discussions.
To appreciate literature and science to boost creative thinking.

UNIT I: Simple Ways to Explore Nature **(15 Hours)**

1. "Marie Curie Biographical" Taken from The Nobel Prize
2. Vocabulary in Context: Radioactive Elements
3. Writing: Media Reports
4. Speaking: Expansion of a Proverb
5. Grammar: Question Tag

UNIT II: The Limits of Human Knowledge **(15 Hours)**

1. "The Marry Month of May" by O. Henry
2. Vocabulary in Context: Seasonal Words
3. Writing: Book or Film Review
4. Speaking: Debate
5. Grammar: WH Questions

UNIT III: Difference Between Original and Copy **(15 Hours)**

1. "The story of Dolly the sheep" taken from Natural World, Science and Technology, Scotland
2. Vocabulary in Context: Cloning Words
3. Writing: E-mail Etiquette
4. Speaking: Group Discussion
5. Grammar: Yes or No Questions

UNIT IV: The Other Worlds **(15 Hours)**

1. "The Star" by Arthur C. Clarke
2. Vocabulary in Context: Astronomical Words
3. Writing: Writing for Social Media (Blogs, Twitter, Instagram and Facebook)
4. Speaking: Story Telling
5. Grammar: Conditional Sentences

UNIT V: Scientific Temparament **(15 Hours)**

1. "The Particle Dance" by Emily Dickinson
2. Vocabulary in Context: Scientific Instruments
3. Writing: Creating Digital Profile
4. Speaking: Spin a Yarn
5. Grammar: Subject Verb Agreement

* Speaking Components are meant only for internal tests

Teaching Methodology	Lecture, Multimedia Presentations, Discussion and Enacting
Assessment Tools	Speaking, reading, listening and written tests

Books for Study:

1. Francis, V., Dr. D.R. Edwin Christy and Dr. D. Loyola Innaci. *Lingua Science – II,* St. Joseph's College (Autonomous), Tiruchirappalli.

Books for Reference:

1. Wilfred, D. Best. *Students Companion*. Harper Collins Publishers, 2020.
2. Dickinson, Emily. *The Complete Poems of Emily Dickinson*, Back Bay Books, 1973.

Websites and eLearning Sources:

1. https://www.nobelprize.org/prizes/physics/1903/marie-curie/biographical/
2. https://www.gutenberg.org/files/59637/59637-h/59637-h.htm
3. https://www.nms.ac.uk/discover-catalogue/the-story-of-dolly-the-sheep
4. https://sites.uni.edu/morgans/astro/course/TheStar.pdf
5. https://poemverse.org/short-poems-about-science/

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, students will be able to	
CO1	Identify and comprehend the local and global issues through the lessons	**K1, K2**
CO2	Use interactive skills	**K3**
CO3	Develop the Listening and Reading Skills of the learners through teacher-led reading practice	**K6**
CO4	Improve their General Writing Skills such as Note-Taking, Note- Making Précis Writing, Paragraph Writing, and Writing Short Essays on Current	**K6**
CO5	Develop their Creative and Critical Thinking and Speaking Skills	**K6**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
4	**25UEN42GE04B**			**General English - 4:** English for Science - 2						**5**	**3**
Course Outcome (COs)	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO 1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	3	2	2	3	2	3	2	3	2	2.4
CO2	2	2	3	2	3	3	2	3	2	2	2.3
CO3	2	3	2	3	2	2	3	2	3	2	2.4
CO4	2	2	3	2	3	3	2	3	2	3	2.5
CO5	2	2	2	3	2	2	2	3	2	2	2.2
										Mean Overall Score	**2.36 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	25UBC43CC07	**Core Course - 7**: Python Programming	4	3

Course Objectives
To provide a comprehensive knowledge on the basics of pythons
To understand the concepts of lists, tuples and dictionaries
To provide better understanding of the NumPy, arrays and its operations.
To gain knowledge on pandas and data structures
To visualize the data using matplotlib

UNIT I **(12 Hours)**

Basics of Python Programming: History of Python, Features of Python, Literal, Constants Variables, Identifiers, Keywords, Built-in Data Types, Output Statements, Input Statements, Comments Indentation, Operators, Expressions, Type conversions. Control Statements: Selection/Conditional Branching statements: if, if else, nested if and if-el if-else statements. Iterative Statements: while loop, for loop, else suite in loop and nested loops. Jump Statements: break, continue and pass statements.

UNIT II **(12 Hours)**

Lists: Creating a list - Access values in List-Updating values in Lists - Nested lists Basic list operations List Methods. Tuples: Creating, Accessing, Updating and Deleting Elements in a tuple-Nested tuples Difference between lists and tuples. Dictionaries: Creating, Accessing, Updating and Deleting Elements in a Dictionary-Dictionary Functions and Methods Difference between Lists and Dictionaries.

UNIT III **(12 Hours)**

The NumPy Library: NumPy: A Little History, The NumPy Installation, Ndarray: The Heart of the Library, Basic Operations, Indexing, Slicing, and Iterating, Conditions and Boolean Arrays, Shape Manipulation, Array Manipulation**,** General Concepts, Reading and writing array data on files,

UNIT IV **(12 Hours)**

The pandas Library-An Introduction: Getting Started with pandas, Introduction to pandas Data Structures, Other Functionalities on Indexes, Operations Between Data Structures, Function Application and Mapping, Sorting and Ranking, Correlation and Covariance, "Not a Number" Data, Hierarchical Indexing and Levelling.

UNIT V **(12 Hours)**

Data Visualization with matplotlib: The matplotlib Library, Installation, The IPython and IPython QtConsole, The matplotlib Architecture, pyplot, The Plotting Window, Using the kwargs, Adding Elements to the Chart, Line Charts, Histograms, Bar Charts, Pie Charts.

Teaching Methodology	PPT, chalk and talk
Assessment Methods	Assignment, Test, MCQ, Seminar

Books for Study:

1. Fabio Nelli, (2018). *Python Data Analytics,* (2nd Ed.). Apress.
2. Thareja, R. (2017). Python Programming using problem solving approach, (1st Ed.). Oxford University Press.
3. Rao, R. N. (2017). Core Python Programming, (1st Ed.). Dreamtech Publishers.

Books for Reference:

1. Udayan Das and Chris Mayfield. (2024). Introduction to Python Programming, (1st Ed.). OpenStax.
2. Rupesh Nasre. (2022). Python Programming, (1st Ed.). AICTE.
3. Mark Lutz. (2009). Learning Python, (4th Ed.). O'Reilly Media, Inc.

Websites and eLearning Sources:

1. https://content.e-bookshelf.de/media/reading/L-11712880-31262f3fd2.pdf

2. https://www.academia.edu/41650571/Python_Data_Analytics_Data_Analysis_and_Scien c e_Using_Pandas_matplotlib_and_the_Python_Programming_Language
3. https://www.halvorsen.blog/documents/programming/python/resources/Python%20Progr a mming.pdf
4. https://assets.openstax.org/oscms-prodcms/media/documents/Introduction_to_Python_Programming_-_WEB.pdf
5. https://zealpolytechnic.com/wp-content/uploads/2023/04/04_Book_-Python- Programming.pdf

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Recall the basic programs and control statements in python	**K1**
CO2	Summarize on lists, tuples and dictionaries	**K2**
CO3	Demonstrate the purpose of NumPy and arrays	**K3**
CO4	Identify the usage of pandas libraries	**K4**
CO5	Apply matplotlib to visualize the data	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**							**Hours**	**Credits**
4	**25UBC43CC07**		**Core Course - 7:** Python Programming							**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	2	**2.4**
CO2	2	3	2	3	2	3	2	3	2	2	**2.4**
CO3	2	2	3	2	1	3	3	2	3	3	**2.4**
CO4	3	3	2	3	2	3	3	2	3	2	**2.6**
CO5	2	2	3	2	3	3	2	3	2	3	**2.5**
										Mean Overall Score	**2.46 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	25UBC43CC08	**Core Course – 8:** Software Engineering (Internship Embedded Course)	4	3

Course Objectives
To provide the idea of decomposing the given problem into Analysis, Design, Implementation, Testing and Maintenance phases.
To provide an idea of using various process models in the software industry according to given circumstances.
To gain the knowledge of how Analysis, Design, Implementation, Testing and Maintenance processes are conducted in a software project.
To demonstrate the ability to work effectively as a team member and/or leader in an ever-changing professional environment
To progress through advanced degree or certificate programs in computing, science, engineering, business, and other professionally related fields.

UNIT I **(12 Hours)**

Software Engineering: Defining the Discipline, The Software process, Software Engineering Practice, Software Development Myths. Software Process Structure: A Generic Process Model, defining a Framework Activity, Identifying a Task Set, Process Patterns, Process Assessment and Improvement. Process Models: Prescriptive Process Models, Specialized Process Models.

UNIT II **(12 Hours)**

Understanding Requirements: Requirement Engineering, Establishing the Groundwork, Eliciting Requirements, Developing Use cases, Building the Analysis Model, Negotiating Requirements, Requirements Monitoring, Validating Requirements, Avoiding Common Mistakes.

UNIT III **(12 Hours)**

Design Concepts: Design within the context of Software Engineering, The Design Process, Design Concepts, The Design Model. Architectural Design: Software Architecture, Architectural Genres, Architectural Styles, Architectural considerations.

UNIT IV **(12 Hours)**

User Interface Design: The Golden Rules, User Interface Analysis and Design, Interface Analysis, Interface Design Steps, Web App and Mobile Interface Design, Design Evaluation. Quality Concepts: Software Quality, The Software Quality Dilemma, Achieving Software Quality.

UNIT V **(12 Hours)**

Software Testing Strategies: A Strategic Approach to Software Testing, Validation Testing, System Testing, The Art of Debugging. Maintenance and Reengineering: Software Maintenance, Software supportability, Software Reengineering, Reverse reengineering, Restructuring.

Teaching Methodology	Videos, PPT, chalk and talk
Assessment Methods	Quiz, Test, Seminar and Assignment

Books for Study:

1. Roger, R. S., & Maxim, B. R. (2019), *Software Engineering - A Practitioner's Approach.* (8th Ed.). McGraw-Hill.

Books for Reference:

1. Mall, R. (2018), *Fundamentals of Software Engineering.* (5th Ed.). Prentice Hall of India Private Limited.
2. Halt, T. (2016), *Software Engineering: Principles and Applications.* (10th Ed.). Research Press.
3. Sommerville, I. (2017), *Software Engineering*. (10th Ed.). Pearson.

Websites and eLearning Sources:

1. https://intranetssn.github.io/www.ssn.net/twiki/pub/CseIntranet/CseBCS6403/PressmanBook.pdf
2. https://dn790001.ca.archive.org/0/items/bme-vik-konyvek/Software Engineering - Ian Sommerville.pdf
3. https://api.pageplace.de/preview/DT0400.9781292096148_A26661611/preview-9781292096148_A26661611.pdf

	Course Objectives	
CO No.	**CO Statements**	**Cognitive Levels (K - Level)**
	On successful completion of this course, students will be able to	
CO1	Provide the idea of decomposing the given problem into Analysis, Design, Implementation, Testing and Maintenance phases.	**K1**
CO2	Provide an idea of using various process models in the software industry according to given circumstances.	**K2**
CO3	Gain the knowledge of how Analysis, Design, Implementation, Testing and Maintenance processes are conducted in a software project.	**K3**
CO4	Demonstrate the ability to work effectively as a team member and/or leader in an ever-changing professional environment	**K4**
CO5	Progress through advanced degree or certificate programs in computing, science, engineering, business, and other professionally related fields.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
4	**25UBC43CC08**			**Core Course – 8:** Software Engineering (Internship Embedded Course)						**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	2	**2.4**
CO2	2	3	2	3	2	3	2	3	2	1	**2.3**
CO3	2	2	3	2	1	3	3	2	3	1	**2.2**
CO4	3	3	2	3	2	3	3	2	3	2	**2.6**
CO5	2	2	3	2	1	3	2	3	2	2	**2.2**
									Mean Overall Score		**2.34 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	25UBC43CP04	**Core Practical - 4:** Python Programming Lab	3	2

Course Objectives
To perform simple operations variables, constants and I/O
To demonstrate use of arrays in indexing
To utilize pandas to create data frames
To apply pandas to aggregate and transform the data
To visualize the data using matplotlib

List of Exercises

1. Variables, constants, I/O statements
2. Conditional Statements and Loops.
3. Lists, Tuples and Dictionaries
4. Arrays and NumPy.
5. Indexing, Slicing, and Iterating using NumPy.
6. Series using pandas
7. Data frames using pandas.
8. Plotting window using matplotlib
9. Kwargs and Histograms using matplotlib
10. Line Charts, Bar Charts and Pie Charts using matplotlib

Teaching Methodology	Hands on lab sessions
Assessing Methods	Practical test, Note evaluation, Viva-voce

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Recall the variables, control statements and operators	**K1**
CO2	Demonstrate array operations using NumPy	**K2**
CO3	Make use of series and dataframes using pandas	**K3**
CO4	Analyze the data transformation and aggregation operations	**K4**
CO5	Recommend to visualize data using matplotlib	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**							**Hours**	**Credits**
4	**25UBC43CP04**		**Core Practical - 4:** Python Programming Lab							**3**	**2**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	3	2	2	1	3	3	3	2	2	**2.4**
CO2	3	2	3	2	2	3	3	3	2	3	**2.6**
CO3	2	3	2	1	2	3	3	3	3	2	**2.4**
CO4	3	2	2	2	2	3	3	3	2	3	**2.5**
CO5	3	3	3	3	2	3	3	3	3	2	**2.8**
										Mean Overall Score	**2.54 (High)**

Semester	Course Code	Title of the Course	Hours	Credits
4	25UBC43AO02B	**Allied Optional - 2:** Financial Accounting Package – Tally Prime Advanced	3	2

Course Objectives
To provide knowledge on the importance of maintaining various book
To help the student to know the application of them in different situations.
To gain comprehensive understanding of all aspects relating to financial statements.
To Understand knowledge on cash budget admission of Partnership
To Differentiate single entry from double entry system.

UNIT- I **(9 Hours)**

Budget – Definition – Characteristics – Cash Budget – Advantages – Preparation of Cash Budget – Receipts and Payments Method.

UNIT-II: **(9 Hours)**

Cost centre – Cost category – Voucher entries using cost centre – Payroll preparation – Budget and Control – Scenario Management

UNIT-III: **(9 Hours)**

Introduction – Adjustments – Revaluation of Assets and Liabilities – Undistributed Profit or Loss – Accumulated Reserve – Treatment of Goodwill – Revaluation Account, Capital Accounts and Balance sheet after Admission of Partner.

UNIT-IV: **(9 Hours)**

Inventory info – Stock Groups, Stock Categories - God owns / Locations – Units of Measure Stock Items – Inventory Vouchers – Vouchers Entry in Tally ERP.9 – TDS – VAT – CST –GST - PoS.

UNIT – V **(9 Hours)**

Backup and Restore – Backup of Data – Restoring Data from a Backup File – Export and Import of Data – Exporting and Importing of Data from one Company to Another in XML Format – Exporting of data in other available formats – E-mailing in Tally ERP9 – Printing Reports - Managing of Data during Financial Year End Process

Books for Study:

1. Lal, Jawahar and Seema Srivastava, Financial Accounting, Himalaya Publishing House.2019
2. Monga, J.R., Financial Accounting: Concepts and Applications, Mayoor Paper Backs, New Delhi.2018
3. Shukla, M.C., T.S. Grewal and S.C. Gupta. Advanced Accounts. Vol.-I. S. Chand & Co., New Delhi.2020

Books for Reference:

1. S. N. Maheshwari, Financial Accounting, Vikas Publication, New Delhi. T.S, Grewal, Introduction to Accounting, S. Chand and Co., New Delhi 2020
2. Compendium of Statements and Standards of Accounting. The Institute of Chartered Accountants of India, New Delhi

Teaching Methodology	Lecture & Concept Explanation, Practical Demonstration Interactive Learning
Assessment Methods	Seminar, Snap Test, MCQ

Course Outcomes		
CO. No	**CO- Statement** On completion of this course, the students will be able to	**Cognitive Level (K- level)**
CO-1	Remembering the ability to create, alter, and delete a company in Tally. Understand the steps involved in selecting a company and shutting down a company.	**K1**
CO-2	Understanding to create, alter, and display single and multiple ledgers in Tally. Create and manage accounting groups, including primary and secondary groups.	**K2**
CO-3	Apply Tally to generate financial statements, including Trading and Profit and Loss Account and Balance Sheet	**K3**
CO-4	Analyzing advanced features of Tally for voucher entry, including handling entry problems in both double-entry and single-entry modes.	**K4**
CO-5	EvaluatingTally for managing various taxation aspects, including E-mailing in Tally ERP9	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
4	**25UBC43AO02B**			**Allied Optional - 2:** Financial Accounting Package – Tally Prime Advanced						**3**	**2**
Course Outcomes↓	**Programme Outcomes (PO)**					**Programme Specific Outcomes (PSO)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO-1	3	2	2	2	1	3	3	2	2	3	2.2
CO-2	2	3	2	1	2	3	3	2	2	3	2.3
CO-3	1	2	3	2	3	2	3	2	3	2	2.3
CO-4	1	2	2	3	1	2	3	2	2	3	2.1
CO-5	1	2	2	2	3	1	3	2	2	3	2.1
									Mean Overall Score		2.2 High

Semester	Course Code	Title of the Course	Hours	Credits
4	25UBC43AO02B	**Allied Optional Practical - 2:** Financial Accounting Packages – Tally Prime Advanced (Lab)	3	2

Course Objectives
To Extract profit and loss account and balance sheet through ledger account balances and adjustment entries.
To Pass entries for transactions in accounting vouchers with or without stock items.
To Pass entries for transactions requiring special features such as TDS, VAT, CST, GST Cost centers and Payrolls.
To Carry out order processing and maintain accounting records along with inventory records and generate reports.
To Work as an accountant or a storekeeper in the computerized environment of business organizations.

Exercises

1. Creation, alteration and deletion of primary and secondary accounting groups.
2. Final A/Cs with adjustments (Creation and deletion of ledgers)
3. Voucher entry problems in double entry mode
4. Voucher entry problem in single entry mode.
5. Voucher entries using cost centre, Cost Category
6. Budget preparation and reporting variance
7. Payroll preparation
8. Accounting vouchers using stock items
9. Order processing and inventory vouchers
10. Generation of accounting books and reports
11. Generation of inventory books and reports.
12. TDS, VAT, CST, and Excise GST

Teaching Methodology	Lab practical

Course Outcomes		
CO. No	**CO- Statement** On completion of this course, the students will be able to	**Cognitive Level (K- level)**
CO-1	Understand the step-by-step process for selecting a company for operations.	**K1**
CO-2	Proficient creation and management of accounting groups, encompassing primary and secondary group categorizations.	**K2**
CO-3	Utilize Tally software proficiently to generate comprehensive financial statements, encompassing Trading and Profit & Loss Account and Balance Sheet formats.	**K3**
CO-4	Demonstrate proficiency in resolving entry discrepancies encountered in both double-entry and single-entry modes.	**K4**
CO-5	Assess Tally's capabilities in managing diverse taxation aspects, such as TDS, VAT, CST, Excise, and GST.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
4	**25UBC43AO02B**			**Allied Optional Practical - 2:** Financial Accounting Packages – Tally Prime Advanced (Lab)						**3**	**2**
Course Outcomes↓	**Programme Outcomes (PO)**					**Programme Specific Outcomes (PSO)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO-1	3	2	2	2	1	3	3	2	2	3	2.2
CO-2	2	3	2	1	2	3	3	2	2	3	2.3
CO-3	1	2	2	3	1	2	3	2	2	3	2.1
CO-4	2	3	2	1	2	3	3	2	2	3	2.3
CO-5	1	2	2	2	3	1	3	2	2	3	2.1
										Mean Overall Score	2.2 High

Semester	Course Code	Title of the Course	Hours/ Week	Credits
4	25UBC43AO02B	**Allied Optional - 2:** Accounts – 2	(6)	(4)

Course objectives:
To familiarise the students with the theoretical concepts of various elements of cost and preparation of cost sheet
To give basic idea about the process of managerial decision making
To highlight various tools and techniques available for managerial decision making
To give practical understanding of application of ratio analysis and cash flow analysis,
To make to understand the application and uses of budgeting control and marginal costing techniques

UNIT – I Introduction to Cost Accounting (18 Hours)

Cost Accounting – Components of cost – Methods and techniques of Costing -Preparation of cost sheet – various stages in cost sheet –WIP - valuation of closing stock of finished goods - tender & quotation.

UNIT – II Cash flow Statement (18 Hours)

Cash flow Statement – meaning – cash flow from operating activities, investment activities and financing activities - preparation of cash flow statement As per AS3 (simple problems)

UNIT – III Working Capital Management (18 Hours)

Working capital management- meaning- Types of working capital - components of working capital - Calculation of working capital

UNIT – IV Marginal Costing (18 Hours)

Marginal costing – Marginal cost- Contribution – PV Ratio – BEP – Margin of safety – CVP - decision making (simple problems)

UNIT – V Budgeting Control (18 Hours)

Budgeting control- preparation of cash budget- sales budget- production budget- production cost budget- flexible budget

Teaching Methodology	Chalk & Talk, Videos, PPTs, Demonstration and Creation of Models
Assessment Method	Snap Test, Quiz, Open Book test

Theory 20% and Problems 80%

Books for Study

1. Reddy TS and Murthy A, Cost Accounting (2012), Margham Publications, Chennai (Unit-I).
2. Reddy TS and Murthy A, Management Accounting (2012), Margham Publications, Chennai. (Unit-II, III, IV & V)

Books for Reference:

1. S.N. Maheswari, (2017), Cost Accounting, S. Chand& Co, New Delhi.
2. Jain SP &Narang KL, (2014), Cost Accounting Principles and Practice, Kalyani Publishers, New Delhi (2018)

Websites and eLearning Sources:

1. https://icmai.in/studentswebsite/Foundation-Papers.php
2. https://icmai.in/studentswebsite/E-LKR.php
3. https://elearn.nptel.ac.in/shop/nptel/cost-accounting/

Course Outcomes		
CO No.	**CO - Statements**	**Cognitive Levels (K – Level)**
	On successful completion of this course, students will be able to	
CO – 01	Remember and recall the various concepts of cost accounting	**K 1**
CO – 02	Demonstrate the preparation of cash flow statements.	**K2**
CO – 03	Analyse the various valuation methods of working capital management.	**K3**
CO – 04	Examine the different methods of calculating marginal costing.	**K4**
CO – 05	Critically evaluate the budgeting control techniques.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours/Week**	**Credits**
4	**25UBC43AO02B**			**Allied Optional - 2:** Accounts – 2						**(6)**	**(4)**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	2	3	2	2	2	2	2	2	**2.2**
CO2	3	2	2	2	2	2	3	2	3	3	**2.4**
CO3	2	3	2	3	2	3	2	3	3	3	**2.6**
CO4	2	2	2	1	2	2	2	1	2	2	**1.8**
CO5	3	2	3	3	1	3	1	3	2	1	**2.2**
Overall Mean Score											**2.2**
											High

Semester	Course Code	Title of the Course	Hours / Week	Credits
4	25UHE44VE04A	**Value Education - 4:** Social Ethics - 2	2	1

Course Objectives
To understand the significance of natural resources and strive to coexist harmoniously with nature.
To implement strategies for disaster management within the community.
To evaluate the significance and distinctions between science and religion.
To recognize the importance of maintaining a healthy lifestyle.
To utilize counseling techniques to address and resolve individuals' issues.

UNIT I: Harmony with Nature (6 Hours)

What is environment, why should we think of harmony, longing for human well-being, Principles to conserve environmental resources, causes of disharmony, the fruits of harmony with nature, Forest resources, Water resources, Mineral resources, Food resources, Fruits of disharmony, Economic values and growth, Environmental Ethics, Guidelines to live in harmony with nature, Towards life-centered system for better quality of life. Harmony with animal kingdom.

UNIT II: Issues Dealing with Science and Religion (6 Hours)

What is Science, Science and Religion, Social Relevance of Science and Technology, Science and technology for social justice, Difference caused by Science and Technology, Need for indigenous technology, Science, Technology and Innovation Policy of India.

UNIT III: Public Health (6 Hours)

Health related issues, Health Care in India vs Developed Countries, Health and Heredity, Public Health - The Indian Scenario, Objectives of public health in India, Public Health System in India, Failure on the public health front, Role of the central government, Hospitals Services in India, Health and Abortion, Health and Drug Addiction, Drug abuse.

UNIT IV: Disaster Management (6 Hours)

Disaster Management, Types of disaster, plans of disaster management, Technology to manage natural disasters and catastrophes, Disaster Management, Rehabilitation and Reconstruction, Human-induced disaster, First Aid, The importance of First-aid, Disaster Declaration and Response.

UNIT V: Counseling for Adolescents (6 Hours)

High Risk Behaviours, Developmental Changes in Adolescents, Key Issues of the Adolescents, need for Counseling, Nature of Counseling, Counseling Goals, does helping help? The Good and the Bad news. Importance of Career Guidance Counseling.

Teaching Methodology	Power point, Assignment and Group discussion
Assessment Methods	Online Test, Group Discussions, Seminar, Assignment

Books for Study:

1. Department of Human Excellence. (2021). *Formation of Youth*, St Joseph's College (Autonomous), Tiruchirappalli.

Books for Reference:

1. Albert, D., & Steinberg, L. *Judgment and decision making in adolescence*: Journal of Research on
2. Adolescence, page no: 211-224 (2011).
3. Larry, R. C. (2000). *Disaster Management and Preparedness,* Lewis Publications.
4. Hurlock, E.B. (2001). *Developmental Psychology: A: Life-Span Approach*. (5th Ed.). Tata McGraw-Hill.
5. Sangha., & Kamaljit. (2015). *Ways to Live in Harmony with Nature: Living Sustainably and*
6. *Working with Passion.* Australia, Woods lane Pty Limited.

Websites and eLearning Sources:

1. https://en.wikipedia.org/wiki/Disaster_management_in_India
2. https://ndma.gov.in/
3. https://talkitover.in/services/child-adolescent-counselling/
4. https://www.nipccd.nic.in/schemes/adolescent-guidance-centre-19#gsc.tab=0

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K - Level)**
	On successful completion of this course, students will be able to	
CO1	Know the value of natural recourses and to live in a harmony with nature.	**K1**
CO2	Apply the plans of disaster management in the society.	**K2**
CO3	Analyse the importance and differences of science and religion.	**K3**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
4	**25UHE44VE04A**			**Value Education - 4:** Social Ethics - 2						**2**	**1**
Course Outcome	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	3	3	3	2	3	3	2	3	3	**2.8**
CO2	3	2	2	3	3	2	3	3	2	2	**2.5**
CO3	2	3	3	3	2	3	3	3	3	3	**2.8**
Mean Overall Score											**2.7 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	25UHE44VE04B	**Value Education - 4:** Religious Doctrine - 2	2	1

Course Objectives
To explore the rich historical background of the Catholic Church
To explore and comprehend the Sacraments practiced by the Catholic Church
To incorporate Christian Prayer into daily routines
To reflect on personal growth through the lens of Sacraments and Christian Prayer
To promote unity by embracing universal values from various religions

UNIT I **:** The Catholic Church **(6 Hours)**

UNIT II **:** Sacraments of Initiation **(6 Hours)**

UNIT III **:** Sacraments of Healing & at the Service of Community **(6 Hours)**

UNIT IV **:** The Christian Prayer **(6 Hours)**

UNIT V **:** Harmony of Religions **(6 Hours)**

Teaching Methodology	Power point, assignment, and Group discussion
Assessment Methods	Seminars, Group Discussion, Online Tests, Assignments

Books for Study:

1. Department of Human Excellence (2022). Fullness of Life, St Joseph's College (Autonomous), Tiruchirappalli.

Books for Reference:

1. (1994). *Compendium: Catechism of the Catholic Church.* Bengaluru: Theological Publications in India. Holy Bible (NRSV).

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K - Level)**
	On successful completion of this course, students will be able to	
CO1	Understand the history of the Catholic Church	**K1**
CO2	Examine and grasp the Sacraments of the Catholic Church	**K2**
CO3	Apply the Christian Prayer to their everyday life	**K3**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
4	**25UHE44VE04B**			**Value Education - 4:** Religious Doctrine - 2						**2**	**1**
Course Outcome	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	3	3	3	2	3	2	2	3	3	**2.7**
CO2	3	2	2	2	3	3	3	3	2	2	**2.5**
CO3	2	2	3	3	2	2	3	3	3	3	**2.6**
										Mean Overall Score	**2.6 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	25UBC44SE02	**Skill Enhancement Course - 2:** Software Testing	2	1

Course Objectives
To explain the phases of software development and the role of testing within these phases.
To explain the phases of software development and the role of testing within these phases.
To understand the importance of software testing verification and validation processes.
To analyze various testing techniques such as white-box testing, static testing, and structural testing.
To demonstrate knowledge of System Integration and System Acceptance Testing.

UNIT I **(6 Hours)**

Principles of testing: Phases of software, Quality assurance and Quality control, Testing verification and validation, Techniques: White box, static testing, structural testing, challenges in white box testing, Black box testing

UNIT II **(6 Hours)**

TYPES OF TESTING: Integration testing, Top-Down Integration, Bottom up integration, Bi-Directional Integration, System - Integration, System Acceptance Testing: Functional versus Non Functional Testing, Functional System Testing, Non Functional Testing Acceptance Testing.

UNIT III **(6 Hours)**

Performance Testing: Factors of governing, performance testing, Methodology for performance testing, Tools for performance testing, Process for performance testing, Regression Testing: Types regression testing, best practice in regression testing.

UNIT IV **(6 Hours)**

Test Planning: Test Plan, Test Management, Test Process, Test Reporting - Test Metrics: Types of metrics, Project metrics - Progress metrics, Productivity metrics, Test Defect Metrics, Development metrics, Test cases development - Closed defect, Execution and reporting.

UNIT V **(6 Hours)**

Software Test Automation: Scope of automation, Terms used in automation, Design and Architecture for automation, Process Model for automation, Selecting testing tool, Generic requirement for test tool / framework, Challenges in automation.

Teaching Methodology	PPT, chalk and talk
Assessment Method	Seminar, Test, Quiz

Books for Study:

1. Srinivasan Desikan and Gopalasamy Ramesh (2008). *Software testing for Principles and Practices*. Person Education. India.

Books for Reference:

1. William E. Perry (2007). *Effective Methods of Software Testing*". (3rd Ed). Wiley India.
2. Renu Rajani, Pradeep Oak (2007). *Software Testing*, TMH.

Websites and eLearning Sources

1. https://mrcet.com/downloads/digital_notes/ME/III%20year/Software%20Testing%20Techniques.pdf
2. https://digitalpoint.tech/admin/uploads/4346d933bcfa1d59b368d121f6747980.pdf
3. https://southcampus.uok.edu.in/Files/Link/DownloadLink/Unit%203,%20Part%201%20Software%20Testing.pdf
4. https://patnawomenscollege.in/upload/e-content/Software-testing.pdf
5. https://aif.org/wp-content/uploads/2018/10/Software-Testing-Trng-Module-2018a_MAST.pdf

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Demonstrate a comprehensive understanding of software testing principles.	**K1**
CO2	Apply different types of software testing techniques effectively.	**K2**
CO3	Perform performance and regression testing with appropriate tools and methodologies.	**K3**
CO4	Conduct various types of integration, system, and acceptance testing.	**K4**
CO5	Design and manage test plans, develop test cases, and apply relevant metrics.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
4	**25UBC44SE02**			**Skill Enhancement Course - 2:** Software Testing						**2**	**1**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	3	1	2	3	2	3	3	3	2	**2.4**
CO2	2	3	2	3	3	2	3	3	2	1	**2.4**
CO3	3	2	2	2	2	3	3	3	3	2	**2.5**
CO4	3	3	2	3	3	2	3	2	3	2	**2.6**
CO5	3	2	3	3	2	3	2	3	3	2	**2.6**
										Mean Overall Score	**2.5 (High)**

Semester	Course Code	Title of the Course	Hours	Credits
4	25UBC44SL03	**Self Learning**- Computer networks	0	2

Unit – I

Data Communication: Network Models. Physical Layer and Media: The OSI Model, Layers in the OSI Model, TCP / IP Protocol Suite, Addressing. Analog Transmission: Analog and Digital, Transmission Impairment Performance, Guided Media, Unguided Media.

Unit – II

Bandwidth Utilization: Multiplexing and Spreading, Multiplexing, Spread Spectrum. Switching: Circuit Switched Networks, Datagram Networks, Virtual Circuit Networks.

Unit – III: Network layer

Network Layer IPv4 Addresses, IPv6 Addresses, Address Mapping, ICMP, IGMP. Transport Layer: Process-to-Process Delivery, User Datagram Protocol – TCP.

Unit – IV: Wireless Networks

Wireless and Mobile Networks: I Wireless Links and Network Characteristics, Wi- Fi: 802.11 Wireless LANs, Cellular Internet Access, Mobility Management: Principles, Managing Mobility in Cellular Networks, Wireless and Mobility: Impact on Higher-Layer Protocols.

Unit – V: Security

Security in Computer Networks: Principles of Cryptography, Message Integrity and Digital Signatures, End-Point Authentication, Securing E-Mail, Network-Layer Security: IPsec and Virtual Private Networks, Operational Security: Firewalls and Intrusion Detection Systems.

Books for Study:

1. Behrouz A. Forouzan, (2012), *Data Communications and Networking*, Tata McGraw Hill Publications, (5thEd). New Delhi.
2. James F. Kurose, Keith Ross, (2017). *Computer Networking- a Top down Approach*, Hoboken, New Jersey: Pearson, (7th Ed).

Books for Reference:

1. Doug Lowe, *Networking- All in one for Dummies,* Hoboken, New Jersey, John Wiley & Sons, (7th Ed), 2018.
2. Behrouz A. Frozen, *Data Communication and Networking (* 4th Ed), MC Graw Hill Publication, India, 2017.
3. Pinaki Mitra, *Recent Trends in Communication Networks,* (1St Ed), Intech Open Publication, United Kingdom, 2020.

CO No.	CO- Statements	Cognitive Levels (K- Levels)
	On successful completion of this course, students will be able to	
CO-1	Recall the different aspects of networks, protocols and network design models.	K1
CO-2	Understand the modes of transmission and switching techniques for data communication	K2
CO-3	Identify the important aspects and functions of network layer, mobile networks and wireless LAN's in internetworking.	K3
CO-4	Classify different routing algorithms and network addressing scheme	K4
CO-5	Analyze different security mechanisms for secured network communication.	K5

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
4	**25UBC44SL03**			**Self Learning** - Computer Networks						**0**	**2**
Course Outcomes (COs)↓	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO-1	3	3	3	3	3	3	3	3	2	2	2.8
CO-2	3	3	3	2	2	3	3	2	3	3	2.7
CO-3	3	3	3	2	2	2	2	3	3	3	2.6
CO-4	3	3	3	3	2	3	2	3	3	2	2.7
CO-5	3	3	3	3	3	3	3	2	2	3	2.8
										Mean Overall Score	2.72 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	25UBC53CC09	**Core Course - 9**: ASP.NET	6	4

Course Objectives
To learn about basic features of ASP.NET and its controls.
To create an ASP.NET application using standard .NET controls
To learn about connecting data source using ADO.NET and managing them.
To discuss and extend data list and data grid controls
To demonstrate the database connectivity in ASP.NET

UNIT I **(18 Hours)**

The .net Framework: The evolution of web development, .net Framework. C# Language: .net Language, C# language basics, variables and data types, variable operation, object based manipulation, Conditional logic, Loops, methods

UNIT II **(18 Hours)**

Visual Studio: Creating website, designing web page, The Anatomy of a web form, Writing code, Web controls; web control classes, List controls, table controls, web control events and autopostback. A simple webpage State Management: The problems of state, view state, Cookies, Session state

UNIT III **(18 Hours)**

Error handling: common errors, exception handling, handling exception, error page. Validation: understanding validation, the validation control, Rich control: the calendar, The AdRotator, page with multi view

UNIT IV **(18 Hours)**

Working with data: understanding data management, Sql basics, ADO.Net basics, direct data access, disconnected data access, Data Binding; single value data binding, data source controls. Data controls: The Gridview, formatting the Gridview, selecting a Gridview row, sorting and paging the Gridview, Details view.

UNIT V **(18 Hours)**

USING XML: XML Classes, XML Validation, XML Display and Transforms. Website Security: windows authentication Caching: understanding caching, data caching Ajax; understanding Ajax, partial Refreshers

Teaching Methodology	PPT, chalk and talk
Assessment Methods	Seminar, MCQ, Website creation

Books for Study:

1. Mathew MacDonald. (2008). *ASP.NET: The Complete Reference*. Tata McGraw Hill Ltd, New Delhi.
2. Andreas Hellan. (2021). *ASP.NET Core 5 for Beginners*. Packt Publishing.

Books for Reference:

1. Dr. C. Muthu. (2011). *ASP.NET*, Shalom InfoTech Pvt. Ltd.
2. Jason De Oliveira, Michel Bruchet. (2017). *Learning ASP.NET Core 2.0*. Paperback.
3. Stephen Walther. (2013). *Beginning ASP.NET 4.5 in C#.* Apress publishing.

Websites and eLearning Sources:

1. https://www.profajaypashankar.com/wp-ntent/uploads/2018/08/beginning_asp.net_4.5_in_C.pdf
2. https://weblogs.asp.net/ricardoperes/visual-studio-2012-and-net-4-5-expert-development- cookbook-review
3. https://dl.ebooksworld.ir/books/Pro.ASP.NET.Core.6.9th.Edition.Adam.Freeman.Apress.978 1 484279564.EBooksWorld.ir.pdf
4. https://www.oreilly.com/library/view/programming-asp-net/0596001711/
5. https://learn.microsoft.com/en-us/dotnet/api/system.web.ui.webcontrols.xml?view=netframework-4.8.1

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Recall the fundamental concepts of .NET framework.	**K1**
CO2	Generalized the concept of web controls and validation controls	**K2**
CO3	Demonstrate C# programs using object-oriented programming.	**K3**
CO4	Discover webpages using database and .net framework	**K4**
CO5	Summarize the basics of XML and data caching	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
5	**25UBC53CC09**			**Core Course - 9:** ASP.NET						**6**	**4**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	3	3	2	2	3	2	2.5
CO2	2	3	2	3	2	1	2	2	2	2	2.1
CO3	2	3	3	2	2	2	3	2	3	2	2.4
CO4	3	3	2	2	3	2	3	2	3	1	2.4
CO5	2	2	3	1	3	1	2	2	2	3	2.1
										Mean Overall Score	**2.3 (High)**

Semester	Course Code	Title of the Course	Hours	Credits
5	25UBC53CC10	**Core Course - 10:** Web Technologies	6	3

Course Objectives
To understand the fundamentals of Internet and the principles of web design.
To construct basic websites using HTML and Cascading Style Sheets.
To be able to develop a web application using PHP.
To gain the skills and project-based experience needed for entry into web application.
To develop modern interactive web applications using PHP and MySQL.

Unit I **(18 Hours)**

HTML: Introduction, Lists: Creating Ordered and Unordered Lists, Styling Nested Lists, Creating Description Lists. Forms: Creating Forms, Processing Forms, Organizing the Form Elements, Creating Text Boxes, Creating Password Boxes, Creating Radio Buttons, Creating Select Boxes, Creating Checkboxes, Creating a Submit Button, Using an Image to Submit a Form. Audio, Video and Multimedia: Video File Formats, Adding a Single Video to Your Web Page, Adding Audio File Formats, Adding a Single Audio File to Your Web Page, Getting Multimedia Files. Tables: Structuring Tables, Spanning Columns and Rows.

Unit II **(18 Hours)**

Introduction to CSS: Importing a Stylesheet, Using IDs, Using Classes, Using Semicolons, CSS Rules, Style Types, CSS Selectors, The CSS Cascade, The Difference Between div and span Elements, Measurements, Fonts and Typography, Managing Text Styles, CSS Colors, Positioning Elements, Pseudo classes, Shorth and Rules, The Box Model and Layout. Advanced CSS With CSS3: Attribute Selectors, The box-sizing Property, CSS3 Backgrounds, CSS3 Borders, Box Shadows, Element Overflow, Multicolumn Layout, Colors and Opacity, Text Effects, Web Fonts, Transformations, Transitions.

Unit III **(18 Hours)**

Introduction to PHP: Incorporating PHP within HTML, The Structure of PHP. Expressions and Control Flow in PHP: Expressions, Operators, Conditionals, Looping, Implicit and Explicit Casting, PHP Dynamic Linking, Dynamic Linking in Action. PHP Functions: Including and Requiring Files, PHP Version Compatibility.

Unit IV **(18 Hours)**

PHP Objects, PHP Arrays: Basic Access, the for each as Loop, Multi dimensional Arrays, Using Array Functions. Practical PHP: Using printf, Date and Time Functions, File Handling, System Calls, XHTML or HTML5.

Unit V **(18 Hours)**

Introduction to MySQL: My SQL Basics, Accessing MySQL via the Command Line, Indexes, My SQL Functions, Accessing MySQL via PHP MyAdmin. Mastering MySQL: Database Design, Normalization, Relationships, Transactions, Backing Up and Restoring. Accessing MySQL Using PHP: Querying a MySQL Database with PHP, A Practical Example, Practical MySQL, Preventing Hacking Attempts, Using MySQLi Procedurally.

Teaching Methodology	PPT, chalk and talk
Assessment Methods	Seminar, Snap Test, MCQ

Books for Study:

1. Elizabeth Castro, Bruce Hyslop, (2012). *HTML5 & CSS3, (*7th Ed). Peachpit Press, UK.
2. Robin Nixon, (2018). *Learning PHP, MySQL & JavaScript with jQuery, CSS & HTML5, (*5th Ed). O'Reilly Media, Inc., New York.

Books for Reference:

1. Paul Gibbs, (2020). *PHP Tutorials: Programming with PHP and MySQL: Learn PHP 7 / 8 with MySQL, (*5th Ed). New Delhi.
2. Steve Prettyman, (2020). *Learn PHP 8: Using MySQL, JavaScript, CSS3, and HTML5,* A Press, New Delhi.
3. DT Nixon, Editorial Services, (2018). *Web Technologies*, Dreamtech Press, New Delhi.
4. Xavier.C, (2017). *Web Technology and Design*, New Age International Publishers, New Delhi.
5. Kogent, Biztantra, (2017). *Web Technologies*, Learning Solutions, New Delhi.

Websites and eLearning Sources:

1. https://ptgmedia.pearsoncmg.com/images/9780321719614/samplepages/0321719611.pdf
2. https://unidel.edu.ng/focelibrary/books/Learning%20PHP,%20MySQL%20%20JavaScript%20-%20With%20jQuery,%20CSS%20%20HTML5%20by%20Robin%20Nixon%20(z-lib.org).pdf
3. https://pdfcoffee.com/download/web-technologies-black-book-pdf-free.html?reader=1
4. https://downloads.mysql.com/docs/mysql-tutorial-excerpt-5.7-en.pdf
5. https://assets.ctfassets.net/nkydfjx48olf/5qFMF3mvitLMahX67i7iOb/028229996c13cbc27a0538f 055a41b46/php_cookbook.pdf

Course Outcomes		
CO No.	**CO- Statements**	**Cognitive Levels (K- Levels)**
	On successful completion of this course, students will be able to	
CO-1	List the HTML form controls	**K1**
CO-2	Demonstrate the basic concepts and functions in PHP	**K2**
CO-3	Apply Cascading Style Sheets to develop dynamic web pages.	**K3**
CO-4	Create PHP objects for server-side Programming	**K4**
CO-5	Build simple database using MySQL for Software Solutions.	**K5**

Relationship matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**	**Credits**	
5	**25UBC53CC10**			**Core Course - 10:** Web Technologies					**6**	**3**	
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO-1	2	2	3	2	2	3	2	2	3	3	2.4
CO-2	2	2	3	2	3	2	2	2	2	3	2.3
CO-3	2	2	2	2	2	2	2	3	3	3	2.3
CO-4	2	2	2	2	3	2	3	3	2	3	2.4
CO-5	2	3	2	2	2	2	3	3	2	3	2.4
										Overall Score	2.36 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	25UBC53CP05	**Core Practical - 5:** ASP.NET Lab	3	2

Course Objectives
Apply rich controls and validation controls to the web page.
Design forms using various web controls
Incorporate cookies, session and application state in a web page
Create and manipulate the data in the database using ADO.NET
Build an application using XML

List of Exercises:

1. Form Design using Various Web Controls
2. Looping statement execution
3. Ad Rotator, Calendar Control and Login Control
4. Validation Controls
5. Cookie Manipulation
6. State Management (using Session and Application)
7. CRUD Operation
8. Data Retrieval, Updating using ADO.NET (using Stored Procedure)
9. Gridview and Detailsview execution
10. Sorting and Paging using DataGrid
11. Day Planner Preparation using XML and ADO.NET
12. Data Caching

Teaching Methodology	Hands on lab sessions
Assessment Methods	Practical test, Note evaluation, Viva-voce

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
5	**25UBC53CP05**			**Core Practical - 5:** ASP.NET Lab						**3**	**2**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	3	2.5
CO2	2	3	2	3	2	2	2	2	2	2	2.2
CO3	3	3	2	2	3	2	2	3	2	2	2.4
CO4	3	2	2	2	2	2	3	2	3	2	2.3
CO5	2	2	2	3	3	2	2	3	2	3	2.4
Mean Overall Score											**2.36 (High)**

Semester	Course Code	Title of the Course	Hours	Credits
5	25UBC53CP06	**Core Practical - 6:** Web Technologies Lab	3	2

Course Objectives
To understand the web page and identify its elements and attributes.
To create web pages using XHTML and Cascading Style Sheets.
To build dynamic web pages using PHP
To design and develop static and dynamic web pages.
To learn Database Connectivity to web applications.

List of Exercises:

HTML & CSS

1. Lists and Tables
2. Design a form in HTML
3. Audio and video to web pages in HTML
4. Selectors and Colors in CSS
5. Text effects, BOX shadows, colors and opacity in CSS

PHP with MySQL

6. Conditional statements and looping
7. PHP Functions
8. PHP Objects
9. Arrays in PHP
10. File handling in PHP
11. Accessing MySQL database with queries
12. Student Mark list using MySQL

Teaching Methodology	Hands on lab sessions
Assessing Methods	Practical test, Note evaluation, Viva-voce

Course Outcomes		
CO No.	**CO- Statements** On successful completion of this course, students will be able to	**Cognitive Level (K- Levels)**
CO-1	Show attractive webpages using Cascading Style Sheets.	**K1**
CO-2	Demonstrate dynamic web forms using HTML and PHP	**K2**
CO-3	Apply PHP functions and objects for modular programming	**K3**
CO-4	Construct PHP programs using arrays and files for text manipulation	**K4**
CO-5	Design database using MySQL for real-time problems	**K5**

Relationship matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
5	**25UBC53CP06**			**Core practical - 6:** Web Technologies Lab						**3**	**2**
Course Outcomes (COs)	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO-1	2	2	2	3	2	3	2	2	3	3	2.4
CO-2	2	2	3	2	3	2	2	2	2	3	2.3
CO-3	1	2	3	2	2	3	2	3	3	3	2.4
CO-4	2	3	2	2	3	2	3	3	2	3	2.5
CO-5	2	2	3	2	2	2	3	3	2	3	2.4
										Mean Overall Score	2.4 (High)

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	25UBC53ES01A	**Discipline Specific Elective - 1:** Fundamentals of Internet of Things	4	3

Course Objectives
To understand the characteristics and enabling technologies of IoT.
To explore the connectivity of sensors and related hardware for IoT application scenario.
To develop skills on IoT technical planning.
To understand the IoT ecosystem Using Wireless Technologies.
To impart the skills to design and develop new IoT-based applications.

UNIT I **(12 Hours)**

Internet Of Things: Fundamentals of Internet of Things: Introduction, Characteristics of IoT, The Physical design of IoT, IoT Architecture and Components, Logical design of IoT, Near Field Communication (NFC), Wireless Sensor Network (WSN), The Industrial Internet of Things, Consumer Internet of Things, Social Internet of things, Cognitive IoT.

UNIT II **(12 Hours)**

Introduction to sensor interfacing, Types of Sensors, Controlling sensors through Webpage, Microcontrollers: a quick walkthrough, Protocols for IoT: Introduction, Messaging Protocols, XMPP and DDS Protocols, Transport Protocols.

UNIT III **(12 Hours)**

Prototyping Embedded Devices: Arduino, Raspberry PI, Other Notable Platforms. Realization of IoT ecosystem using Wireless Technologies: Architecture for IoT Using Mobile Devices, Mobile Technologies for Supporting IoT Ecosystem, Mobile Use Cases for IoT, Low Power Wide Area Networking Topologies, Sigfox, Nwave, Ingenu, Lora.

UNIT IV **(12 Hours)**

IoT Enablement Platforms: IoT Building Blocks, IoT Enablement Platforms, IoT Architectural Building Blocks, Azure IoT HUB, Amazon Web Service IoT Platform, IoT Data Virtualization Platforms, IoT Data Visualization Platforms, IoT Edge Data Analytics.

UNIT V **(12 Hours)**

Introduction to Governance Use Cases, Ubiquitous Connectivity, Omnipresent Devices, Collaboration Platforms, Cloud Computing, Open Standards and Service Oriented Architecture, Smart Cities, Smart Industrial Use Cases of IoT, Smart Transport Systems, Connected Cars, Consumer Use Cases of IoT, Smart Homes/Buildings, Smart Education Systems using Wearable Devices.

Teaching Methodology	Chart, PPT, chalk and talk
Assessment Methods	Project Reports, Snap Test, MCQ, Case Studies

Books for Study:

1. Shriram, K. V., Abhishek, S. N. & Sundaran, R. M. D. (2020). *Internet of Things*, (2nd Ed.). Wiley Publication.
2. Adrian, M.E., & Hakim, C. (2014*). Designing the Internet of Things*. John Wiley and Sons.
3. Pethuru, R. & Raman, C.A. (2017). *The Internet of Things Enabling Technologies, Platforms, and Use Cases*, (1st Ed.). Taylor & Francis, CRC Press.

Books for Reference:

1. Hanes, David, Gonzalo, S., Patrick, G., Robert, B., & Jerome, H. (2017*). IoT fundamentals: Networking technologies, protocols, and use cases for the Internet of Things*. Cisco Press.
2. Qusay, F. H. (2018). *Internet of Things A to Z: Technologies and Applications*. Wiley Publication, IEEE Press.
3. Maciej, K. (2016). *Building the Internet of Things: Implement New Business Models, Disrupt Competitors, Transform Your Industry*. Wiley.

Websites and eLearning Sources:

1. https://pg.its.edu.in/sites/default/files/KCA043%20Internet%20of%20things%20 - IoT%20by%20Raj%20Kamal%20Text%20Book.pdf
2. https://mrcet.com/downloads/digital_notes/EEE/IoT%20&%20Applications%20Digital%20 N otes.pdf
3. https://www.youtube.com/watch?v=LlhmzVL5bm8
4. https://sjctni.edu/Department/cy/eLecture/IoT.ppt
5. https://www.tutorialspoint.com/internet_of_things/internet_of_things_tutorial.pdf
6. https://www.inria.fr/sites/default/files/2021-12/LB_IoT_EN_WEB_HD_2.pdf

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Recall and explain the fundamentals of IoT, including its characteristics, architecture, and various categories.	**K1**
CO2	Understand and describe different types of sensors, microcontrollers, and protocols used for IoT communication.	**K2**
CO3	Apply knowledge of embedded systems by working with Arduino, Raspberry Pi, and other IoT prototyping platforms.	**K3**
CO4	Analyze IoT platforms, including cloud services like AWS and Azure, and evaluate data processing techniques such as virtualization, visualization, and edge analytics.	**K4**
CO5	Evaluate real-world IoT applications, such as smart cities, connected cars, and smart homes, and assess their impact, challenges, and future scope.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
5	**25UBC53ES01A**			**Discipline Specific Elective - 1:** Fundamentals of Internet of Things						**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	3	2	3	2	3	2	3	2	1	**2.3**
CO2	3	2	3	2	2	3	2	2	3	2	**2.4**
CO3	3	3	2	3	2	3	3	2	3	2	**2.6**
CO4	2	2	3	2	1	3	3	2	3	1	**2.2**
CO5	2	2	3	2	1	3	2	3	2	1	**2.1**
										Mean Overall Score	**2.4 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	25UBC53ES01B	**Discipline Specific Elective - 1:** Cloud Computing	4	3

Course Objectives
To provide a comprehensive knowledge of Cloud Computing concepts
To understand the principles of virtualization, its techniques, and its role in enabling cloud computing environments.
To explore the major cloud platforms used in the industry
To understand the real-world applications of Cloud Computing
To understand the fundamentals of virtualization and its impact on cloud computing, along with a comparison of key technologies

UNIT I **(12 Hours)**

Cloud Computing at a Glance, Historical Developments, Building Cloud Computing Environments, Computing Platforms and Technologies. Cloud Computing Architecture: Cloud Reference Model, Types of Clouds, Economics of the Cloud**.**

UNIT II **(12 Hours)**

Introduction, Characteristics of virtualized environments, Taxonomy of virtualization techniques, Virtualization and Cloud Computing-Pros and cons of virtualization, Technology examples: Xen: Para virtualization, VMware: full virtualization, Microsoft Hyper-V.

UNIT III **(12 Hours)**

Amazon Web Services: Compute Services, Storage Services, Communication Services, Additional Services. Google AppEngine: Architecture and Core Concepts, Application Life Cycle, Cost Model. Microsoft Azure: Azure core Concepts, SQL Azure.

UNIT IV **(12 Hours)**

Scientific Applications, Healthcare, Biology, Geoscience: Satellite image processing, Business and Consumer Applications: CRM and ERP, Productivity, Social Networking, Media Applications, Multiplayer online gaming.

UNIT V **(12 Hours)**

Energy efficiency in clouds, Market-based management of clouds: Market-oriented cloud computing, A reference model for MOCC, Technologies and initiatives supporting MOCC, Federated clouds/InterCloud: Cloud federation stack, Technologies for cloud federations.

Teaching Methodology	PPT, chalk and talk
Assessment Methods	Seminar, Snap Test, MCQ

Books for Study:

1. Raj Kumar Buyya, Christian Vecchiola, ThamaraiSelvi, S. (2013). *Mastering Cloud Computing* (1st Ed), McGraw Hill Education (India) Private Limited Publications, India.

Books for Reference:

1. Rajkumar Buyya, James Bromberg, and Andrzej Goscinski (2016). *Cloud Computing Principles and Paradigms*, Wiley Publications, USA.
2. Michael Miller (2014). *Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online*, Pearson Education, USA.
3. Arshdeep Bahga (2015). *Internet of Things, Universities Press in India Private Limited*, India.
4. Thomas Erl, Zaigham Mahmood, and Ricardo Puttini (2013). *Cloud Computing: Concepts, Technology & Architecture*, Pearson Education, USA.
5. Toby Velte, Anthony Velte, and Robert Elsenpeter (2010). *Cloud Computing: A Practical Approach*, McGraw-Hill Education, USA.

Websites and e Learning Sources:

1. https://www.lpude.in/SLMs/Master%20of%20Computer%20Applications/Sem_2/DECAP470_CL OUD_COMPUTING.pdf
2. https://dhoto.lecturer.pens.ac.id/lecture_notes/internet_of_things/CLOUD%20COMPUTING%20 Principles%20and%20Paradigms.pdf
3. https://eclass.uoa.gr/modules/document/file.php/D416/CloudComputingTheoryAndPractice.pdf
4. https://www.youtube.com/watch?v=2LaAJq1lB1Q
5. https://ptgmedia.pearsoncmg.com/images/9780133387520/samplepages/0133387526.pdf

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Recall the fundamental concepts and architecture of cloud computing	**K1**
CO2	Explain knowledge in understanding virtualization techniques and their role in enabling cloud infrastructure	**K2**
CO3	Apply the significance of industry-leading cloud platforms.	**K3**
CO4	Analyze and compare and the applications of cloud computing across various domains	**K4**
CO5	Evaluate the emerging trends in cloud computing.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
5	**25UBC53ES01B**			**Discipline Specific Elective - 1:** Cloud Computing						**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	2	**2.4**
CO2	2	3	2	3	2	3	2	3	2	1	**2.3**
CO3	2	2	3	2	1	3	3	2	3	1	**2.2**
CO4	3	3	2	3	2	3	3	2	3	2	**2.6**
CO5	2	2	3	2	1	3	2	3	2	1	**2.1**
										Mean Overall Score	**2.42 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	25UBC53ES02A	**Discipline Specific Elective - 2:** Aptitude and Reasoning	4	3

Course Objectives
To revise and master the basic techniques of arithmetic operations & logical reasoning.
To understand mathematical reasoning in order to read, comprehend, and construct mathematical arguments
To ability to analyze patterns, sequences, and logical connections.
To build the student's confidence in handling aptitude-related questions and improve their efficiency in solving problems
To equip students with the skills required to excel in competitive exams, entrance exams, and placement tests

UNIT I **(12 Hours)**

Numbers, HCF, LCM, Decimal fractions, Simplification, Square roots, cube roots, averages, problems in numbers.

UNIT II **(12 Hours)**

Surds and Indices, Percentages, profit and loss, ratio and proportion, partnership, chain rule, Time and work, Pipes and Distances, Time and Distance,

UNIT III **(12 Hours)**

Alligation, Simple Interest, Compound Interest, Logarithms, Area, Volume and surface area, Calendar, Clocks Permutation and combination, probability, True discount, banker's discount, height and distances, Odd man out series.

UNIT IV **(12 Hours)**

Logical Reasoning; classification, series completion, coding-decoding, blood relations, puzzle test, Seating Arrangements, logical Venn diagrams. Data Interpretation; Tabulation, Bar Graphs, pie Graphs, Line Graphs

UNIT V **(12 Hours)**

SET Theory: Representation of Set, Types of Sets, Set operation, finite and infinite set, Function, Cardinality of sets, Matrices.

Teaching Methodology	Group Discussions, PPT, chalk and talk
Assessment Methods	Seminar, MCQ, Gamified Learning

Books for Study:

1. R.S. Aggarwal. (2017). *Quantitative aptitude for competitive Examinations,* Seventh Revised Edition, S. Chand and Co. Ltd, New Delhi.
2. Kenneth H. Rosen. (2019). *Discrete Mathematics and its Applications*, eight edition, McGraw Hill Education.

Books for Reference:

1. R.S. Aggarwal. (2008). *Quantitative aptitude for competitive Examinations,* Seventh Revised Edition, S. Chand and Co. Ltd, New Delhi.
2. R.S. Aggarwal. (2020). *Quantitative Aptitude for Competitive Examination.*
3. R.S. Aggarwal. (2020). *A Modern Approach to Verbal & Non-Verbal Reasoning.*
4. Shakuntala Devi (2026). *Puzzles to Puzzle You. Orient Paperbacks,*

Websites and eLearning Sources:

1. https://www.indiabix.com/
2. https://prepinsta.com/learn-aptitude/
3. https://mettl.com/aptitude-tests/
4. https://www.careerride.com/online-aptitude-test.aspx

5. https://cdnbbsr.s3waas.gov.in/s3d1a21da7bca4abff8b0b61b87597de73/uploads/2025/03/202 50 30125.pdf

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Recall their logical thinking and analytical abilities to solve Quantitative aptitude questions from company specific and other competitive tests	**K1**
CO2	Summarize to solve questions related to Time and distance and time and work.	**K2**
CO3	Solve puzzle related questions from specific and other competitive tests	**K3**
CO4	Analyze and solve problems related to tables, bar graphs, pie charts, line graphs, and data sufficiency.	**K4**
CO5	Develop both speed and accuracy in solving aptitude-based problems,	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**	**Credits**	
5	**25UBC53ES02A**		**Discipline Specific Elective - 2:** Aptitude and Reasoning						**4**	**3**	
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	2	3	2	2	3	2	2	2	3	2.3
CO2	2	3	2	3	2	2	3	2	3	2	2.4
CO3	2	2	3	2	3	2	2	3	3	3	2.5
CO4	3	2	2	3	3	2	2	2	2	2	2.3
CO5	2	3	3	2	2	3	2	3	2	2	2.4
										Mean Overall Score	**2.38 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	25UBC53ES02B	**Discipline Specific Elective - 2:** Cyber Security	4	3

Course Objectives
To introduce the fundamental concepts of cybersecurity and the need for protecting digital assets.
To explore threats, vulnerabilities, and attack mechanisms in modern computing environments.
To develop skills in security planning, governance, and policy enforcement in organizations.
To understand security technologies, including firewalls, intrusion detection systems,
To explore cryptographic algorithms, encryption techniques, and their role in securing information.

UNIT I **(12 Hours)**

Security, Components of Information System, The System Development Life Cycle, Security Development life cycle, Security Professionals and the Organizations, Communities of Interest, Information Security.

UNIT II **(12 Hours)**

The Need for Security: Business needs first, Threats, Attacks, Types of Hackers, Classification of Attacks, Security Breaches, Malware, Network Vulnerabilities, Types of Attacks.

UNIT III **(12 Hours)**

Planning for Security: Information Security Planning and Governance, Information Security Policy, Standards, and Practices, Security Education, Training, and Awareness Program. Legal, Ethical, and Professional Issues in Information Security: Law and Ethics in Information Security, Relevant U.S. Laws.

UNIT IV **(12 Hours)**

Security Technology: Access Control, Firewalls, VPN's. Intrusion Detection and Prevention Systems and Other Security Tools, Scanning and Analysis Tools. Risk Management: Risk Identification, Assessment, Control. Staying Safe in Cyber Space: Need for Digital Resilience, Browser Protection, Network Protection, Email Protection, Malware Free Techniques.

UNIT V **(12 Hours)**

Foundations of Cryptology, Cipher Methods, Cryptographic Algorithms, Cryptographic Tools, Attacks on Cryptosystems.

Teaching Methodology	PPT, chalk and talk
Assessment Method	Seminar, Test, Quiz

Books for Study:

1. Michael E.W., & Herbert J.M. (2012). *Principles of Information Security*. (4th Ed). Course Technology. Cengage Learning
2. Behrouz A. Forouzan (2015) Cryptography and Network Security. (3rd Ed) Tata McGraw Hill

Books for Reference:

1. William, S. (2017). *Cryptography and Network Security: Principles and Practice*. (7th Ed.). Pearson Education Inc.
2. Ross J. Anderson (2008) *Security Engineering: A Guide to Building Dependable Distributed Systems (*2nd Ed) – Wiley.
3. Mark, S. (2022). *Information Security: Principles and Practice*. Wiley Blackwell Publications.

Websites and eLearning Sources:

1. https://www.kali.org/
2. https://csrc.nist.gov
3. https://www.sans.org/
4. https://www.coursera.org/specializations/intro-cyber-security
5. https://www.udemy.com/topic/cyber security

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, students will be able to	
CO1	Relate the need for security in different aspects	**K1**
CO2	Apply security policy in system design and analyze network security protocols	**K2**
CO3	Clarify security policies, legal, ethical, and professional aspects of Information Security	**K3**
CO4	Identify a network security threat and familiarize in intrusion detection and Prevention	**K4**
CO5	Distinguish the concept of Cryptography and recognize its Tools.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
5	**25UBC53ES02B**			**Discipline Specific Elective - 2:** Cyber Security						**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	2	3	3	3	2	3	3	3	2	**2.6**
CO2	2	3	1	2	3	3	2	3	2	2	**2.3**
CO3	3	2	3	3	2	3	3	3	3	1	**2.6**
CO4	3	3	2	3	2	2	3	2	3	2	**2.5**
CO5	2	3	3	3	2	3	3	3	3	1	**2.6**
										Mean Overall Score	**2.52 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	25UBC54OE01	**Open Elective – 1 (WS):** Digital Marketing	4	2

Course Objectives
To understand the concept of digital marketing and its real-world iterations
To articulate innovative insights in digital marketing that enable a competitive edge.
To identify and utilize various tools such as Twitter and Instagram
To discuss the benefits of Marketing Tools
To examine the concept of Marketing Web Analytics

UNIT I **(12 Hours)**

Digital Marketing: Introduction, Internet Users, Digital Marketing Strategies, Skills Required in Digital Marketing, Digital Marketing Plan. Display Advertising: Introduction, Concept of Display Advertising, Types of Display Ads, Buying Models, Display Plan, Targeting.

UNIT II **(12 Hours)**

Advertising: Introduction, Programmatic Digital Advertising, Analytics Tools, YouTube Advertising. Search Engine Advertising: Introduction, Pay for Search Advertising, Understanding Ad Placement, Understanding Ad Ranks.

UNIT III **(12 Hours)**

Facebook: Introduction, Facebook for Business, Anatomy of an Ad Campaign, Adverts, Other Marketing Tools, Other Essentials. Twitter Marketing: Introduction, Getting Started with Twitter, Building a Context Strategy, Twitter Usage, Twitter Ads, Twitter Analytics, Twitter Tools, Instagram.

UNIT IV **(12Hours)**

Search Engine Optimization: Introduction, Concepts of Search Engine Optimization, Search Engine Optimization Phases, On page optimization, Off page Optimization.

UNIT V **(12 Hours)**

Web Analytics: Introduction, Data Collection, Key Metrics, Marketing Web Analytics Actionable, Types of Tracking codes, Mobile Analytics.

Teaching Methodology	PPT, chalk and talk
Assessment Method	Seminar, Test, Quiz

Books for Study:

1. Gupta, S. (2017). *Digital Marketing*, (1st Ed.). Mc-Graw Hill, New Delhi.

Books for Reference:

1. Dodson, I. (2018). *The Art of Digital Marketing* (1st Ed.). Wiley, New Jersey, USA.
2. Kamat, N.C., & Kamat, N.C. (2018). *Digital Social Media Marketing* (1st Ed.). Himalaya Publishing House Pvt. Ltd.
3. Deiss, R., & Henneberry, R. (2020). *Digital Marketing for Dummies*, (2nd Ed.). John Wiley& Sons, Inc.

Websites and eLearning Sources:

1. https://www.webmarketingacademy.in/wp-content/uploads/2018/10/A-Beginners-Guide-to- Digital-Marketing.pdf
2. https://www.eway-crm.com/eWay-Book/eWay-Book%20-%20Online%20Marketing%20EN.pdf
3. https://www.americansforthearts.org/sites/default/files/Netmarks-2016-Guide-to-Digital- Marketing.pdf
4. https://www.tutorialspoint.com/seo/seo_tutorial.pdf
5. https://cdn2.hubspot.net/hubfs/2080894/1217%20-%20App%20Analytics%20Campaign/Mobile-App-Analytics-Guide.pdf

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	Show the acquaintance of the concepts of Digital Marketing and Display Advertising.	**K1**
CO2	Comprehend the Anatomy of an Ad Campaign	**K2**
CO3	Identify the concepts of Search Engine Advertising.	**K3**
CO4	Classify the knowledge of Facebook Marketing and Twitter Marketing.	**K4**
CO5	Distinguish various applications of Search Engine Optimization and social media.	**K5**

Relationship Matrix											
Semester	**Course code**		**Title of the Course**							**Hours**	**Credits**
5	**25UBC54OE01**		**Open Elective – 1 (WS):** Digital Marketing							**4**	**2**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Scores of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	2	3	2	3	2	3	2	2	**2.4**
CO2	2	3	2	3	3	2	1	2	3	3	**2.4**
CO3	2	3	2	3	3	3	3	2	2	2	**2.5**
CO4	3	2	3	3	2	3	1	3	2	3	**2.5**
CO5	2	2	2	3	2	3	3	3	2	2	**2.4**
Mean Overall Score											**2.44 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	25UBU54SL04	**Certificate Course:** Fundamentals of Multimedia and Animations	0	2

Course Objectives
To identify students with a foundational understanding of multimedia.
To familiarize students with various multimedia tasks.
To help students understand the different types of graphics and image data, popular file formats.
To acquaint students with Adobe Flash.
To teach students the principles of animation using Flash, including creating, editing, and testing.

UNIT I

Introduction to Multimedia: Components of Multimedia, Multimedia: Past and Present, Hypermedia, WWW, and Internet, Multimedia Software Tools.

UNIT II

A Perception of Multimedia: Multimedia Tasks and Concerns, Multimedia Presentation, Some useful Editing and Authoring Tools.

UNIT III

Graphics and Image Data Representations: Graphics and Image Data Types, Popular File Formats; Color in Image and Video: Color Science, Color Models in Images, Color Models in Video.

UNIT IV

Getting Acquainted: Starting Flash and Opening a File: Getting to Know the Workspace, working with the Library Panel, Understanding the timeline, Organizing Layers in a timeline, using the Properties inspector, Using the tools Panel, Undoing Steps in Flash, Modifying the content and Stage, Saving Your Movie.

UNIT V

Adding Animation: Getting Started, Understanding the Project File, Changing the Pacing and timing, animating transformations, Changing the path of the motion, creating nested animations, Using the motion Editor, testing your movie.

Teaching Methodology	PPT, Video, Demo
Assessment Methods	Seminar, Snap Test, MCQ, Hands-On Practice

Books for Study:

1. Ze-Nian, L., Mark, S. D., & Jiangchuan, L. (2021). *Fundamentals of Multimedia,* (3rd Ed.). Springer Nature Switzerland AG.
2. Adobe Creative Team. (2012). *Adobe Flash Professional CS6 Classroom in a Book*. Adobe Systems Incorporated.

Books for Reference:

1. Tay, V. (2014). *Multimedia: Making It Work.* (9th Edi*)*. McGraw-Hill Education.
2. Rafael, C., Gonzalez., & Richard, E. W. (2018). *Digital Image Processing (4th Edi)*. Pearson.
3. Chris, G. (2012). *Flash CS6: The Missing Manual*. O'Reilly Media.

Websites and eLearning Sources:

1. https://users.dimi.uniud.it/~antonio.dangelo/MMS/materials/Fundamentals_of_Multimedia. pdf
2. https://www.slideshare.net/slideshow/chapter-1-multimedia-fundamentals- 61123502/61123502
3. https://www.sfu.ca/~tutor/techbytes/Flash/fl1.html
4. https://www.coursestuff.co.uk/DESI1182/docs/Flash%20tutorials.pdf

5. https://ayomenulisfisip.wordpress.com/wp-content/uploads/2018/01/introduction-to- multimedia.pdf

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Identify the components of multimedia, its evolution, and the significance of hypermedia.	**K1**
CO2	Describe various multimedia software tools for editing, authoring, and presenting multimedia content.	**K2**
CO3	Criticize different graphics and image data types, file formats, and color models used in images and video.	**K3**
CO4	Develop animations using Flash, including transformations, motion paths, nested animations, and 3D motion, and apply easing techniques to enhance animations.	**K4**
CO5	Evaluate the multimedia projects in Flash, ensuring they are optimized for presentation and distribution.	**K5**

Relationship Matrix											
Semester	**Course Code**	**Title of the Course**								**Hours**	**Credits**
5	**25UBU54SL04**	**Certificate Course:** Fundamentals of Multimedia and Animations								**0**	**2**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	3	**2.5**
CO2	2	3	2	3	2	3	3	3	2	3	**2.6**
CO3	2	2	3	2	2	3	3	2	3	2	**2.4**
CO4	3	3	2	3	2	3	3	2	3	2	**2.6**
CO5	2	2	3	3	2	3	3	3	2	3	**2.6**
										Mean Overall Score	**2.54 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	25UBC63CC11	**Core Course - 11:** Full Stack Development	6	4

Course Objectives
To learn the basics of web programming and apply styling techniques to enhance webpage design.
To use JavaScript for adding dynamic features, handling events, and validating forms.
To understand jQuery for simplified DOM manipulation and event handling.
To build scalable web applications using Node.js and server-side scripting.
To manage MySQL databases by creating, modifying, and querying data efficiently.

UNIT I **(18 Hours)**

HTML Overview: Introduction to HTML, Basic Structure of HTML, HTML Tags, Elements, Attributes, Text Formatting, Lists, Links, Images, Tables, Forms, Semantic Elements. CSS Basics: Introduction to CSS, Types of CSS, Selectors, Colors, Backgrounds, Borders, Margins, Padding, Text Formatting.CSS Layout: Box Model, Float, Positioning, Flexbox, Grid Layout. Responsive Design: Media Queries, Mobile-first Design.

UNIT II **(18 Hours)**

Introduction to JavaScript: History, Variables, Data Types, Operators. Control Structures: If-Else, Switch, Loops. Functions: Defining Functions, Function Expressions, Arrow Functions. Objects and Arrays: Creating Objects, Object Methods, Arrays, Array Methods. DOM Manipulation: Selecting Elements, Modifying Elements, Event Listeners. Form Validation: Regular Expressions, Validation Functions.

UNIT III **(18 Hours)**

Introduction to jQuery: Overview, Adding jQuery to Web Pages, Basic jQuery Syntax. Selectors and Events: Selecting Elements, Event Handling, Mouse Events, Keyboard Events. Effects and Animations: Hide/Show, Fade, Slide, Animate. DOM Manipulation: Adding and Removing Elements, Modifying Content, Traversing the DOM. AJAX with jQuery: Basics of AJAX, Loading Data from Server, Error Handling.

UNIT IV **(18 Hours)**

Introduction to NodeJS: Overview, Installation, Node Package Manager (NPM). Core Modules: File System, Path, HTTP, Events. Creating Web Servers: HTTP Module, Handling Requests and Responses. Express Framework: Introduction, Routing, Middleware, Static Files. Database Connectivity: Connecting to MySQL using NodeJS. CRUD Operations: Create, Read, Update, Delete

UNIT V **(18 Hours)**

Introduction to MySQL: Relational Database Concepts, Data Types, Primary Keys, Foreign Keys. SQL Basics: Select, Insert, Update, Delete Queries. Joins and Aggregates: Inner Join, Left Join, Right Join, Aggregate Functions. Constraints: Not Null, Unique, Check, Default, Indexes. Backup and Restore: Exporting and Importing Databases.

Teaching Methodology	PPT, Demonstrations, chalk and talk
Assessment Methods	Seminar, Snap Test, MCQ

Books for Study:

1. Duckett, J. (2011). *HTML and CSS: Design and Build Websites*. Wiley.
2. Flanagan, D. (2020). *JavaScript: The Definitive Guide*. O'Reilly Media.
3. Beaulieu, A. (2020). *Learning SQL: Generate, Manipulate, and Retrieve Data*. O'Reilly Media.

Books for Reference:

1. Robbins, J.N. (2018*). Learning Web Design*. O'Reilly Media.
2. Haverbeke, M. (2018). *Eloquent JavaScript.* No Starch Press.
3. Richard York. (2009). *Beginning JavaScript®and CSS Development with jQuery*, Wiley Publishing, Inc.
4. Paul Weinberg James Groff Andrew Oppel. (2010). *SQL The Complete Reference,* Third Edition, The McGraw-Hill Companies.

Websites and eLearning Sources:

1. https://wtf.tw/ref/duckett.pdf
2. https://pepa.holla.cz/wp-content/uploads/2016/08/JavaScript-The-Definitive-Guide-6th- Edition.pdf
3. https://www.kea.nu/files/textbooks/humblelearn2code/eloquentjavascript3rdedition.pdf
4. https://mrce.in/ebooks/Learning%20SQL%20Generate,%20Manipulate,%20&%20Retrieve%20 Data%203rd%20Ed.pdf
5. https://www.youtube.com/watch?v=ZxKM3DCV2kE

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, students will be able to	
CO1	Recognize knowledge in designing responsive web pages using HTML and CSS with proper structure and layout.	**K1**
CO2	Explain JavaScript to enhance user interactivity, form validation, and DOM manipulation.	**K2**
CO3	Implement jQuery for simplified DOM traversal, event handling, and animations.	**K3**
CO4	Examine server-side applications using Node.js for handling HTTP requests and database operations.	**K4**
CO5	Assess MySQL database operations including table creation, queries, and data manipulation.	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**							**Hours**	**Credits**
6	**25UBC63CC11**		**Core Course – 11:** Full Stack Development							**6**	**4**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	2	**2.4**
CO2	2	3	2	3	2	3	2	3	2	1	**2.3**
CO3	2	2	3	2	1	3	3	2	3	1	**2.2**
CO4	3	3	2	3	2	3	3	2	3	2	**2.6**
CO5	2	2	3	2	1	3	2	3	2	1	**2.1**
										Mean Overall Score	**2.64 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	25UBC63CC12	**Core Course – 12**: Data Mining and Warehousing	6	3

Course Objectives
To summarize the basic concepts in data mining and the techniques in knowledge mining
To analyze the fundamentals of Data Preprocessing
To apply the various concepts of Data Warehousing and Online Analytical Processing for forecasting
To estimate the knowledge of Outlier Detection, Data Mining Trends and Research Frontiers
To summarize the basic concepts in data mining and the techniques in knowledge mining

UNIT I **(18 Hours)**

Data ware house: The Need for an Operational Data Store (ODS), Operational Data Store, Data Ware house, Data Marts, Comparative Study of Data Warehouse with OLTP and ODS. Data Warehouse Schema: Introduction to Data Warehouse Schema, Star Schema, Snow flake Schema, Fact Constellation Schema, Comparison among Star, Snowflake and Fact Constellation Schema.

UNIT II **(18 Hours)**

Online Analytical Processing: Introduction to Online Analytical Processing, Representation of Multidimensional Data, Types of OLAP Servers, OLAP Operations. Introduction to Data Mining: Need of Data Mining, Data Mining Do and Not Do, Data Mining Applications, Data Mining Process, Data Mining Techniques, Difference between Data Mining and Machine Learning.

UNIT III **(18 Hours)**

Data Preprocessing: Need for Data Preprocessing, Data Preprocessing Methods. Association Mining: Introduction to Association Rule Mining, Defining Association Rule Mining, Representations of Items for Association Mining, The Metrics to Evaluate the Strength of Association Rules. The Apriori Algorithm: About the inventors of Apriori, Working of the Apriori algorithm.

UNIT IV **(18 Hours)**

Classification: Introduction to Classification, Types of Classification, Input and Output Attributes, Working of Classification, Guidelines for Size and Quality of the Training Data set. Introduction to the Decision Tree Classifier: Building decision tree, Concept of information theory, Advantages of the decision tree method, Disadvantages of the decision tree. Understanding Metrics to Assess the Quality of Classifiers: The boy who cried wolf - True positive, True negative, False positive, False negative, Confusion Matrix, Precision, Recall, F-Measure.

UNIT V **(18 Hours)**

Cluster Analysis: Introduction to Cluster Analysis, Applications of Cluster Analysis, Desired Features of Clustering, Major Clustering Methods/Algorithms. Distance Metrics: Euclidean distance, Manhattan distance, Chebyshev distance. Partitioning Clustering: k-means clustering.

Teaching Methodology	Chart, PPT, chalk and talk
Assessment Methods	Seminar, Snap Test, MCQ

Books for Study:

1. Parteek, B. (2019*). Data Warehousing and Data Mining*, (1st Ed.). Cambridge University Press.

Books for Reference:

2. Sreedhar, G. (2017). *Web Data Mining and The Development of Knowledge-Based Decision Support Systems*, (1st Ed.). IGI Global.
3. Zaki, M.J. & Wagner, M.J.R. (2020). *Data Mining and Machine Learning – Fundamental Concepts and Algorithms*, (2nd Ed.). Cambridge University Press.
4. Raja, R., Nagwanshi, K.K., Kumar, S. & Laxmi, R.K. (2022). *Data Mining and Machine*
5. *Learning Applications*, (1st Ed.). Scrivener Publishing.

Websites and eLearning Sources:

1. Parteek, B. (2019). Data Warehousing and Data Mining, (1st Ed.). Cambridge University Press.
2. https://datamineaz.org/textbooks/hanDataMiningConceptual.pdf
3. https://www.gacbe.ac.in/images/E%20books/Data%20Mining%20Practical%20Machine%20Learning%20Tools%20and%20Techniques%203rd%20Edition-Manteshbbbb.pdf
4. https://www.tpointtech.com/data-mining
5. https://www.cs.ccsu.edu/~markov/weka-tutorial.pdf

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Understand the fundamental concepts, principles, and applications of Data Mining and Data Warehousing.	**K1**
CO2	Describe the fundamentals of various concepts of Data Warehousing and Online Analytical Processing.	**K2**
CO3	Apply the data preprocessing techniques and transformation methods to prepare data for mining.	**K3**
CO4	Analyze the various data mining techniques such as classification, clustering, and association rule mining.	**K4**
CO5	Evaluate different data mining clustering algorithms and their effectiveness for real-world applications.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
6	**25UBC63CC12**			**Core Course – 12**: Data Mining and Warehousing						**6**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	2	**2.4**
CO2	2	3	2	3	2	3	2	3	2	1	**2.3**
CO3	2	2	3	2	2	3	3	2	3	2	**2.4**
CO4	3	3	2	3	3	3	3	2	3	3	**2.8**
CO5	2	2	3	2	1	3	2	3	2	1	**2.1**
										Mean Overall Score	**2.5 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	25UBC63CP07	**Core Practical - 7:** Full Stack Development Lab	3	2

Course Objectives
To learn HTML elements and CSS rules for designing responsive web pages.
To understand JavaScript concepts for adding interactivity and validation to web pages.
To explore jQuery for efficient DOM manipulation and animations.
To develop dynamic web applications using Node.js with database connectivity.
To implement MySQL queries for data storage, retrieval, and management in web applications.

List of Exercises:

1. Create a webpage using lists, tables, and forms.
2. Add Audio and Video to a Webpage and Style Elements Using CSS
3. Validate form inputs using JavaScript and regular expressions.
4. Change webpage content using DOM and event listeners.
5. Modify webpage elements using jQuery.
6. Add Effects and Animations Like Hide, Show, Slide, and Fade
7. Build a web server with Node.js.
8. Create a Simple API with Express.js
9. Perform Create, Read, Update, and Delete (CRUD) operations on a MySQL database
10. Use SQL Queries to Join Multiple Tables and Retrieve Data Efficiently

Teaching Methodology	Hands on Lab Sessions
Assessment Methods	Practical Test, Note Evaluation, Viva-Voce

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Recall proficiency in creating structured web pages using HTML elements, tags, and attributes.	**K1**
CO2	Understand the CSS styling techniques like selectors, box model, and responsive design for visually appealing web pages.	**K2**
CO3	Apply interactive web pages with JavaScript by handling user input, functions, and form validations.	**K3**
CO4	Analyze web page manipulation and create dynamic effects using jQuery.	**K4**
CO5	Evaluate server-side applications with Node.js and perform CRUD operations using MySQL.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
6	**25UBC63CP07**			**Core Practical - 7:** Full Stack Development Lab						**3**	**2**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	3	**2.7**
CO2	2	3	2	3	2	3	2	3	2	3	**2.4**
CO3	2	2	3	2	1	3	3	2	3	3	**2.4**
CO4	3	3	2	3	2	3	3	2	3	3	**2.6**
CO5	2	2	3	2	1	3	2	3	2	3	**2.6**
										Mean Overall Score	**2.64 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	25UBC63CP08	**Core Practical – 8:** Data Mining and Warehousing Lab	3	2

Course Objectives
To summarize the basic concepts in data mining and the techniques in knowledge mining.
To analyze the fundamentals of Data Preprocessing techniques.
To apply the various concepts of Data Warehousing and Online Analytical Processing for forecasting.
To estimate the knowledge of Outlier Detection, Data Mining Trends and Research Frontiers.
To summarize the basic concepts in data mining and the techniques in knowledge mining.

List of Exercises:

1. Creating new Arff File
2. Data pre-processing – Supervised and Unsupervised Filters
2. Feature Selection – Filter, Wrapper
3. Association Rule Mining – Apriori Algorithm
4. Classification - Multilayer Perceptron and Decision Tree
5. Clustering - Simple KMeans, Hierarchical cluster and EM
6. Data preprocessing on student.arff and labor.arff
7. Association rule process on contactlenses.arff and test.arff using apriori algorithm
9. Classification rule process on dataset employee.arff using j48, id3, naïve bayes algorithm
10. Clustering rule process on dataset iris.arff and student.arff using simple k-means

Teaching Methodology	Hands-on Lab session
Assessment Methods	Practical Test, Viva-voce, Note Evaluation

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, the students will be able to	**Cognitive Levels (K-Level)**
CO1	Understand and ability to build Data Warehouse and Explore WEKA	**K1**
CO2	Demonstrate the data preprocessing techniques such as cleaning, transformation, and reduction.	**K2**
CO3	Apply data preprocessing techniques such as cleaning, transformation, and reduction.	**K3**
CO4	Analyse the various clustering techniques in WEKA Tool.	**K4**
CO5	Evaluate association rule mining techniques such as Apriori, FP-Growth for extracting hidden patterns.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
6	**25UBC63CP08**			**Core Practical – 8:** Data Mining and Warehousing Lab						**3**	**2**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	2	**2.4**
CO2	2	3	2	3	2	3	2	3	2	1	**2.3**
CO3	2	2	3	2	1	3	3	2	3	1	**2.2**
CO4	3	3	2	3	2	3	3	2	3	2	**2.6**
CO5	2	2	3	2	1	3	2	3	2	1	**2.1**
Mean Overall Score											**2.4 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	25UBC63ES03A	**Discipline Specific Elective - 3:** Distributed Operating Systems	4	3

Course Objectives
To understand basics of operating systems and its types.
To analyze the architecture of distributed operating systems
To develop an inter-process communication technique, in practical applications.
To acquire knowledge of real-time operating systems, scheduling techniques and managing real- time tasks.
To implementation of security measures, authentication, cryptography in operating systems.

UNIT I **(12 Hours)**

Fundamentals: Distributed operating systems, Evolution of DOS, Distributed computing system models, Issues in designing distributed operating system, Distributed computing environment. Computer Networks: Network Types, Lan and WAN Technologies, Communication protocols.

UNIT II **(12 Hours)**

Message passing: Introduction, Synchronization, Buffering, Multi datagram messages, Encoding Decoding of message data, Process addressing, Failure handling. Remote Procedure call: The RPC model, transparency of RPC, Implementing RPC, RPC messages, Marshalling Arguments, Parameter passing Semantics, call Semantics, communication protocols, client server binding, Exception Handling. Security.

UNIT III **(12 Hours)**

Synchronization: Clock synchronization, Event ordering Mutual Exclusion, Deadlock. Distributed shared memory: general architecture of DSM systems, Granularity, structure of shared memory space, Replacement strategy, Thrashing.

UNIT IV **(12 Hours)**

Naming: Naming System, Fundamental Concepts, System Oriented Names, Object Locating Mechanism, Human Oriented Names, Name Caches, Naming and Security. Security: Cryptography, Authentication, Access control, Digital Signatures.

UNIT V **(12 hours)**

Process Management: Introduction, Process Migration, Threads. Distributed File system: File models, File-accessing, models, File shared semantics, File cache Schemes, File Replication, Fault Tolerance, Atomic Transactions.

Teaching Methodology	Chart, PPT, chalk and talk
Assessment Methods	Seminar, Snap Test, MCQ

Books for Study:

1. Pradeep Sinha, (2012), *Distributed operating system concepts and design*, PHI learning private limited New Delhi.

Books for Reference:

1. Pramod Chandra P. Bhatt, (2010), *An introduction to operating systems, concept and practice*, PHI, Third edition,
2. Daniel. P. Bovet & Marco Cesati, (2005) *Understanding the Linux kernel*, 3rd edition, O"Reilly,
3. Andrew S Tanenbaum, (2007), Distributed Operating Systems -principles and paradigms, PHI. Pearson Education.

Websites and eLearning Sources:

1. http://dpnm.postech.ac.kr/itec502/OS-Concepts-7th.pdf
2. https://vowi.fsinf.at/images/b/bc/TU_Wien-Verteilte_Systeme_VO_%28G%C3%B6schka%29_-_Tannenbaum-distributed_systems_principles_and_paradigms_2nd_edition.pdf

3. https://books.google.co.ck/books?id=coPT7vaEjFsC&printsec=frontcover#v=onepage&q&f=f al se
4. https://acadndtechy.wordpress.com/wp-content/uploads/2015/01/real-time-systems-rajib-mall- pearson-education-india-2007.pdf

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Understand the fundamentals of distributed operating systems and computing models.	**K1**
CO2	Analyze network technologies, communication protocols, and their impact on distributed systems.	**K2**
CO3	Apply message passing, remote procedure calls, and synchronization techniques.	**K3**
CO4	Explore naming systems, security mechanisms, cryptography, and authentication	**K4**
CO5	Evaluate process management, distributed file systems, and fault tolerance strategies.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
6	**25UBC63ES03A**			**Discipline Specific Elective - 3:** Distributed Operating Systems						**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	2	**2.4**
CO2	2	3	3	3	2	3	3	3	3	2	**2.6**
CO3	2	2	3	2	2	2	3	2	2	2	**2.2**
CO4	3	2	3	2	2	3	2	2	3	2	**2.4**
CO5	2	3	2	3	2	3	2	3	2	1	**2.3**
										Mean Overall Score	**2.38 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	25UBC63ES03B	**Discipline Specific Elective – 3:** Business Analytics	4	3

Course Objectives
To introduce the evolution and types of business analytics.
To develop proficiency in database management and queries using Excel.
To create effective data visualizations.
To apply machine learning models for predictive analytics.
To understand and implement decision trees and k-NN algorithms.

UNIT I **(12 Hours)**

Introduction to business analytics: Evolution of Business Analytics, Descriptive, Predictive and Prescriptive analytics, Data for business analytics, Models in business analytics, Problem-solving with analytics.

UNIT II **(12 Hours)**

Database Analytics: Data Sets and Databases, Data Queries: Tables, Sorting, Filtering, Logical Functions, Lookup Functions for Database Queries, Excel Template Design, Pivot Tables.

UNIT III **(12 Hours)**

Descriptive Analytics: The Value of Data Visualization, Creating Charts in Microsoft Excel, Creating Charts in Microsoft Excel, Other Excel Data Visualization Tools.

UNIT IV **(12 Hours)**

Machine Learning for Predictive Data Analytics: Predictive Data Analytics; The Predictive Data Analytics Project Lifecycle: CRISP-DM, Predictive Data Analytics Tools, Converting Business Problems into Analytics Solutions, Designing the Analytics Base Table, Designing and Implementing Features.

UNIT V **(12 Hours)**

Information-based Learning: Fundamentals - Decision Trees - Shannon's Entropy Model, Information Gain; Similarity-based Learning: Standard Approach: The Nearest Neighbor Algorithm; Extensions and Variations;

Teaching Methodology	PPT, Data Gathering and Analysis, Data Visualization, Discussions
Assessment Methods	Seminars, Quizzes and Exams, Assignments, Case Study Analysis

Books for Study:

1. Evans, J. R. (2021). *Business Analytics.* (3rd Ed.). Pearson Education, Limited.
2. John, D. K., Brian, M. N., & Aoife, D. (2015). *Fundamentals of Machine Learning for Predictive Data Analytics (3rd Edition).* The MIT Press.

Books for Reference:

1. Christian, A., & Wayne, L. (2014). *Business Analytics: Data Analysis & Decision Making* (7th Ed.). Cengage Learning.
2. McKinney, W. (2018). Python for Data Analysis (3rd Ed.). O'Reilly Media.
3. Dinabandhu, B. (2017). *Business Analytics.* Routledge, Apex CoVantage. LLC.

Websites and eLearning Sources:

1. https://api.pageplace.de/preview/DT0400.9781292339047_A39573401/preview - 9781292339047_A39573401.pdf
2. https://www.aalimec.ac.in/wp-content/uploads/Material/cse/3/CCW331%20-%20Business%20Analytics.pdf
3. https://www.lpude.in/SLMs/Master%20of%20Computer%20Applications/Sem_4/DEMGN801_ BUSINESS_ANALYTICS.pdf
4. https://machinelearningbook.com/wp-content/uploads/2015/07/FMLPDA_SampleChapter_InformationBasedLearning.pdf

5. https://www.aalimec.ac.in/wp-content/uploads/Material/cse/3/CCW331%20-%20Business%20Analytics.pdf

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, the students will be able to	**Cognitive Levels (K-Level)**
CO1	Differentiate between descriptive, predictive, and prescriptive analytics.	**K1**
CO2	Use Excel for data queries and PivotTables using Microsoft Excel.	**K2**
CO3	Design charts and dashboards using Microsoft Excel.	**K3**
CO4	Solve real-world business problems using predictive analytics and machine learning techniques.	**K4**
CO5	Apply advanced machine learning algorithms for information-based and similarity-based learning tasks.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
6	**25UBC63ES03B**			**Discipline Specific Elective – 3:** Business Analytics						**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	2	2	2	3	2	2	2	3	**2.3**
CO2	2	3	2	2	2	3	3	3	2	3	**2.5**
CO3	2	2	2	2	3	2	3	2	3	2	**2.3**
CO4	3	2	2	2	2	2	3	2	3	2	**2.3**
CO5	2	2	2	2	2	3	2	3	2	3	**2.3**
										Mean Overall Score	**2.34 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	25UBC6ES04A	**Discipline Specific Elective – 4:** Ethical Hacking	4	3

Course Objectives
To understand the need for security
To understand the fundamental concepts of footprinting
To gain knowledge on scanning and its tools
To apply enumeration and its techniques to secure data
To comprehend the hacking methods

UNIT I **(12 Hours)**

Introduction to Ethical Hacking: Introduction, Importance of Security, Importance of Security, Importance of Security, Types of Hacker Attacks, Hacktivism, Ethical Hackers, Vulnerability Research, Conducting Ethical Hacking, Computer Crimes and Implications.

UNIT II **(12 Hours)**

Footprinting: Introduction to Footprinting, Information-Gathering Methodology, Footprinting Tools, WHOIS Tools, DNS Information Tools, Locating the Network Range, E-Mail Spiders, Locating Network Activity, Meta Search Engines.

UNIT III **(12 Hours)**

Scanning: Introduction to Scanning, Scanning Defined, Objectives of Scanning, Objectives of Scanning, Tools: Live System Scanning Tools, Port Scanning Tools, Proxy Tools, Spoofing Tools.

UNIT IV **(12 Hours)**

Enumeration: Introduction to Enumeration, Enumeration Defined, Enumeration Techniques, Enumeration Procedure.

UNIT V **(12 Hours)**

System Hacking: Introduction to System Hacking, Cracking Passwords, Password Guessing, Password Cracking Tools, Password Cracking Countermeasures.

Teaching Methodology	PPT, chalk and talk
Assessment Methods	Assignment, Seminar, Test, MCQ

Book for Study:

1. Ec-Council. (2010). *Ethical Hacking and Countermeasures: Attack Phases,* (1st Ed.). Cengage Learning Press.

Books for Reference:

1. Michael T. Simpson, Kent Backman, James E. Corley (2012). “Hands-On Ethical
2. Hacking and Network Defense”, Cengage Learning.
3. Patrick Engebretson2013. The Basics of Hacking and Penetration Testing –
4. Ethical Hacking and Penetration Testing Made Easy, (2nd Ed.). Syngress Media.

Websites and eLearning Sources:

1. https://dl.hellodigi.ir/dl.hellodigi.ir/dl/book/Ethical%20Hacking%20and%20Countermeasures%20Attack%20Phases.pdf
2. EN-Ethical Hacking.pdf
3. 2-footprinting-and-reconnaissance.pdf
4. Ethical Hacking - Footprinting Footprinting Overview: Unit 2 | PDF | Domain Name System | Domain Name
5. CEH v10: EC-Council Certified Ethical Hacker Complete Training Guide with Practice Labs: Exam: 312-50

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Relate the types of hackers with the attacks	**K1**
CO2	Summarize on the footprinting techniques	**K2**
CO3	Identify the tools to be used for scanning	**K3**
CO4	Examine the enumeration techniques and procedures	**K4**
CO5	Compare the system hacking and password cracking tools	**K5**

Relationship Matrix											
Semester	**Course Code**	**Title of the Course**								**Hours**	**Credits**
6	**25UBC6ES04A**	**Discipline Specific Elective – 4:** Ethical Hacking								**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	2	2	3	3	2	2	3	2	2	**2.3**
CO2	2	2	2	2	3	2	3	2	3	2	**2.3**
CO3	2	2	2	3	3	2	2	2	3	3	**2.4**
CO4	2	2	3	3	3	3	2	3	2	2	**2.5**
CO5	3	2	3	2	2	2	3	2	3	3	**2.5**
										Mean Overall Score	**2.4 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	25UBC63ES04B	**Discipline Specific Elective – 4:** Web Mining	4	3

Course Objectives
To learn the basics of web mining, including association rule mining and machine learning techniques.
To study information retrieval models, relevance feedback, and web search techniques.
To understand social network analysis methods and web crawling strategies.
To learn wrapper generation techniques for extracting structured data from web pages.
To analyze schema matching, query integration, web usage patterns for recommendations, query log mining, and computational advertising.

UNIT I **(12 Hours)**

Introduction: World Wide Web, History of the Web and the Internet, Data Mining, Web Mining Introduction to Association Rule Mining, Supervised Learning & Unsupervised Learning. Information Retrieval and Web Search: Basic Concepts of Information Retrieval, Information Retrieval Models, Relevance Feedback, Evaluation Measures, Text and Web Page Pre-Processing, Inverted Index and Its Compression, Latent Semantic Indexing, Web Search.

UNIT II **(12 Hours)**

Social Network Analysis: Introduction, Co-Citation and Bibliographic Coupling, Page Rank, HITS Algorithm, Community Discovery. Web Crawling: A Basic Crawler Algorithm, Implementation Issues, Universal Crawlers, Focused Crawlers, Topical Crawlers, Evaluation, Crawler Ethics and Conflicts.

UNIT III **(12 Hours)**

Structured Data Extraction: Wrapper Generation, Preliminaries, Wrapper Induction, Instance-Based Wrapper Learning, Automatic Wrapper Generation: Problems, String Matching and Tree Matching, Building DOM Trees, Extraction Based on a Single List Page, Extraction Based on Multiple Pages.

UNIT IV **(12 Hours)**

Information Integration: Introduction to Schema Matching, Pre-Processing for Schema Matching, Schema - Level Matching, Domain and Instance-Level Matching, Combining Similarities. Opinion Mining and Sentiment Analysis: The Problem of Opinion Mining, Document Sentiment Classification, Sentence Subjectivity and Sentiment Classification, Opinion Lexicon Expansion, Aspect- Based Opinion Mining, Opinion Search and Retrieval, Opinion Spam Detection.

UNIT V **(12 Hours)**

Web Usage Mining: Data Collection and Pre-Processing, Data Modeling for Web Usage Mining, Discovery and Analysis of Web Usage Patterns, Recommender Systems and Collaborative Filtering, Query Log Mining, Computational Advertising.

Teaching Methodology	Chart, PPT, chalk and talk
Assessment Methods	Assignment, sSeminar, Test, MCQ

Books for Study:

1. S Chakrabarti (2002). Mining the Web, Discovering Knowledge from Hypertext Data (1st Ed.), Morgan Kaufmann Publishes.

Books for Reference:

1 . Bing Liu, 2011, Web Data Mining: Exploring Hyperlinks, Contents, and Usage Data, 2nd Edition, Springer.

2. Ricardo Baeza-Yates and Berthier Ribeiro-Neto, 2011, Modern Information Retrieval: The Concepts and Technology behind Search, 2nd Edition, Addison-Wesley.
3. Christopher D. Manning, Prabhakar Raghavan, and Hinrich Schütze, 2008, Introduction to Information Retrieval, 1st Edition, Cambridge University Press.
4. M.A. Hearst, 2011, Search User Interfaces, 1st Edition, Cambridge University Press. Lee, R. E. (2008). *Phycology,* (4th Ed.). Cambridge University Press.

Websites and eLearning Sources:

1. https://www.tutorialspoint.com/data_mining/dm_web_mining.htm
2. https://nlp.stanford.edu/IR-book/
3. https://www.geeksforgeeks.org/web-crawling-concept-and-its-implementation-in-python/
4. https://www.kdnuggets.com/2020/02/social-network-analysis-overview.html
5. https://towardsdatascience.com/sentiment-analysis-introduction-to-opinion-mining- 3cc32d3c3db8

Course Outcomes		
CO No.	**CO-Statements**	**Cognitive Levels (K-Level)**
	On successful completion of this course, the students will be able to	
CO1	Recall fundamental concepts of web mining, including its types, applications, and basic machine learning techniques.	**K1**
CO2	Explain the principles of information retrieval, web search, and different ranking algorithms used in search engines.	**K2**
CO3	Implement web crawling techniques and structured data extraction methods using wrapper generation techniques.	**K3**
CO4	Analyze schema matching techniques, sentiment analysis approaches, and integration of web query interfaces.	**K4**
CO5	Evaluate web usage mining models, recommender systems, and query log mining techniques for knowledge discovery.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
6	**25UBC63ES04B**			**Discipline Specific Elective – 4:** Web Mining						**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	2	3	2	2	3	2	**2.4**
CO2	2	3	2	3	2	3	2	3	2	2	**2.4**
CO3	2	2	3	2	3	3	3	3	3	2	**2.6**
CO4	3	3	2	3	2	3	3	2	3	2	**2.6**
CO5	2	2	3	2	2	3	2	3	2	2	**2.3**
Mean Overall Score											**2.46 (High)**

Semester	Course Code	Title of the Course	Hours	Credit
6	25UBC63CE01	Comprehensive Examination	0	2

Unit – I

C Programming, Digital Computer Fundamentals

Unit –II

Relational Management System, Data Structures and Algorithms.

Unit – III

Java Programming, Data Analytics using R Programming

Unit – IV

Python Programming, Software Engineering

Unit – V

ASP.Net, Web Technologies

CO No.	CO- Statements	Cognitive Levels (K- Levels)
	On successful completion of this course, students will be able to	
CO-1	Recall the basic concept of C Programming and DCF	K1
CO-2	Summarize RDBMS concepts in database.	K2
CO-3	Apply the fundamental principles of java programming and Data Analytics using R Programming.	K3
CO-4	Analyze the concepts of python programming in simple problems	K4
CO-5	Examine the basic concepts of asp dot net and web technologies	K5

Relationship Matrix

Semester	Course Code	Title of the Course	Hours	Credits
6	25UBC63CE01	Comprehensive Examination	0	2

Course Outcomes (COs)↓	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of Cos
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO-1	1	2	2	3	3	2	2	3	3	2	2.3
CO-2	3	1	3	2	2	3	2	2	3	3	2.4
CO-3	2	2	2	1	2	2	3	2	3	2	2.1
CO-4	3	2	2	3	2	3	2	3	2	3	2.5
CO-5	3	2	3	2	3	2	2	3	2	2	2.4
										Mean Overall Score	2.4 (High)

Semester	Course Code	Title of the Course	Hours	Credit
6	25UBC64OE02	**Open Elective - 2:** Web Design	4	2

Course Objectives
To understand the fundamental elements of Design
To comprehend various methods of building Web Pages.
To design web pages using tables and forms
To learn to design layouts using HTML and CSS techniques
To apply CSS to stylize websites

Unit I: (12 Hours)

Web Page Building Blocks: basic HTML Pages, Semantic HTML, Markup, Elements, Attributes, Values. Text Content: Links, Images, URLs. Working with Web Page Files: planning, Creating, and Saving a Web Page, Editing Web Pages, Organizing Files, and Viewing a Page in a Browser.

Unit II (12 Hours)

Basic HTML Structure: Creating Header, Marking Navigation, Creating an Article, Defining a section, Specifying an aside, Creating Footer, Creating Generic Containers, Improving Accessibility with ARIA, Naming Elements with a Class or ID, Adding the Title Attributes to Elements, Adding Comments.

Unit III (12 Hours)

Forms: Creating, Processing and Sending Form Data, Organizing the Form Elements, Creating Text Boxes, Password Boxes, Labeling Form Parts, Creating Radio Buttons, Select Boxes, Check Boxes, Text Areas, Hidden Fields, Using an Image to Submit a Form, Disabling For Elements, New HTML5 Features and Browser Support. Tables: Structuring Tables, Row span, Col span, Spacing, Editing Tables.

Unit IV (12 Hours)

CSS: Introduction to CSS, Cascade Rule, Style Sheets, Constructing Style Rules, Creating and Linking an External Style Sheet, Integration and Applying Various Styles, Importance of Location, Media-Specific Style Sheets, Offering Alternate Style Sheets.

Unit V (12 Hours)

Advanced CSS: Selectors, Name, Class, ID Group, Pseudo Selectors, Formatting Fonts, Setting Color, Background, Shadow, Basic Transition, Selecting Elements, Links Based on the State, Elements Based on Attributes, Specifying Group of Elements, Combining Selectors, Selectors Recap.

Teaching Methodology	PPT, chalk and talk
Assessment Methods	Seminar, Snap Test, MCQ

Book for Study:

1. Elizabeth Castro and Bruce Hyslop, *(2012), HTML5 and CSS3, Visual Quick Start Guide*, (7th Ed), Peach pit press, Berkeley.

Books for Reference:

1. Brian P. Hogan, (2010), *HTML5 & CSS3 Develop with Tomorrow's Standards Today,* Pragmatic Programmers, LLC, USA.
2. Anne Boehm, Zak Ruvalcaba, (2018), *Murach's HTML5 and CSS3, (*4th Ed), Mike Murach & Associates Inc, UK.
3. David Sawyer Mcfarland, (2015) *CSS: The Missing Manual*, O'Reilly, USA.
4. Kris Jamsa, Konrad King, Andy Anderson (2002), *HTML & Web Design Tips & Techniques*, McGraw-Hill/Osborne, New York.
5. Jennifer Niederst Robbins, (2012), *Learning Web Design, (*4th Ed), OREILY, Canada.

Websites and eLearning Sources:

1. https://ptgmedia.pearsoncmg.com/images/9780321719614/samplepages/0321719611.pdf
2. https://downloads.mysql.com/docs/mysql-tutorial-excerpt-5.7-en.pdf
3. https://assets.ctfassets.net/nkydfjx48olf/5qFMF3mvitLMahX67i7iOb/028229996c13cbc27a

0 538f055a41b46/php_cookbook.pdf
4. https://wtf.tw/ref/robbins.pdf
5. https://core.ac.uk/download/pdf/11820195.pdf

Course Outcomes		
CO No.	**CO- Statements**	**Cognitive Levels (K- Levels)**
	On successful completion of this course, students will be able to	
CO-1	Find the basic elements for building Web Pages to provide practical solutions.	**K1**
CO-2	Understand the basic methods of HTML to enhance the web pages.	**K2**
CO-3	Apply HTML and CSS techniques to design real-time applications.	**K3**
CO-4	Design web Pages Using API's for an effective outlook.	**K4**
CO-5	Apply the various techniques of CSS to make attractive Web pages.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
6	**25UBC64OE02**			**Open Elective - 2:** Web Design						**4**	**2**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of Cos**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO-1	1	2	2	3	3	2	2	3	3	2	2.3
CO-2	3	1	3	2	2	3	2	2	3	3	2.4
CO-3	2	2	2	2	2	2	3	2	3	2	2.2
CO-4	3	2	2	3	2	3	2	3	2	3	2.5
CO-5	2	2	3	2	3	2	2	3	2	2	2.3
Mean Overall Score											**2.34 (High)**