B C A (COMPUTER APPLICATIONS)

LOCF SYLLABUS 2023

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) POSTGRADUATE 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 133 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.*

Foundation Course (FC): *Foundation Courses serve to bridge the gap in knowledge and skills between secondary education and college-level studies, facilitating a smoother transition for students entering higher education.*

Skill Enhancement Course (SE): *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 (AE): *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 (ES): *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 ES, a minimum of two courses of equal importance/weightage is a must. A department with two sections must offer two courses to the students.

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

Self-paced Learning (SP): *It is a two-credit course designed to foster students' ability for independent and self-directed learning. With a syllabus structured to be completed within 45 hours, this course encourages learners to take control of their own educational journey. Notably, Self-paced Learning is conducted outside of regular class hours, emphasizing autonomy and self-motivation in students.*

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.*

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:

23	**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
FC - Foundation Course
SE - 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
SP - Self-paced Learning
EG - Generic Elective
ES - Discipline Specific Elective
PW - Project and Viva Voce
CE - Comprehensive Examination
OR - Outreach Programme

EVALUATION PATTERN

Continuous Internal Assessment

Sl No	Component	Marks Alloted
1	Mid Semester Test	30
2	End Semester Test	30
3	*Three Components (15 + 10 + 10)	35
4	Library Referencing (30 hours)	5
	Total	**100**

Passing minimum: 40 marks

* *The first component is a compulsory online test (JosTEL platform) comprising 15 multiple choice questions (10 questions at K1 level and 5 questions at K2 level); The second and the third components are decided by the course in-charge.*

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)*	*For courses with K5 as the highest cognitive level, one K4 and one K5 question is compulsory. (Note: two questions on K4 and one question on K5)*				1	1*		2 × 10 = 20
	*For courses with K6 as the highest cognitive level: **Mid Sem:** two questions on K4 and one question on K5; **End Sem:** two questions on K5 and one question on K6)*				Mid Sem			
						End Sem		
					1	1	1*	
							Total	**60**

***** *Compulsory*

Question Paper Blueprint for Semester Examination

Duration: 3 Hours					**Maximum Marks: 100**
UNIT	**Section A** *(Compulsory)*	**Section B** *(Compulsory)*	**Section C** *(Either…or type)*	**Section D** *(3 out of 5)*	
	K1	**K2**	**K3**	**K4**	**K5**
UNIT I	2	2	2	3*	2*
UNIT II	2	2	2		
UNIT III	2	2	2		
UNIT IV	2	2	2		
UNIT V	2	2	2		
Marks	**10 × 1 = 10**	**10 × 3 = 30**	**5 × 6 = 30**	**3 × 10 = 30**	

* *For courses with K5 as the highest cognitive level wherein two K4 and one K5 questions are compulsory. (Note: three questions on K4 and two question on K5)*

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

Title of the Course	CIA	Semester Examination	Total Marks
• Skill Enhancement Course (Non Major Elective) • Foundation Course • Skill Enhancement Course (WS)	20 + 10 + 20 = 50	50 *(A member from the Department other than the course instructors)*	100
• Self-paced Learning • Comprehensive Examination	25 + 25 = 50	50 *(CoE)*	100
• Value Education • Environmental Studies	50	50 *(CoE)*	100
• Skill Enhancement Course: Soft Skills	100	-	100
• Generic Elective	100	100 *(CoE)*	100
• Project Work and Viva Voce	100	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 Objectives (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.

PROGRAMME STRUCTURE					
Part	**Semester**	**Specification**	**No. of Courses**	**Hours**	**Credits**
1	1- 4	Languages (Tamil / Hindi/ French/ Sanskrit)	4	17	12
2	1 - 4	General English	4	20	12
3	1 - 6	Core Course	11	49	38
	1 - 6	Core Practical	8	25	16
	1, 2	Allied Course	2	11	8
	3, 4	Allied Optional	2	6	4
	3, 4	Allied Optional Practical	2	6	4
	5, 6	Discipline Specific Elective	4	20	12
	5	Internship	1	-	1
	5	Self-paced Learning	1	-	2
	5	Project Work and Viva Voce	1	-	2
	5	Comprehensive Examination	1	-	2
4	1	Foundation Course	1	2	1
	1	Skill Enhancement Course (Non-Major Elective)	1	2	1
	5	Skill Enhancement Course (Soft Skills)	1	2	1
	6	Skill Enhancement Course (WS)	1	2	1
	1 - 4	Value Education	4	8	4
	1, 2	Ability Enhancement Compulsory Course	2	2(6)	4
	5, 6	Generic Elective	2	8	4
5	2 - 6	Outreach Programme (SHEPHERD)	-	-	4
	2 - 6	Extra Credit Courses (MOOC)/Certificate Courses	(5)	-	(15)
		Total	**53(5)**	**180(6)**	**133(15)**

PROGRAMME PATTERN								
Course Details						Scheme of Exams		
Sem	**Part**	**Course Code**	**Title of the Course**	**Hours**	**Credits**	**CIA**	**SE**	**Final**
1	1	23UTA11GL01A	General Tamil - 1	5	3	100	100	100
		23UFR11GL01	French - 1					
		23UHI11GL01	Hindi - 1					
		23USA11GL01	Sanskrit - 1					
	2	23UEN12GE01	General English - 1	5	3	100	100	100
	3	23UBC13CC01	**Core Course - 1:** Python Programming	5	4	100	100	100
		23UBC13CP01	**Core Practical - 1:** Python	4	2	100	100	100
		23UBC13AC01	**Allied Course - 1**: Numerical Methods	5	4	100	100	100
	4	23UBC14FC01	**Foundation Course:** Structured Programming Language in C	2	1	100	-	100
		-	**Skill Enhancement Course - 1 (Non Major Elective):** Refer ANNEXURE 1	2	1	100	-	100
		23UHE14VE01	**Value Education - 1:** Essentials of Humanity*	2	1	50	50	50
		23UEN14AE01	**Ability Enhancement Compulsory Course - 1:** Communicative English	(6)	3	100	-	100
			Total	**30**	**22**			
2	1	23UTA21GL02	General Tamil - 2	4	3	100	100	100
		23UFR21GL02	French - 2					
		23UHI21GL02	Hindi - 2					
		23USA21GL02	Sanskrit - 2					
	2	23UEN22GE02	General English - 2	5	3	100	100	100
	3	23UBC23CC02	**Core Course - 2:** Digital Computer Fundamentals	4	3	100	100	100
		23UBC23CC03	**Core Course - 3:** Relational Database Management Systems	4	3	100	100	100
		23UBC23CP02	**Core Practical - 2:** Relational Database Management Systems	3	2	100	100	100
		23UBC23AC02	**Allied Course - 2:** Statistical Methods	6	4	100	100	100
	4	23UHE24VE02	**Value Education - 2:** Fundamentals of Human Rights*	2	1	50	50	50
		23UHE24AE01	**Ability Enhancement Compulsory Course - 2:** Environmental Studies*	2	1	50	50	50
		-	Extra Credit Courses (MOOC/ Certificate Courses) - 1	-	(3)			
			Total	**30**	**20(3)**			
3	1	23UTA31GL03	General Tamil - 3	4	3	100	100	100
		23UFR31GL03	French - 3					
		23UHI31GL03	Hindi - 3					
		23USA31GL03	Sanskrit - 3					
	2	23UEN32GE03	General English - 3	5	3	100	100	100
	3	23UBC33CC04	**Core Course - 4:** Data Structures and Algorithms	5	4	100	100	100
		23UBC33CC05	**Core Course - 5:** Programming in Java	5	4	100	100	100
		23UBC33CP03	**Core Practical - 3**: Java	3	2	100	100	100
		23UBC33AO01A	**Allied Optional - 1:** Financial Accounting Package -TallyPrime Basic	3	2	100	100	100
		23UBC33OP01A	**Allied Optional Practical - 1**: Financial Accounting Package - TallyPrime Basic	3	2	100	100	100
		23UBC33AO01B	**Allied Optional - 1:** Accounts - 1	(6)	(4)	100	100	100
	4	23UHE34VE03A	**Value Education - 3:** Social Ethics - 1*	2	1	50	50	50
		23UHE34VE03B	**Value Education - 3:** Religious Doctrine - 1*					
		-	Extra Credit Courses (MOOC/ Certificate Courses) - 2		(3)			
			Total	**30**	**21(3)**			

4	1	23UTA41GL04B	General Tamil - 4 *அறிவியல் தமிழ்* (Scientific Tamil)	4	3	100	100	100
		23UFR41GL04	French - 4					
		23UHI41GL04	Hindi - 4					
		23USA41GL04	Sanskrit - 4					
	2	23UEN42GE04	General English - 4	5	3	100	100	100
	3	23UBC43CC06	**Core Course - 6:** Software Engineering	5	4	100	100	100
		23UBC43CC07	**Core Course - 7:** Web Technologies	5	4	100	100	100
		23UBC43CP04	**Core Practical - 4:** Web Technologies	3	2	100	100	100
		23UBC43AO02A	**Allied Optional - 2**: Financial Accounting Package - TallyPrime Advanced	3	2	100	100	100
		23UBC43OP02A	**Allied Optional Practical - 2**: Financial Accounting Package - TallyPrime Advanced	3	2	100	100	100
		23UBC43AO02B	**Allied Optional - 2:** Accounts - 2	(6)	(4)	100	100	100
	4	23UHE44VE04A	**Value Education - 4:** Social Ethics - 2*	2	1	50	50	50
		23UHE44VE04B	**Value Education - 4:** Religious Doctrine - 2*					
		-	Extra Credit Courses (MOOC/ Certificate Courses) - 3		(3)			
			Total	**30**	**21(3)**			
5	3	23UBC53CC08	**Core Course - 8:** Programming with ASP.NET	4	3	100	100	100
		23UBC53CC09	**Core Course - 9:** R Programming	4	3	100	100	100
		23UBC53CP05	**Core Practical - 5:** Programming with ASP.NET	3	2	100	100	100
		23UBC53CP06	**Core Practical - 6:** R Programming	3	2	100	100	100
		23UBC53ES01A	**Discipline Specific Elective - 1:** Operating Systems	5	3	100	100	100
		23UBC53ES01B	**Discipline Specific Elective - 1:** Linux Programming					
		23UBC53ES02A	**Discipline Specific Elective - 2:** Communication Networks	5	3	100	100	100
		23UBC53ES02B	**Discipline Specific Elective - 2:** Software Testing					
		23UBC53IS01	Internship	-	1	100	-	100
		23UBC53SP01	**Self-paced Learning:** Cloud Computing*	-	2	50	50	50
	4	-	**Generic Elective - 1**: Refer ANNEXURE 2	4	2	100	100	100
		23USS54SE01	**Skill Enhancement Course - 2:** Soft Skills	2	1	100	-	100
		-	Extra Credit Courses (MOOC/ Certificate Courses) - 4	-	(3)			
			Total	**30**	**22(3)**			
6	3	23UBC63CC10	**Core Course - 10:** NoSQL with MongonDB	4	3	100	100	100
		23UBC63CC11	**Core Course - 11:** Fundamentals of React JS	4	3	100	100	100
		23UBC63CP07	**Core Practical - 7**: MongonDB	3	2	100	100	100
		23UBC63CP08	**Core Practical - 8**: React JS	3	2	100	100	100
		23UBC63ES03A	**Discipline Specific Elective - 3:** Information Security	5	3	100	100	100
		23UBC63ES03B	**Discipline Specific Elective - 3:** Data Warehousing and Data Mining					
		23UBC63ES04A	**Discipline Specific Elective - 4:** Fundamentals of IoT	5	3	100	100	100
		23UBC63ES04B	**Discipline Specific Elective - 4:** Mobile App Development					
		23UBC63PW01	Project Work and Viva Voce	-	2	100	100	100
		23UBC63CE01	Comprehensive Examination*	-	2	50	50	50
	4	-	**Generic Elective - 2:** Refer ANNEXURE 3	4	2	100	100	100
		-	**Skill Enhancement Course - 3 (WS):** Refer ANNEXURE 4	2	1	100	-	100
		-	Extra Credit Courses (MOOC/ Certificate Courses) - 5	-				
			Total	**30**	**23(3)**			
2 - 6	5	23UCW65OR01	Outreach programme (SHEPHERD)		4			
1 - 6			**Total (3 years)**	**180**	**133(15)**			

*- for grade calculation 50 marks are converted into 100 in the mark statements

Passed by	***Board of Studies held on 18.12.2023***
Approved by	***48th Academic Council Meeting held on 27.03.2024***

ANNEXURE 1

Skill Enhancement Course - 1: (Non-Major Elective)*

Department	Course Code	Title of the Course
Botany	23UBO14SE01	Skill Enhancement Course - 1: (Non-Major Elective): Organic Farming
Computer Science	23UCS14SE01	Skill Enhancement Course - 1: (Non-Major Elective): Office Automation
Mathematics	23UMA14SE01	Skill Enhancement Course - 1: (Non-Major Elective): Mathematics for Competitive Examinations
Statistics	23UST14SE01	Skill Enhancement Course - 1: (Non-Major Elective): Basics of Statistics
Vis Com	23UVC14SE01	Skill Enhancement Course - 1: (Non-Major Elective): Digital Storytelling and Scriptwriting
English	23UEN14SE01	Skill Enhancement Course - 1: (Non-Major Elective): English for Communication
History	23UHS14SE01	Skill Enhancement Course - 1: (Non-Major Elective): Introduction to Tourism
Tamil	23UTA14SE01	Skill Enhancement Course - 1: (Non-Major Elective): பேச்சுக்கலைத் திறன் (Oratory Skills)
BBA	23UBU14SE01A	Skill Enhancement Course - 1: (Non-Major Elective): Practical Advertising
	23UBU14SE01B	Skill Enhancement Course - 1: (Non-Major Elective): Digital Marketing
B. Com	23UCO14SE01A	Skill Enhancement Course - 1: (Non-Major Elective): Introduction to Accounting
	23UCO14SE01B	Skill Enhancement Course - 1: (Non-Major Elective): Consumer Protection and Rights
B. Com CA	23UCC14SE01	Skill Enhancement Course - 1: (Non-Major Elective): Entrepreneurship Skills
Economics	23UEC14SE01	Skill Enhancement Course - 1: (Non-Major Elective): Demography
Chemistry	23UCH14SE01	Skill Enhancement Course - 1: (Non-Major Elective): Role of Chemistry in Daily Life
Electronics	23UEL14SE01	Skill Enhancement Course - 1: (Non-Major Elective): Consumer Electronics
Physics	23UPH14SE01A	Skill Enhancement Course - 1: (Non-Major Elective): Physics for Everyday Life
	23UPH14SE01B	Skill Enhancement Course - 1: (Non-Major Elective): Home Electrical Installation

**Offered to students from other Departments*

ANNEXURE 2

Generic Elective - 1*

Department	Course Code	Title of the Course
Botany	23UBO54EG01	Generic Elective - 1: Landscape designing
Computer Science	23UCS54EG01	Generic Elective - 1: Ethical Hacking
Mathematics	23UMA54EG01	Generic Elective - 1: Numerical Ability
Statistics	23UST54EG01	Generic Elective - 1: Actuarial Statistics
Vis Com	23UVC54EG01	Generic Elective - 1: Media Education
English	23UEN54EG01	Generic Elective - 1: Film Studies
History	23UHS54EG01	Generic Elective-1: Tamil Heritage and Culture
Tamil	23UTA54EG01	Generic Elective - 1: தமிழிலக்கியத்தில் மனித உரிமைகள் (Human rights in Tamil literature)
BBA	23UBU54EG01A	Generic Elective - 1: Global Supply Chain Management
	23UBU54EG01B	Generic Elective - 1: Starts-ups and small Business Management
B.Com.	23UCO54EG01A	Generic Elective - 1: Computerised Accounting
	23UCO54EG01B	Generic Elective - 1: Basics of Excel
	23UCO54EG01C	Generic Elective - 1: Personal Investment Planning
B. Com CA	23UCC54EG01	Generic Elective - 1: E-commerce and E Business Management
Economics	23UEC54EG01	Generic Elective - 1: Principles of Economics
Chemistry	23UCH54EG01	Generic Elective - 1: Health Science
Electronics	23UEL54EG01A	Generic Elective - 1: Everyday Electronics
	23UEL54EG01B	Generic Elective - 1: Wireless Communication
Physics	23UPH54EG01A	Generic Elective-1: Everyday Physics
	23UPH54EG01B	Generic Elective-1: Renewable Energy Physics

**Offered to students from other Departments*

ANNEXURE 3
Generic Elective - 2*

Department	Course Code	Title of the Course
Botany	23UBO64EG02	Generic Elective - 2: Solid Waste Management
Computer Science	23UCS64EG02	Generic Elective - 2: 3D Printing and Design
Mathematics	23UMA64EG02	Generic Elective - 2: Quantitative Techniques
Statistics	23UST64EG02	Generic Elective - 2: Applied Statistics
Vis Com	23UVC64EG02	Generic Elective - 2: Digital Media Production
English	23UEN64EG02	Generic Elective - 2: English for the Media
History	23UHS64EG02	Generic Elective - 2: Intellectual Revivalism in Tamil Nadu
Tamil	23UTA64EG02	Generic Elective - 2: தமிழர் மருத்துவம் (Tamil Medicine)
BBA	23UBU64EG02A	Generic Elective - 2: Personality Development
	23UBU64EG02B	Generic Elective - 2: NGO Management
B. Com	23UCO64EG02A	Generic Elective - 2: Rural Marketing
	23UCO64EG02B	Generic Elective - 2: Entrepreneurship Development
	23UCO64EG02C	Generic Elective - 2: Digital Marketing
B. Com CA	23UCC64EG02	Generic Elective - 2: Total Quality Management
Economics	23UEC64EG02	Generic Elective - 2: Economics for Competitive Exams
Chemistry	23UCH64EG02	Generic Elective - 2: Solid Waste Management
Electronics	23UEL64EG02A	Generic Elective - 2: CCTV and Smart Security Systems
	23UEL64EG02B	Generic Elective - 2: Entrepreneurial Electronics
Physics	23UPH64EG02A	Generic Elective - 2: Laser Technology and its applications
	23UPH64EG02B	Generic Elective - 2: Physics of Earth

**Offered to students from other Departments*

ANNEXURE 4
Skill Enhancement Course - 3 (WS)*

School	Course Code	Title of the Course
SCS	23UCS64SE02	Skill Enhancement Course - 3 (WS): E-Services and Applications
	23UMA64SE02	Skill Enhancement Course - 3 (WS): MATLAB
	23UST64SE02	Skill Enhancement Course - 3 (WS): Official Statistics
	23UVC64SE02	Skill Enhancement Course - 3 (WS): Event Management

**Offered to students from other Departments within School*

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UTA11GL01A	General Tamil - 1	5	3

கற்றலின் நோக்கங்கள்
தமிழ்ச் செவ்வியல் இலக்கியங்களையும் காப்பியங்களையும் மாணவர்கள் அறிந்துகொள்ளல்
தமிழர் பேணி வளர்த்த அறம்சார் விழுமியங்களை மாணவர்கள் தம் வாழ்வில் பின்பற்றுதல்
தமிழில் பக்திஇயக்கப் பங்களிப்பையும் பகுத்தறிவுச் சிந்தனை மரபையும் உணர்தல்
மாணவர்கள் தம் எழுத்தாற்றலையும் மொழிப்புலமையையும் வளர்த்தெடுத்தல்
போட்டித்தேர்வுகளை எதிர்கொள்ளும் வகையில் இலக்கணம், இலக்கியம் கற்றல்

அலகு - 1 தமிழ் இலக்கிய, இலக்கண வரலாறு அறிமுகம். **(10 மணி நேரம்)**

1. இலக்கணம் :

அ.தொல்காப்பியம், இறையனார் களவியல் உரை , நம்பியகப் பொருள், புறப்பொருள் வெண்பா மாலை, நன்னூல், தண்டியலங்காரம், யாப்பருங்கலக்காரிகை- நூல்கள்

ஆ.மொழிப் பயிற்சி- ஒற்றுப்பிழை தவிர்த்தல்

- வல்லினம் மிகும் இடங்கள்
- வல்லினம் மிகா இடங்கள்
- ஈரொற்று வரும் இடங்கள்
- ஒரு, ஓர் வரும் இடங்கள்
- அது, அஃது வரும் இடங்கள்
- தான், தாம் வரும் இடங்கள்

பயிற்சி : வல்லினம் மிகும் இடங்கள், மிகா இடங்கள் தவறாக வரும்வகையில் ஒரு பத்தி கொடுத்து ஒற்றுப் பிழை திருத்தி எழுதச் செய்தல்.

2. சங்க இலக்கியம் - எட்டுத்தொகை, பத்துப்பாட்டு
3. அற இலக்கியம்-பதினெண்கீழ்கணக்கு நூல்கள்
4. காப்பிய இலக்கியம் - ஐம்பெருங் காப்பியங்கள், ஐஞ்சிறு காப்பியங்கள், சமயக் காப்பியங்கள்
5. பக்தி இலக்கியமும் (பன்னிரு திருமுறைகள், நாலாயிர திவ்வியப் பிரபந்தம் -- பகுத்தறிவு இலக்கியமும் (சித்தர் இலக்கியங்கள், புலவர் குழந்தையின் இராவண காவியம்)

அலகு - 2 சங்க இலக்கியம் **(15 மணி நேரம்)**

எட்டுத்தொகை :

6. நற்றிணை-முதல் பாடல் -நின்ற சொல்லர்
7. குறுந்தொகை 3 ஆம் பாடல் -நிலத்தினும் பெரிதே
8. ஐங்குறுநூறு -நெல் பல பொலிக! பொன் பெரிது சிறக்க!' (முதல் பாடல்)-வேட்கைப் பத்து
9. கலித்தொகை- 51 - சுடர்த்தொடீஇக் கேளாய் -குறிஞ்சிக் கலி
10. புறநானூறு -189 தெண்கடல் வளாகம் பொதுமையின்றி, நாடா கொன்றோ -187

பத்துப்பாட்டு:

முல்லைப்பாட்டு (முழுவதும்)

அலகு - 3 அற இலக்கியம் **(10 மணி நேரம்)**

12. திருக்குறள் -அறன் வலியுறுத்தல் அதிகாரம்
13. நாலடியார்-பாடல்: 131 (குஞ்சியழகும்)
14. நான்மணிக்கடிகை-நிலத்துக்கு அணியென்ப
15. பழமொழி நானூறு- தம் நடை நோக்கார்
16. இனியவை நாற்பது- 37. இளமையை மூப்பு என்று

அலகு - 4 காப்பிய இலக்கியம் **(20 மணி நேரம்)**

17. சிலப்பதிகாரம் - வழக்குரைகாதை

18. மணிமேகலை- பாத்திரம் பெற்ற காதை
19. பெரியபுராணம் - பூசலார் நாயனார்புராணம்
20. கம்பராமாயணம்- குகப் படலம்
21. சீறாப்புராணம் - மானுக்குப் பிணை நின்ற படலம்
22. இயேசு காவியம் -ஊதாரிப்பிள்ளை

அலகு - 5 பக்தி இலக்கியமும், பகுத்தறிவு இலக்கியமும் **(15 மணி நேரம்)**

23. **பக்தி இலக்கியம்:**

- திருநாவுக்கரசர் தேவாரம் - நாமார்க்கும் குடியல்லேம் எனத் தொடங்கும் பாடல் மட்டும்
- மாணிக்கவாசகர் திருவாசகம் - நமச்சிவாய வாஅழ்க நாதன்தாள் வாழ்க முதல் சிரம்குவிவார் ஓங்குவிக்கும் சீரோன் கழல் வெல்க வரை
- பொய்கையாழ்வார்-வையந் தகளியா வார்கடலே
- பூதத்தாழ்வார்-அன்பே தகளியா
- பேயாழ்வார்-திருக்கண்டேன் பொன்மேனி கண்டேன்
- ஆண்டாள் - திருப்பாவை மார்கழித் திங்கள் (முதல் பாடல்)

24. **பகுத்தறிவு இலக்கியம் :**

- திருமூலர் - திருமந்திரம் (270,271, 274, 275 285)
- பட்டினத்தார் -திருவிடை மருதூர் (காடே திரிந்து - எனத் தொடங்கும் பாடல்
- பா.எண்.279, 280)
- கடுவெளி சித்தர் - பாபஞ்செய் யாதிரு மனமே (பாடல் முழுவதும்)
- இராவண காவியம் - **தாய்மொழிப் படலம்** - 18. (ஏடுகை யில்லா ரில்லை முதல் - 22. செந்தமிழ் வளர்த்தார் வரை)

கற்பித்தல் முறை	**விரிவுரை** *(Lecture),* **காணொளிக் காட்சி** *(Videos),* **விளக்கக் காட்சி** *(PPT presentation)*

பாடநூல்

1. **பொதுத்தமிழ்**-*1 (* **தமிழ் இலக்கிய வரலாறு**-*1),* **தமிழாய்வுத்துறை, தூய வளனார் தன்னாட்சிக் கல்லூரி, திருச்சிராப்பள்ளி** - *620 002,* **முதற்பதிப்பு** - *2023*
2. **பார்வை நூல்கள்**
3. வரதராசன்.மு., தமிழ் இலக்கிய வரலாறு, சாகித்ய அக்காதெமி, புதுடெல்லி. *2021*
4. விமலானந்தன். மது. ச., தமிழ் இலக்கிய வரலாறு, முல்லை நிலையம், சென்னை, *2019*
5. தமிழண்ணல், புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, பாரி நிலையம், சென்னை, *2022*
6. சிற்பி பாலசுப்பிரமணியன் & சேதுபதி.சொ., தமிழ் இலக்கிய வரலாறு, கவிதா வெளியீடு, சென்னை, *2015*
7. சிற்பி பாலசுப்ரமணியம், & பத்மநாபன். நீல., புதிய தமிழ் இலக்கிய வரலாறு *(3* தொகுதிகள்), சாகித்ய அக்காதெமி, புதுடெல்லி,*2013*
8. பெருமாள். அ.கா., தமிழ் இலக்கிய வரலாறு, சுதர்சன் புக்ஸ், நாகர்கோவில், *2014*
9. ஏசுதாசன். ப.ச., தமிழ் இலக்கிய வரலாறு, நியூ செஞ்சுரி புக் ஹவுஸ்,சென்னை, *2015*
10. ஸ்ரீகுமார். எஸ்., தமிழ் இலக்கிய வரலாறு, ஸ்ரீசெண்பகா பதிப்பகம், சென்னை, *2014*
11. பாக்கியமேரி எஃப்., வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு, பூவேந்தன் பதிப்பகம், சென்னை,2022
12. சுப்புரெட்டியார்.ந., தமிழ் பயிற்றும் முறை, மணிவாசகர் நூலகம், சிதம்பரம், *1980*

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1. https://www.chennailibrary.com/
2. https://www.sirukathaigal.com
3. https://www.tamilvirtualuniversity.org
4. https://www.noolulagam.com
5. https://www.katuraitamilblogspot.com

Course Outcomes		
CO No.	**CO-Statements** ***இப்பாடத்தின் நிறைவில் மாணவர்கள்***	**Cognitive Levels (K - Level)**
CO1	*சங்க இலக்கியங்கள்வழி பண்டைத்தமிழரின் வாழ்வியலையும் பண்பாட்டையும் அறிந்து கொள்வர்*	**K1**
CO2	*அற இலக்கியங்கள், காப்பியங்கள் வெளிப்படுத்தும் அறம்சார் விழுமியங்களைத் தம் வாழ்வில் பின்பற்றுவர்*	**K2**
CO3	*இலக்கணக் கோட்பாடுகளை இக்கால வாழ்வியலோடு பொருத்திப் பார்ப்பர்*	**K3**
CO4	*மொழியறிவோடு பெறுவர் திறன் பகுத்தாராயும் இலக்கியங்களைப்*	**K4**
CO5	*பக்தி இயக்கங்களின் செல்வாக்கையும், தமிழரின் பகுத்தறிவு மரபையும் மதிப்பிடுவர்*	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
1	**23UTA11GL01A**			General Tamil - 1						**5**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO 1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	1	2	3	2	2	3	3	2	2	2	**2.2**
CO2	2	2	3	2	2	2	3	2	3	2	**2.3**
CO3	1	2	2	3	2	2	2	3	3	3	**2.3**
CO4	2	2	3	2	2	3	2	3	3	2	**2.4**
CO5	3	1	2	2	2	2	3	2	3	3	**2.3**
Mean Overall Score											**2.3 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UFR11GL01	French - 1	5	3

Course Objectives
Identify the basic French sentence structure
Define and describe the various grammatical tenses and use them to communicate in French
Examine the various documents presented and discuss and reply to the questions asked on it
Analyze and interpret expressions used to convey the cause, the effect, the purpose, and the opposition in French
Evaluate the grammatical nature present in passages

UNIT I **(15 Hours)**

- Salut ! Enchanté

UNIT II **(15 Hours)**

- J'adore

UNIT III **(15 Hours)**

- Tu veux bien ?

UNIT IV **(15 Hours)**

- On se voit quand ?

UNIT V **(15 Hours)**

- Bonne idée

Teaching Methodology	Videos, Audios, PPT presentation, Role-play, Quiz

Book for Study

1. Mérieux, R. & Loiseau, Y. (2017). *Latitudes* -1- (A1 /A2), méthode de français, Didier. (Units 1 - 6 only)

Books for Reference

1. P.Dauda,L.Giachino and C.Baracco, *Generation A1*, Didier, Paris 2020.
2. J.Girardet and J.Pecheur, *Echo A1*, CLE International, 2^{e}edition ,2017
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2. https://francais.lingolia.com/en/grammar/tenses/le-present
3. https://www.lawlessfrench.com/grammar/articles/
4. https://www.frenchpod101.com/french-vocabulary-lists/10-lines-you-need-for-introducing-yourself
5. https://www.tolearnfrench.com/exercises/exercise-french-2/exercise-french-3295.php

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	recall and remember the usage of grammatical tenses in constructing sentences in a dialogue.	**K1**
CO2	apply the learnt grammar rules in practice exercises to improve their understanding	**K2**
CO3	explain the nuances in the usage of various grammatical tenses and their aspects	**K3**
CO4	demonstrate knowledge of various expressions used to express opinions, emotions, cause, effect, purpose, and hypothesis in French	**K4**
CO5	communicate in French and summarize a given text	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
1	**23UFR11GL01**		French - 1						**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	3	1	3	1	3	3	2	3	2	**2.4**
CO2	2	3	3	2	1	3	3	3	3	2	**2.5**
CO3	1	3	2	1	2	2	2	2	3	2	**2.0**
CO4	3	3	3	3	3	3	3	2	3	2	**2.8**
CO5	3	3	3	3	2	3	3	3	3	2	**2.8**
Mean Overall Score											**2.5 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UHI11GL01	Hindi - 1	5	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 Hindu Literature
To empower the students with globally employable soft skills

UNIT I: Buniyadi Hindi **(15 Hours)**

- Swar
- Vyanjan
- Barah Khadi
- Shabd aur
- Vakya Rachna

UNIT II: Hindi Shabdavali **(15 Hours)**

- Rishto ke Naam
- Gharelu padartho ke Naam

UNIT III: Vyakaran **(15 Hours)**

- Sadharan Vakya aur Sangya
- Sarvanam
- Visheshan
- Kriya aadi shabdo ka prayog

UNIT IV: Chote Gadyansh ka pattan **(15 Hours)**

- Bacho ki Kahaniya
- Patra-Patrikao mein prakashit Gadyansho ka Pathan

UNIT V: Nibandh **(15 Hours)**

- Sant Tiruvalluvar
- E.V.R Thandai Periyar
- Naari Sashaktikaran
- Paryavaran Sanrakshan
- Vibhinna pratiyogi parikshao ke bare mein jaankari dena
- Pratiyogi priksha par adharit nibandho dwara bhasha ki kshamta badhane vale prashikshan kary.

Teaching Methodology	Videos, PPT, Quiz, Group Discussion, Project Work.

Books for Study

1. Gupth, M.K. (2020). *Hindi Vyakaran*, Anand Prakashan, Kolkatta.
2. Tripaty, V. (2018). *Kuchh Kahaniyan*, Rajkamal Prakashan Pvt. Ltd, New Delhi.
3. Jain, S.K. (2019). *Anuwad: Siddhant Evam Vyavhar*, Kailash Pustak Sadan, Madhya Pradesh.

Books for Reference

1. Abdul Kalam, A. P.J. (2020). *Mere sapnom ka Bharath*, Prabath Prakashan, Noida.
2. Singh, L.P. (2017). *Kavya ke sopan*, Bharathy Bhavan Prakashan.
3. Kumar, A. (2019). *Sampoorna Hindi Vyakaran our Rachana*, Lucent publisher.
4. (2018). *Adhunik Hindi Vyakaran our Rachana*, Bharati Bhavan Publishers & distributors.

5. Shukla, A.R. (2022). *Hindi Sahitya Ka Itihas*, Prabhat Prakashan.

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** On successful completion of this course, the student will be able to	**Cognitive Levels (K - Level)**
CO1	Introduction to Hindi sounds	**K1**
CO2	Acquisition of Hindi Vocabulary	**K2**
CO3	Sentence formation in Hindi	**K3**
CO4	Reading of stories and other passages	**K4**
CO5	Modules to increase language ability through general essays based on competitive exams	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**				**Hours**		**Credits**	
1	**23UHI11GL01**			Hindi - 1				**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	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	23USA11GL01	Sanskrit - 1	5	3

Course Objectives
To help the students learn the alphabets of Sanskrit.
To understand the Sanskrit grammar and sabdas.
To have an idea of the epics.
To closely understand the literary works in Sanskrit with special reference toPancamahakavyas.
To understand the Raghuvasa Mahakava and Kalidasa.

UNIT I **(15 Hours)**

Introduction to Sanskrit (Alphabets, Two letter words and three letter words)

Grammar:

akārāntaḥpuṁliṅgaḥśabda-s - 1. बाल (*Bāla*) and 2. देव (*Deva*) *ākārāntaḥstrīliṅgaḥśabda-s* - 1. बाला (*Bālā*) and 2. लता (*Latā*)*akārāntaḥnapuṁsakaliṅgaḥśabda-s* -

1. फल (*Phala*) and 2. वन (*Vana*)

UNIT II **(15 Hours)**

Introduction to *Rāmāyana,Kālidāsa* and his poetic works

Text: *Raghuvaṁśa* (Canto I) Verses 1-15

UNIT III **(15 Hours)**

Introduction to the works of *Bhāravi* -

Text: *Raghuvaṁśa* (canto I) Verses 16-30

UNIT IV **(15 Hours)**

Introduction to the works of *ŚrīHarṣha* -

Text: *Raghuvaṁśa* (Canto I) Verses 31-45

UNIT V **(15 Hours)**

Grammar:

Conjugations -*Laṭlakāra-s* - (Present tense)

(i) गच्छतत (*Gacchati*) (ii) ततष्ठतत (*Tiṣṭhati*) (iii) पठतत (*Paṭhati*)

(iv) नृत्यतत (*Nṛtyati*) (v) कु प्यतत (*Kupyati*) (vi) कथयतत (*Kathayati*)

(vii) गणयतत (*Gaṇayati*) (viii) अततत (*Asti*)

(ix) करोतत (*Karoti*) (x) शृणोतत (*Śṛṇoti*)

Indeclinables (Avyayaani) - अतप (*api*), कदा (*kadā*), च (*ca*), अद्य (*adya*), तवना (*vinā*),सह (*saha*), तत्र (*tatra*), ककम् (*kim*), यकद (*yadi*) - तर्ह (*tarhi*), यथा (*yathā*) - तथा (*tathā*) Prefixes (*Upasargas*) - आङ् (*āṅ*), तव (*vi*), परर (*pari*), अनु (*anu*),

अति (*adhi*), उत् (*ut*), प्रतत (*prati*), उप (*upa*), प्र (*pra*) तनर् (*nir*)

Teaching Methodology	Videos, PPT, demonstration.

Book for Study

1. Murugan, C., et al. (eds.). (2022). *Kalasala Samskrta Sukha Bodhini I* (for under graduate foundation course) Published by University of Madras.

Book for Reference

1. Vadhyar, R.S. (2017). *Shabdha manjari*, R.S. Vadyar & Sons, Palakkad.

Websites and e-Learning Sources

1. https://www.arlingtoncenter.org/Sanskrit%20Alphabet.pdf

2. https://courses.lumenlearning.com/suny-hccc-worldcivilization/chapter/sanskrit/
3. https://www.newworldencyclopedia.org/entry/Sanskrit_literature
4. https://archive.org/details/AShortHistoryOfsanskritLiterarure
5. https://archive.org/details/raghuvamsha_with_sanjivini_edited_by_mr_kale

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	remember the usage of grammatical tenses inconstructing sentences in dialogue.	**K1**
CO2	apply the rules of usage in practice exercises and identify errors	**K2**
CO3	explain the nuances in the usage of various grammatical tenses and aspects	**K3**
CO4	demonstrate knowledge of various expressions of opinion, emotions, cause, effect, purpose, and hypothesisin French	**K4**
CO5	communicate in French and summarize the given text	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
1	**23USA11GL01**			Sanskrit - 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	1	3	2	3	1	3	2	3	2	2	**2.1**
CO2	2	3	2	3	1	2	2	3	2	3	**2.5**
CO3	3	2	2	2	2	2	3	2	3	2	**2.1**
CO4	3	2	3	2	2	3	3	2	3	2	**2.4**
CO5	3	2	3	3	2	2	3	2	3	3	**2.3**
										Mean Overall Score	**2.34 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UEN12GE01	General English - 1	5	3

Course Objectives
To enable learners to acquire self awareness and positive thinking required in various life situations
To help them acquire the attribute of empathy
To assist them in acquiring creative and critical thinking abilities
To enable them to learn the basic grammar
To assist them in developing LSRW skills

UNIT I: Self-awareness ELF-A (WHO) & Positive Thinking (UNICEF) (15 Hours)

Life Story

1. Chapter 1 from Malala Yousafzai, I am Malala
2. An Autobiography or The Story of My Experiments with Truth (Chapters 1, 2 & 3) M.K. Gandhi

Poem

3. Where the Mind is Without Fear - Gitanjali 35 - Rabindranath Tagore
4. Love Cycle - Chinua Achebe

UNIT II: Empathy (15 Hours)

Poem

5. Nine Gold Medals - David Roth
6. Alice Fell or poverty - William Wordsworth

Short Story

7. The School for Sympathy - E.V. Lucas
8. Barn Burning - William Faulkner

UNIT III: Parts of Speech (15 Hours)

9. Articles
10. Noun
11. Pronoun
12. Verb
13. Adverb
14. Adjective
15. Preposition

UNIT IV: Critical & Creative Thinking. (15 Hours)

Poem

16. The Things That Haven't Been Done Before - Edgar Guest
17. Stopping by the Woods on a Snowy Evening - Robert Frost

Readers Theatre

18. The Magic Brocade - A Tale of China
19. Stories on Stage - Aaron Shepard (Three Sideway Stories from Wayside School" by Louis Sachar)

Unit V: Paragraph and Essay Writing (15 Hours)

20. Descriptive
21. Expository
22. Persuasive
23. Narrative
24. Reading Comprehension

Teaching Methodology	Interactive methods, and multimedia presentations

Books for Study

1. Yousafzai, M. (2013). *I am Malala, Little.* Brown and Company.
2. Gandhi, M. K. (2011). *An Autobiography or The Story of My Experiments with Truth (Chapter - I).* Rupa Publications.
3. Tagore, R. (1913). *"Gitanjali 35" from Gitanjali (Song Offerings): A Collection of Prose Translations Made by the Author from the Original Bengali.* MacMillan.
4. Shepard, A. (2017). *Stories on Stage.* Shepard Publications.

Books for Reference

1. Krishnasamy. N. (1975). *Modern English: A Book of Grammar, Usage and Composition.* Macmillan.
2. Nesfield, J. C. (2019). *English Grammar Composition and Usage.* Macmillan.

Websites and eLearning Sources

1. https://archive.org/details/i-am-malala
2. https://www.indiastudychannel.com/resources/146521- Book-Review-An- Autobiography-or-The-story-of-my-experiments-with-Truth.aspx
3. https://www.poetryfoundation.org/poems/45668/gitanjali-35
4. https://amzn.eu/d/9rVzlNv
5. https://archive.org/details/in.ernet.dli.2015.44179

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	discover self awareness and positive thinking required in various life situations	**K1**
CO2	classify the attributes of empathy	**K2**
CO3	apply creative and critical thinking skills	**K3**
CO4	focus on grammar for functional purposes	**K4**
CO5	integrate the LSRW skills for effective communication	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
1	**23UEN12GE01**		General English - 1						**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	3	3	3	3	3	3	3	3	3	**3**
CO2	2	3	3	3	2	3	3	3	3	3	**2.5**
CO3	3	3	3	2	3	3	3	3	3	2	**2.8**
CO4	3	3	3	3	3	3	3	3	3	3	**3**
CO5	3	2	3	3	3	3	3	3	3	3	**2.8**
									Mean Overall Score		**2.82 (High)**

Semester	Course code	Title of the Course	Hours/Week	Credits
1	23UBC13CC01	**Core Course - 1:** Python Programming	5	4

Course Outcomes
To make students understand the concepts of Python programming
To apply the OOPs concept in PYTHON programming
To impart knowledge on functions Function Arguments, Python Strings, Modules
To make the students learn best practices in PYTHON programming
To know the python file handling

UNIT I: Basics of Python Programming, Python Arrays **(15 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. Python Arrays: Defining and Processing Arrays-Array methods.

UNIT II **(15 Hours)**

Control Statements, Branching statements, Iterative Statements, Jump Statements: 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 III: Functions, Function Arguments, Python Strings, Modules **(15 Hours)**

Functions: Function Definition - Function Call - Variable Scope and its Life time Return Statement. Function Arguments: Required Arguments, Keyword Arguments, Default Arguments and Variable Length Arguments Recursion. Python Strings: String operations- Immutable Strings - Built-in String Methods and Functions - String Comparison. Modules: import statement- The Python module - dir() function - Modules and Name space-Defining our own modules.

UNIT IV: Lists, Tuples, Dictionaries **(15 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 MethodsDifference between Lists and Dictionaries.

UNIT V: Python File Handling **(15 Hours)**

Python File Handling: Types of files in Python - Opening and Closing files-Reading and Writing files: write () and write lines () methods append () method-read () and read lines () methods-with keyword-Splitting words -File methods - File Positions - Renaming and deleting files.

Teaching Methodology	Chalk and Talk, PPT, videos

Books for Study

1. Thareja, R. (2017). *Python Programming using problem solving approach,* (1st Ed.). Oxford University Press.
2. Rao, R. N. (2017). *Core Python Programming,* (1st Ed.). Dreamtech Publishers.

Books for Reference

1. Kurama, V. (2017). *Python Programming: A Modern Approach*. Pearson Education.
2. Lutz, M. (2013). *Learning Python*. Orielly.
3. Stewarts, A. (2017). *Python Programming*. Online.
4. Nelli, F. (2015). *Python Data Analytics*. Apress.
5. Lambert, K. A. (2017). *Fundamental soft Python - First Programs*. CENGAGE Publication.

Websites and eLearning Sources

1. https://www.programiz.com/python-programming
2. https://www.programiz.com/python-programming
3. http://www.w3schools.com/python/python_intro.asp

4. http://www.geeksforgeeks.org/python-programming-language/
5. https://en.wikipedia.org/wiki/Python_(programming_language

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, the students will be able to	**Cognitive Levels (K-Level)**
CO1	learn the basics of python, do simple programs on python, learn how to use an array.	**K1**
CO2	develop program using selection statement, work with looping and jump statements, do programs on loops and jump statements.	**K2**
CO3	concept of function, function arguments, implementing the concept strings in various application, significance of modules, work with functions, strings and modules.	**K3**
CO4	work with list, tuples and dictionary, write program using list, tuples and dictionary.	**K4**
CO5	usage of file handlings in python, concept of reading and writing files, do programs using files.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
1	**23UBC13CC01**			**Core Course - 1:** Python Programming						**5**	**5**
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	2	3	3	2	2	3	3	**2.4**
CO2	2	3	3	3	2	3	2	2	3	2	**2.5**
CO3	3	2	3	3	3	3	2	2	3	2	**2.6**
CO4	3	3	2	2	3	3	2	2	3	2	**2.5**
CO5	2	3	3	3	2	3	2	2	3	3	**2.6**
										Mean Overall Score	**2.52 (High)**

Semester	Course code	Title of the Course	Hours/Week	Credits
1	23UBC13CP01	**Core Practical - 1:** Python	4	2

Course Objectives
Be able to design and program Python applications.
Be able to create loops and decision statements in Python.
Be able to work with functions and pass arguments in Python.
Be able to build and package Python modules for reusability.
Be able to read and write files in Python.

1. Program using variables, constants, I/O statements in Python.
2. Program using Operators in Python.
3. Program using Conditional Statements.
4. Program using Loops.
5. Program using Jump Statements.
6. Program using Functions.
7. Program using Recursion.
8. Program using Arrays.
9. Program using Strings.
10. Program using Modules.
11. Program using Lists.
12. Program using Tuples.
13. Program using Dictionaries.
14. Program for File Handling.

Teaching Methodology	Lab

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, the students will be able to	**Cognitive Levels (K-Level)**
CO1	demonstrate the understanding of syntax and semantics of	**K1**
CO2	identify the problem and solve using PYTHON programming techniques.	**K2**
CO3	identify suitable programming constructs for problem solving.	**K3**
CO4	analyze various concepts of PYTHON language to solve the problem in an efficient way.	**K4**
CO5	develop a PYTHON program for a given problem and test for its correctness.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
1	**23UBC13CP01**			**Core Practical - 1:** Python						**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**	
CO1	2	2	2	2	3	2	2	2	2	3	**2.2**
CO2	2	2	3	2	3	2	1	3	2	2	**2.2**
CO3	3	2	3	2	3	3	3	1	1	1	**2.2**
CO4	2	3	3	2	2	2	3	3	1	1	**2.2**
CO5	3	2	2	3	3	3	2	3	1	1	**2.3**
										Mean Overall Score	**2.22 (High)**

Semester	Course code	Title of the Course	Hours/Week	Credits
1	23UBC13AC01	**Allied Course 1:** Numerical Methods	5	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: Fundamentals of Algebraic Equation **(15 Hours)**

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

UNIT II: Simultaneous Linear Algebraic Equations **(15 Hours)**

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

UNIT III: Interpolation with Equal And Unequal Interval **(15 Hours)**

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

UNIT IV: Numerical Integration **(15 Hours)**

Numerical integration - Trapezoidal rule - Romberg's Method - Simpson's 1/3

UNIT V: Initial Value Problems For Ordinary Differential Equations **(15 Hours)**

Single step methods - Taylor's series method - Euler's method - Modified Euler's method - RungeKutta method for solving equations

Teaching Methodology	Chalk and Talk, PPT

Book 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, 5)*
   Unit II: *Chapter 4 (Sec: 2, 6)*
   Unit III: *Chapter 6 (Sec: 3, 4), Chapter 8 (Sec : 4)*
   Unit IV: *Chapter 9 (Sec: 7, 8, 9, 10)*
   Unit V: *Chapter 11 (Sec 6, 10, 12, 13)*

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.

Website and eLearning Source

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

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, the students will be able to	**Cognitive Levels (K-Level)**
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	**23UBC13AC01**			**Allied Course 1:** Numerical Methods						**5**	**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	3	2	2	3	2	3	2	2	**2.5**
CO2	2	3	3	2	2	2	3	2	2	3	**2.4**
CO3	3	1	3	2	2	3	2	2	1	2	**2.1**
CO4	3	2	2	1	2	3	3	3	2	3	**2.4**
CO5	2	3	3	1	2	3	3	2	2	3	**2.4**
										Mean Overall Score	**2.36 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UBC14FC01	**Foundation Course:** Structured Programming Language in C	2	1

Course Objectives
To familiarize the students with the Programming basics and the fundamentals of C, Datatypes in C, Mathematical and logical operations.
To understand the concept using if statements and loops.
This unit covers the concept of Arrays.
This unit covers the concept of Functions.
To understand the concept of implementing pointers.

UNIT I: Overview of C **(6 Hours)**

Overview of C: Importance of C, sample C program, C program structure, executing C program. Constants, Variables, and Data Types: Character set, C tokens, keywords and identifiers, constants, variables, data types, declaration of variables, assigning values to variables---Assignment statement, declaring a variable as constant, as volatile. Operators and Expression.

UNIT II: Decision Making and Branching, Looping **(6 Hours)**

Decision Making and Branching: Decision making with If, simple IF, IF ELSE, nested IF ELSE, ELSE IF ladder, switch, GOTO statement. Decision Making and Looping: While, DoWhile, For, Jumps in loops.

UNIT III: Arrays **(6 Hours)**

Arrays: Declaration and accessing of one & two-dimensional arrays, initializing two dimensional arrays, multidimensional arrays.

UNIT IV: Functions **(6 Hours)**

Functions: The form of C functions, Return values and types, calling a function, categories of functions, Nested functions, Recursion, functions with arrays, call by value, call by reference, storage classes-character arrays and string functions.

UNIT V: Pointers **(6 Hours)**

Pointers: definition, declaring and initializing pointers, accessing a variable through address and through pointer, pointer expressions, pointer increments and scale factor, pointers and arrays, pointers and functions, pointers and structures.

Teaching Methodology	Chalk and Talk, ppt, videos

Book for Study

1. Balagurusamy, E. (2010). *Programming in ANSI C,* (5th Ed.). Tata McGraw-Hill.

Books for Reference

1. Gottfried, B. (2018). *Schaum's Outline Programming with C,* (4th Ed.). Tata McGraw- Hill.
2. Kernighan & Ritchie (1998). *The C Programming Language,* (2nd Ed.). Prentice Hall.
3. Kanetkar, Y. (2021). *Let Us C,* (18th Ed.). BPB Publications.

Websites and eLearning Sources

1. https://codeforwin.org/
2. https://www.geeksforgeeks.org/c-programming-language/
3. http://en.cppreference.com/w/c
4. http://learn-c.org/
5. https://www.cprogramming.com/

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, the students will be able to	**Cognitive Levels (K-Level)**
CO1	remember the program structure of C with its syntax and semantics	**K1**
CO2	understand the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files)	**K2**
CO3	apply the programming principles learnt in real-time problems	**K3**

Relationship Matrix											
Semester	**Course Code**	**Title of the Course**								**Hours**	**Credits**
1	**23UBC14FC01**	**Foundation Course:** Structured Programming Language in C								**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	3	2	2	1	2	2	2	2	**2.1**
CO2	3	2	2	3	2	2	2	2	2	2	**2.2**
CO3	3	2	3	3	3	3	2	2	1	1	**2.3**
										Mean Overall Score	**2.2 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UHE14VE01	**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 a holistic development
To assimilate human values comprehensively

UNIT I: Principles of 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: Development of Human Personality **(6 Hours)**

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

UNIT III: The Dimensions of Human Development **(6 Hours)**

Areas of Development: Physical, Intellectual, Emotional, Social Development, Moral & Spiritual development

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 - Crimens against Women - Women rights - Time-line of Women achievements in India

Teaching Methodology	Chalk and Talk, Power point

Book for Study

1. Department of Human Excellence. (2021). *Essentials of Humanity.* St. Joseph's College.

Books for Reference

1. Xavier, A. (2012). *You Shall Overcome*, (6th Ed.). ICRDE Publication.
2. Alex, K. (2009). *Soft Skills.* S. Chand.
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. http://www.apa.org/topics/personality#. Accessed 05 March 2021.
3. http://www.peacecorps.gov/educators/resources/global-issues-gender-equaligy-and-womens-empowerment/. Accessed 05 March 2021.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	recall the prescribed values and their 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	**23UHE14VE01**	**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**	**PSO 4**	**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
1	23UEN14AE01	**Ability Enhancement Compulsory Course - 1:** Communicative English	6	3

Course Objectives
To recognize and identify the components of a formal letter.
To summarize the main points of a given letter and identify the intended meaning.
To use appropriate grammatical structures in context within their own writing.
To compare and contrast the elements of successful and unsuccessful letters.
To create well-structured letters with clear purpose and effectively evaluate and revise their own writing.

Basic Level

UNIT I **(18 Hours)**

1) A letter to avail college hostel
2) A requisition letter to provide fee concession
3) A requisition letter to provide Bonafide certificate
4) A letter to avail resources in college library
5) An On Duty Permission Letter
6) Nouns
7) Pronouns
8) Adjectives
9) Verbs
10) Adverbs

UNIT II **(18 Hours)**

11) A letter to provide conduct certificate
12) A letter to provide new ID card
13) A Permission letter for Name Correction in Mark sheet
14) A permission letter for Sports Events
15) A letter to avail permission for the Shepherd programme
16) Prepositions
17) Conjunctions
18) Articles
19) Conjugation of present form ‘Be’ verbs
20) Conjugation of past form ‘Be’ verbs

UNIT III **(18 Hours)**

21) A letter to avail the College Hostel
22) A permission letter to join the sport team
23) A request letter to access college Wi-Fi
24) A letter to vice principal requesting to change Elective course
25) A permission letter for project extension
26) Conjugation of future form ‘Be’ verbs
27) Conjugation of present continuous ‘Be’ verbs
28) Conjugation of Past continuous ‘Be’ verbs
29) Conjugation of Future continuous ‘Be’ verbs
30) Conjugation of Present Perfect ‘Be’ verbs

UNIT IV **(18 Hours)**

31) An apology letter to Dean for using mobile phone
32) A request letter to repair fan and tube light
33) A letter to invite Chief guest for Bibliophile Club meeting

34) A requisition Letter to issue the Transfer certificate
35) A permission letter for group exam coaching class
36) Conjugation of Past Perfect 'Be' verbs
37) Conjugation of Future Perfect 'Be' verbs
38) Conjugation of Present Perfect Continuous 'Be' verbs
39) Conjugation of Past Perfect Continuous 'Be' verbs
40) Conjugation of Future Perfect Continuous 'Be' verbs

UNIT V **(18 Hours)**

41) A letter seeking help to find the missing laptop
42) A letter to the editor regarding frequent power cut
43) A medical leave letter
44) A requesting OD Letter to issue invitation to other colleges
45) A requisition letter to change Shift
46) Conjugation of present form 'Action' verbs
47) Conjugation of past form 'Action' verbs
48) Conjugation of Present form 'do verbs
49) Conjugation of Past form 'do' verbs
50) Conjugation of Future form 'have' verbs

Teaching Methodology	Chalk and Talk, discussion, Training

Book for Study

1. Jayapaul, V.L. (2023). *Begin to Learn English.* St. Joseph's College (Autonomous), Tiruchirappalli.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	compose various types of letters (request, permission, and apology) demonstrating clarity, coherence, and correctness.	**K1**
CO2	exhibit a sound understanding of nouns, pronouns, adjectives, verbs, and adverbs, utilizing them accurately in written and spoken English.	**K2**
CO3	apply language skills in real-life college scenarios, gaining confidence in communicating effectively with peers, faculty, and administrative staff.	**K3**

Relationship Matrix											
Semester	**Course Code**	**Title of the Course**							**Hours**		**Credits**
1	**23UEN14AE01**	**Ability Enhancement Compulsory Course - 1:** Communicative English							**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	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**
										Mean Overall Score	**2.37 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UEN14AE01	**Ability Enhancement Compulsory Course - 1:** Communicative English	6	3

Course Objectives
To recognize and identify common punctuation marks and their usage in paragraphs.
To summarize the main topics introduced in a paragraph and demonstrate understanding.
To apply the learned concepts to construct paragraphs that convey ideas effectively.
To analyze paragraphs to identify the role of prefixes, suffixes, and noun types in enhancing meaning.
To synthesize information to create paragraphs, evaluate their own writing, and engage in role-playing scenarios to demonstrate understanding.

Intermediate Level

UNIT I **(18 Hours)**

1) Paragraph Punctuation
2) Introducing a Topic
3) Rhyming Words
4) Word Association
5) Going To
6) What Will Happen

UNIT II **(18 Hours)**

7) Every Drop Counts
8) Prefix
9) Suffix
10) Comprehending Characters
11) Complimenting & Thanking
12) Proper & Common Nouns

UNIT III **(18 Hours)**

13) Noun Substitution Table
14) A, Some
15) Visual Comprehension
16) Singular to Plural
17) Making & Responding
18) Pronoun Classification

UNIT IV **(18 Hours)**

19) Pronoun I, Me, He, Him, She, Her, We.
20) Singular to Plural
21) Responding
22) Pronoun Classification
23) Using Preposition of Movement
24) Preposition: Visual Talk

UNIT V **(18 Hours)**

25) Prepositional Phrases
26) Storytelling
27) Asking For Opinion
28) Using Things Creatively
29) Transition Sequencing
30) Role Play

Book for Study

1. Joy, J. L. (2020). *Learning to Communicate*. St. Joseph's College (Autonomous), Tiruchirappalli.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	demonstrate proficiency in paragraph construction, rhyming words, and the use of prefixes and suffixes.	**K1**
CO2	apply advanced grammar rules, including proper/common nouns and pronoun usage, in both written and spoken communication.	**K2**
CO3	express opinions, compliments, and gratitude effectively, showcasing an enhanced ability to articulate thoughts and emotions.	**K3**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
1	**23UEN14AE01**		**Ability Enhancement Compulsory Course - 1:** Communicative English						**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	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**
									Mean Overall Score		**2.37 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
1	23UEN14AE01	**Ability Enhancement Compulsory Course - 1:** Communicative English	6	3

Course Objectives
To recognize and demonstrate basic self-introduction strategies.
To summarize information from listening and reading exercises, demonstrating understanding.
To apply learned concepts to construct essays, actively contribute to group discussions, and create coherent narratives.
To analyze reviews to understand how different elements contribute to a comprehensive evaluation.
To synthesize information to create compelling presentations, actively participate in debates, interviews, and assess their own communication proficiency.

Advance Level

UNIT I **(18 Hours)**

1) Self Introduction
2) Listening
3) Reading

UNIT II **(18 Hours)**

4) Essay Writing
5) Group Discussion
6) Story Building, Story Writing & Story Narration

UNIT III **(18 Hours)**

7) Book Review
8) Film Review

UNIT IV **(18 Hours)**

9) News Paper Reading and Analysis
10) Public speaking: Drafting and Speaking

UNIT V **(18 Hours)**

11) Debate
12) Interview Skills

Websites and eLearning Resources

1. https://ielts-up.com/listening/ielts-listening-practice.html
2. https://www.bestmytest.com/ielts/speaking
3. https://ielts-up.com/speaking/ielts-speaking-practice.html
4. https://learnenglishteens.britishcouncil.org/skills/writing/a2-writing/film-review

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	exhibit high-level language skills in self-introduction, listening, reading, and diverse writing tasks such as essay writing and storytelling.	**K1**
CO2	critically evaluate and analyze literature through book reviews, film reviews, and newspaper reading, demonstrating an ability to articulate informed opinions.	**K2**
CO3	showcase proficiency in public speaking, group discussions, debates, and interviews, reflecting a comprehensive mastery of advanced communication skills.	**K3**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
1	**23UEN14AE01**		**Ability Enhancement Compulsory Course - 1:** Communicative English						**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	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**
Mean Overall Score											**2.37 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	23UTA21GL02	General Tamil - 2	4	3

கற்றலின் நோக்கங்கள்
தமிழ் இலக்கிய வரலாற்றை அறிதல்.
எழுத்து, சொல் இலக்கணங்களின் அடிப்படைகளைக் கண்டறிதல்.
அயலகக் கவிதை வடிவங்களை விளங்கிக் கொள்ளுதல்.
மொழிபெயர்ப்புக் கவிதைகளின் வாயிலாக மொழிபெயர்ப்புத் திறனை வளர்த்தெடுத்தல்.
போட்டித் தேர்வுகளை எதிர்கொள்வதற்கான இலக்கண அறிவு பெறுதல்.

அலகு - 1 ***(12 மணிநேரம்)***

பாரதியார் கவிதைகள் - குயில்பாட்டு (குயில் தன் பூர்வ ஜென்மக் கதை உரைத்தல்)
பாரதிதாசன் கவிதைகள் - சஞ்சீவி பர்வதத்தின் சாரல்
நற்றமிழ்க்கோவை - முதல் மூன்று கட்டுரைகள்

அலகு - 2 ***(12 மணிநேரம்)***

வெ.இராமலிங்கனார் - சொல், தமிழன் இதயம்
முடியரசனார் - உயிர் வெல்லமோ, மனத்துயர்மை
பெருஞ்சித்திரனார் - அஞ்சாதீர், மொழி,இனம்,நாடு
பட்டுக்கோட்டை கலியாண சுந்தரனார் - வருங்காலம் உண்டு, உழைக்காமல் சேர்க்கும் பணம்
இலக்கணம் - எழுத்து
இலக்கிய வரலாறு - புதுக்கவிதை, தமிழில் புதிய கவிதை வடிவங்கள்

அலகு-3 ***(12 மணி நேரம்)***

சுரதா - நல்ல தீர்ப்பு
கண்ணதாசன் - ஒரு பானையின் கதை
அப்துல் ரகுமான்- வீடு
மேத்தா - ஒரேகுரல்
இலக்கிய வரலாறு - தமிழ்ச்சிறுகதைகள், இருபதாம் நூற்றாண்டு உரைநடை வளர்ச்சி
சிறுகதை - முதல் மூன்று சிறுகதைகள்

அலகு - 4 ***(12 மணிநேரம்)***

அரசியல் கவிதைகள்
ஈரோடு தமிழன்பன்- அகல் விளக்காக இரு
ஆதவன் தீட்சண்யா- இன்னும் இருக்கும் சுவர்களின் பொருட்டு
சுகிர்தராணி- என் கண்மணியே இசைப்பிரியா
சக்தி ஜோதி - யுகாந்திர உறக்கம்
பழநி பாரதி- வெள்ளைக்காகிதம்
விவிங்ஸ்மைல் வித்யா - நினைவில் பால்யம் அழுத்தம்
இலக்கணம் - சொல்

அலகு - 5 ***(12 மணிநேரம்)***

அயலகக் கவிதைகள்
ஓசேரிசால் (தமிழில் நெய்தல்)- விடைகொடு என்தாய் மண்ணே
ஹைபுன் கவிதைகள்
சிறுகதை - நான்கு முதல் ஆறு சிறுகதைகள்
நற்றமிழ்க் கோவை - நான்கு முதல்ஆறு கட்டுரைகள்

கற்பித்தல் முறை **(Teaching Methodology)**	***விரிவுரை*** (Lecture), ***காணொளிக் காட்சி*** (Videos), ***விளக்கக் காட்சி*** (PPT presentation)

பாடநூல்கள்

1. *தமிழாய்வுத்துறை* (2023). *பொதுத்தமிழ் -2, தூய வளனார் தன்னாட்சிக் கல்லூரி.*
2. *தமிழாய்வுத்துறை* (2021). *நற்றமிழ்க் கோவை, தூய வளனார் தன்னாட்சிக் கல்லூரி.*

Websites and eLearning Sources

1. https://www.chennailibrary.com/bharathiyar/kuyilpattu.html
2. www.tamildigitallibrary.in
3. https://eluthu.com/kavithai
4. https://podhutamizh.blogspot.com/2017/09/blog-post_42.html
5. https://thamizhsudar.com
6. https://ta.wikipedia.org/wiki

Course Outcomes		
CO No.	**CO-Statements** ***இப்பாடத்தின் நிறைவில் மாணவர்கள்***	**Cognitive Levels (K - Level)**
CO1	***தமிழ் இலக்கிய நூல்கள் பற்றிய அறிவைப் பெறுவர்.***	**K1**
CO2	***தமிழ் இலக்கண வளர்ச்சியைப் புரிந்து கொள்வர்.***	**K2**
CO3	***பிழையின்றி எழுதும் திறன் பெறுவதோடு கற்றல் திறனையும் வளர்த்துக்கொள்வர்.***	**K3**
CO4	***பிற கவிதை வடிவங்களைக் கையாளும் திறன் பெறுவர்.***	**K4**
CO5	***போட்டித் தேர்வுகளை எதிர்கொள்ளும் திறனைப் பெறுவர்.***	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
2	**23UTA21GL02**			General Tamil - 2						**4**	**3**
Course Outcomes	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO 1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	1	2	2	3	3	3	2	3	2	**2.3**
CO2	2	1	2	2	2	3	2	2	2	2	**2.0**
CO3	2	1	2	2	3	3	3	2	3	2	**2.3**
CO4	1	2	1	2	2	3	2	2	3	2	**2.0**
CO5	1	1	2	2	3	3	3	2	3	2	**2.2**
										Mean Overall Score	**2.16 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	23UFR21GL02	French - 2	4	3

Course Objectives
To construct simple phrases with pronominal verbs
To apply the different types of articles
To understand the usage of pronouns
To analyse the French culture through French culinary art
To evaluate and compare the French fashion in current scenario

UNIT I **(12 Hours)**

- TITRE: Les Loisirs
- GRAMMAIRE : les adjectifs interrogatifs, les nombres ordinaux, les verbes pronominaux
- LEXIQUE : les différentes activités quotidiennes, les loisirs, les activités quotidiennes, les matières
- PRODUCTION ORALE : parler sur votre passe-temps
- PRODUCTION ECRITE : décrire sa journée

UNIT II **(12 Hours)**

- TITRE: La routine
- GRAMMAIRE : les pronoms personnels COD, les verbes du premier groupe en e/er/eler/eter, le verbe prendre
- LEXIQUE : exprimer ses goûts et ses préférences, le temps, l'heure, la fréquence
- PRODUCTION ORALE : savoir comment dire l'heure
- PRODUCTION ECRITE : écrire vos préférences en quelques lignes

UNIT III **(12 Hours)**

- TITRE: Où Faire Ses Courses?
- GRAMMAIRE : les articles partitifs, le pronom en (la quantité), très ou beaucoup
- LEXIQUE : inviter et répondre à une invitation, les commerces et les commerçants, demander et dire le prix, les quantités
- PRODUCTION ORALE : faire des courses pour une soirée
- PRODUCTION ECRITE : écrire un message en acceptant l'invitation

UNIT IV **(12 Hours)**

- TITRE: Découvrez et Dégustez
- GRAMMAIRE : l'impératif, il faut, les verbes devoir, pouvoir, savoir, vouloir
- LEXIQUE : Commander et commenter sur un plat de la carte, les aliments, les services, les moyens de paiement
- PRODUCTION ORALE : Jeu de rôle - au restaurant (entre vous et le garçon)
- PRODUCTION ECRITE : faire une comparaison avec la carte française et indienne

UNIT V **(12 Hours)**

- TITRE: Tout le monde s'amuse/ les ados au quotidien
- GRAMMAIRE : les adjectifs démonstratifs, le pronom indéfini on, le futur proche, le passé composé, les verbes en -yer, voir et sortir
- LEXIQUE : connaître les marques connues sur les vêtements, les sorties, situer dans le temps, les vêtements et les accessoires

- PRODUCTION ORALE : décrire une tenue
- PRODUCTION ECRITE : écrire une lettre amicale, une carte postale

Teaching Methodology	Chalk and talk, visual cues like flashcards, one to one conversation

Book for Study

1. Dauda, P., Giachino, L. & Baracco, C. (2016). *Generation A1*. Didier.

Books for Reference

1. Girardet, J. & Pecheur, J. (2017). *Echo A1*. CLE International, (2nd Ed.).
2. Mérieux, R. & Loiseau, Y. (2012). *Latitudes A1*. Didier.
3. Fournier, I. (2011). *Talk French.* Goyal Publishers.

Websites and eLearning Sources

1.https://www.frenchtoday.com/blog/french-verb-conjugation/french-reflexive-verbs-list- exercises/

2.https://www.fluentu.com/blog/french/french-subject-pronouns/

3.https://grammarist.com/french/french-partitive-article/

4.https://www.talkinfrench.com/guide-french-food-habits/

5.https://www.fluentu.com/blog/french/talking-about-clothes-in-french/

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	relate pronominal verbs in expressing one's day today activity	**K1**
CO2	compare the different types of articles - article partitif and contracte	**K2**
CO3	construct texts using pronouns - passages and dialogues	**K3**
CO4	discover the food habits of the French culture	**K4**
CO5	appraise the French fashion	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
2	**23UFR21GL02**		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	3	3	3	3	1	3	1	2	2	2	**2.2**
CO2	2	1	2	3	2	3	1	2	2	2	**2.0**
CO3	3	2	3	2	2	3	3	1	3	2	**2.4**
CO4	3	2	2	1	3	3	3	1	1	3	**2.2**
CO5	2	1	2	2	3	3	3	2	2	2	**2.2**
										Mean Overall Score	**2.2 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	**23UHI21GL02**	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)**

- Kafan
- Letter Writing - Chutti Patra
- Bakthikal - Namakarn
- Sarkari Kariyalayom Ka Naam

UNIT II **(12 Hours)**

- Baathcheeth - Dookan Mein
- Kriya
- Letter Writing - Rishthedarom Ko Patra
- Bakthikal - Samajik Paristhithiyam

UNIT III **(12 Hours)**

- Vah Thodthi Patthar
- Adverb
- Letter Writing - Naukari Keliye Avedan Patra
- Bakthikal - Sahithyik Paristhithiyam

UNIT IV **(12 Hours)**

- Mukthi
- Samas
- Letter Writing - Kitab Maangne Keliye Patra
- Bakthikal - Salient Features, Main Divisions

UNIT V **(12 Hours)**

- Anuvad
- Sandhi
- Letter Writing - Nagarpalika Ko Patra
- Bakthikal - Visheshathayem

Teaching Methodology	Peer Instruction Exercise, Videos, PPT, Quiz, Group Discussion

Books for Study

1. Viswanath Tripaty. (2018). *Kuchh Kahaniyan*, Rajkamal Prakashan Pvt. Ltd.
2. Kamathaprasad Gupth, M. (2020). *Hindi Vyakaran*. Anand Prakashan.
3. Sadananth Bosalae. (2020). *kavya sarang*, Rajkamal Prakashan.

Books for Reference

1. Acharya Ramchandra Shukla. (2021). *Hindi Sahitya Ka Itihas*. Prabhat Prakashan.
2. Krishnakumar, G. (2016). *Anuvad vigyan ki Bhumika*. Rajkamal Prakashan.
3. Aravind Kumar. (2019). *Sampoorna Hindi Vyakaran our Rachana*, Lucent publisher.
4. Lakshman Prasad Singh. (2017). *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 this course, the student will be able to	**Cognitive Levels (K - Level)**
CO1	Find out the Terms & Expressions related to letter writing.	**K1**
CO2	Explain the works of Hindi writers.	**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 the following authors “Premchand, Nirala, etc.”.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**				**Hours**		**Credits**	
2	**23UHI21GL02**			Hindi - 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	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	23USA21GL02	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) sarvanaam asabdaha

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

Books for Study

1. Saralasamkritham Skisha. (2021).
2. Dhaatu Manjari. (2021).

Books for Reference

1. Paindrapuram Ashram, Srirangam. (2019).
2. Vadhyar, R. S., & Sons, Book - Seller and Publishers. (2021).
3. Kulapthy, K. M. (2018). *Saral Sanskrit Balabodh*. Bharathiys Vidya Bhavan.

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 On successful completion of this course, students will be able to	Cognitive Levels (K - Level)
CO1	remembering names of different objects, remembering different verbal forms and sandhi	K1
CO2	contrast different verbal forms Explain good sayings, Relate good saying to life.	K2
CO3	apply and build small sentences	K3
CO4	analyze different forms of Verbs and nouns	K4
CO5	appreciate subhashitas and Sanskrit poetry	K5

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
2	**23USA21GL02**			Sanskrit - 2						**4**	**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	1	3	2	2	2	3	3	2	1	**2.1**
CO2	3	2	3	2	2	3	2	3	3	2	**2.5**
CO3	2	2	3	2	2	2	2	3	3	1	**2.1**
CO4	3	2	3	3	1	2	3	3	3	1	**2.4**
CO5	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	23UEN22GE02	General English - 2	5	3

Course Objectives
To develop an expanded and specialised vocabulary related to diverse themes such as education, entertainment, career, and society through activities like word grids, reading, and discussions.
To enhance problem-solving abilities through activities like debates, role-playing, and scenario analysis.
To enable students to express ideas with precision and clarity by practising different forms of expressing quality, comparison, and actions in various contexts.
To equip students with language skills relevant to professional settings.
To encourage students to explore language as a tool for creative expression and communication.

UNIT I **(15 Hours)**

01. Education Word Grid
02. Reading Problems and Solutions
03. Syllabification
04. Forms for Expressing Quality
05. Expressing Comparison
06. Monosyllabic Comparison
07. Di/polysyllabic Comparison
08. The Best Monosyllabic Comparison
09. The Best Di/Polysyllabic Comparison
10. Practising Quality Words

UNIT II **(15 Hours)**

11. Wh Words
12. Yes/No Recollection
13. Unscramble Wh Questions
14. Wh Practice
15. Education and the Poor
16. Controlled Role Play
17. Debate on Education
18. Education in the Future
19. Entertainment Word Grid
20. Classify Entertainment Wordlist
21. Guess the Missing Letter
22. Proverb-Visual Description
23. Supply Wh Words
24. Rearrange Questions
25. Information Gap Questions

UNIT III **(15 Hours)**

26. Asking Questions
27. More about Actions
28. More about Actions and Uses
29. Crime Puzzle
30. Possessive Quiz
31. Humourous News Report
32. Debate on Media and Politics
33. Best Entertainment Source

UNIT IV **(15 Hours)**

34. Career Word Grid
35. Job-Related Wordlist
36. Who's Who?
37. People at Work
38. Humour at Workplace
39. Profession in Context
40. Functions and Expressions
41. Transition Fill-in
42. Transition Word Selection
43. Professional Qualities
44. Job Procedures
45. Preparing a Resume
46. Interview Questions
47. Job Cover Letter Format
49. Emailing an Application
50. Mock Interview

UNIT V **(15 Hours)**

51. Society Word Grid
52. Classify Society Wordlist
53. Rearrange the Story
54. Storytelling
55. Story Cluster
56. Words Denoting Time
57. Expressing Time
58. What Can You Buy?
59. Noise Pollution
60. Positive News Headlines
61. Negative News Headlines
62. Matching Conditions
63. What Would You Do?
64. If I were the Prime Minister
65. My Dream Country

Teaching Methodology	Lecture Method, Use of ICT Tools and Interactive method

Book for Study

1. Joy, J.L. & Peter, F.M. (2014). *Let's Communicate 2*, Trinity Press.

Books for Reference

1. Ahrens, Sönke. (2017). *How to Take Smart Notes: One Simple Technique to Boost Writing, Learning and Thinking*. Create Space.
2. Aspinall, Tricia. (2002). *Test Your Listening.* Pearson.
3. Bailey, Stephen. (2004). *Academic Writing: A Practical Guide for Students*. Routledge.
4. Fitikides, T.J. (2002). *Common Mistakes in English,* (6th Ed.). Longman
5. Wainwright., Gordon. (2007). *How to Read Faster and Recall More: Learn the Art of Speed Reading with Maximum Recall,* (3rd Ed.). How to Books.

Websites and eLearning Sources

1. https://learnenglish.britishcouncil.org/
2. https://oneminuteenglish.org/en/best-websites-learn-english/
3. https://www.dailywritingtips.com/best-websites-to-learn-english/

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	write paragraphs with apt punctuation marks	**K1**
CO2	discuss basic issues with friends, relatives and members of the family	**K2**
CO3	use polite expressions in appropriate ways	**K3**
CO4	evaluate the language and communication aspects of the topics	**K4**
CO5	create and produce various forms of communication, including professional documents like resumes and cover letters, debates	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
2	**23UEN22GE02**			General English - 2					**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	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
2	23UBC23CC02	**Core Course - 2:** Digital Computer Fundamentals	4	3

Course Objectives
Identify the logic gates and their functionality
Perform number conversions from one system to another system
Design basic electronic circuits
Differentiating between software types and common use cases.
Applying computer fundamentals knowledge to other technology, including mobile devices.

UNIT I: Digital Logic & Combinational Logic Circuits **(12 Hours)**

Binary Number System - The Basic Gates - Boolean algebra - NOR Gates - NAND Gates -Boolean Laws and Theorem - Sum of Product Method - Karnaugh Simplification - Product of Sum Method - Product of Sum Simplifications.

UNIT II: Data Processing & Arithmetic **(12 Hours)**

Multiplexers - De-multiplexers - Decoders: 1 of 16 encoders - BCD to decimal decoders -Seven segment decoders - Encoders - Ex-OR gates. Binary Addition - Subtraction - Unsigned Binary Numbers - 2's Complement Representation. The Adder - Subtracter - Binary Multiplication and Division.

UNIT III: Flip-Flops, Registers & Counters **(12 Hours)**

Flip - Flops: RSFlip - Flops - Gated Flip - Flops - Edge Triggered RSFlip - Flop - Edge Triggered D Flip - Flop - Edge Triggered JK Flip-Flops - JK Master/Slave - REGISTERS: Types of Registers - Serial - In -Serial - Out-Serial-I n-Parallel-out- Parallel-In- Serial Out-Parallel-In - Parallel-Out.

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

Counters: Asynchronous Counters - Synchronous Counters. D/A and A/D Conversions: D/A Converters - A/D - converter Simultaneous Conversion. Memory: Magnetic Memory - Memory Addressing -ROMs, PROMs, and EPROMs - SRAMs - DRAMs.

UNIT V: Microprocessors, Microcomputers and Assembly Language **(12 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	PPT Presentation, Chalk and Talk, Video Lectures

Books for Study

1. Donald, P. L., & Albert, P.M. (2011). *Digital Principles and Applications*, (7th Ed.). Tata McGraw-Hill.
   Unit I: *Chapter 1, Chapter 3(Sec. 3.1 - 3.8)*
   Unit II: *Chapter 4 (Sec. 4.1 - 4.7), Chapter 6(Sec. 6.1 - 6.11)*
   Unit III: *Chapter 8 (Sec. 8.1 - 8.5), Chapter 9 (Sec. 9.1 - 9.5)*
   Unit IV: *Chapter 10 (Sec. 10.1 - 10.3), Chapter 12 (Sec. 12.4, 12.5), Chapter 13 (Sec.13.1 - 13.6)*
2. Ramesh, G. (2007). *Microprocessor Architecture, Programming and Applications with the 8085.* (5th Ed.). Penram International Publishing Private Limited.
   Unit V: *Chapter 1 (Sec 1, 1.2), Chapter 2.*

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.

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

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
2	**23UBC23CC02**			**Core Course - 2:** Digital Computer Fundamentals						**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	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	1	3	3	2	2	2	**2.3**
CO5	3	3	3	2	1	3	3	3	2	1	**2.4**
										Mean Overall Score	**2.38 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	23UBC23CC03	**Core Course - 3:** Relational Database Management Systems	4	3

Course Objectives
Understand the relational database design principles
Familiar with the basic issues of transaction processing and concurrency control
Familiar with database storage structures and access techniques
To develop conceptual understanding of database management system
To understand how a real-world problem can be mapped to schemas

UNIT I: Introduction to Database System **(12 Hours)**

DatabaseSystemApplications-PurposeofDatabaseSystem.VIEWOFDATA:Data Abstraction -Instances and Schemas- Data Models- Relational Database- Data base Design-The Entity Relationship model

UNIT II: Storage and file Structure **(12 Hours)**

Overview of physical storage media - Magnetic Disks - Tertiary Storage - Storage Access. File Organization: Fixed Length Records - Variable Length Records. Organization of Records in Files: Sequential File Organization - Multi table Clustering File Organization - Data Dictionary Storage.

UNIT III: Relational Model **(12 Hours)**

Structure of Relational Data bases - Fundamental Relational Algebra Operation. TRANSACTIONS: Transaction Concept - Transaction State - Implementation of Atomicity and Durability - Concurrent Execution-Serializability.

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

SQL: Background - Data Definition - Basic Structure of SQL Queries - Set Operations -Aggregate Functions - Nested sub queries - Views - Joined Relations. Relational Data base Design: Atomic Domain and First Normal Forms. Decomposition Using Functional Dependencies: Keys and Functional Dependencies- Third Normal Form - Boyce Code Normal Form.

UNIT V: Introduction to PL/SQL **(12 Hours)**

Introduction of PL/SQL: Advantages of PL/SQL - The Generic PL/ SQL Block. PL/SQL: Data types - Variables - Constants - Control Structures - Cursors - Exception Handling -Procedures and Functions- Packages - Triggers.

Teaching Methodology	PPT Presentation, Chalk and Talk, Video Lectures

Books for Study

1. Abraham, S., Henry, F.K., & Sudarshan, S. (2016). *Database System Concepts* (8th Ed.). Tata McGraw-Hill.
   Unit I: *Chapter 1, Chapter 2*
   Unit II: *Chapter 3, Chapter 5, Chapter 6*
   Unit III: *Chapter 8, Chapter 9, Chapter 10*
   Unit IV: *Chapter 12, Chapter 13*
2. Ivan, B. (2016). *SQL & PL/SQL: The Programming Languages of Oracle.* (4th Ed.). BPB Publications.
   Unit V: *Chapter 2, Chapter 3*

Books for Reference

1. Gill, P.S. (2019). *Database Management Systems.* Dream Tech Press.
2. Deshpande, P.S. (2017). *SQL & PL/SQL for Oracle 10g.* Dream Tech Press.
3. Ramez, E. & Navathe, S.B. (2017). *Fundamentals of Database Systems*, (7th Ed.). Pearson.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	choose the need, role, importance and uses of databases in application development.	**K1**
CO2	contrast the data base approach over the file based data storage system.	**K2**
CO3	apply the different models of file organizing, storing and using of data in software solutions.	**K3**
CO4	analyze the relational model and relational algebra operations.	**K4**
CO5	examine the PL/SQL procedural techniques on relational tables as per the Industrial requirements.	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
2	**23UBC23CC03**		**Core Course - 3:** Relational Database Management Systems						**4**		**3**
Course Outcomes	**Programme Outcome (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	3	3	3	2	3	**2.7**
CO2	3	2	3	3	2	3	2	2	3	1	**2.4**
CO3	2	3	2	3	3	2	3	2	2	3	**2.5**
CO4	3	2	3	2	1	3	3	2	1	2	**2.2**
CO5	2	3	2	3	2	3	2	3	3	2	**2.5**
										Mean Overall Score	**2.36 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	23UBC23CP02	**Core Practical - 2:** Relational Database Management Systems	3	2

Course Objectives
To practice the concepts learnt in the subject DBMS by developing a database
To practice the designing, developing and querying a database
To use “Mysql/Oracle” database
Ability to define a problem at the view level & ability to understand the physical structure of the database to handle data.
To explain basic database concepts, applications, data models, schemas and instances.

List of Exercises

1. DDL, DML and DCL Queries
2. Aggregate Functions and Set Operations
3. Normalization
4. Joins and Views
5. Nested Sub Queries and Correlated Sub Queries

PL/SQL

6. Cursor
7. Procedures and Functions
8. Packages
9. Triggers
10. Exception Handling

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	list the queries of data base using DML/DDL commands.	**K1**
CO2	demonstrate the aggregate function and set operations.	**K2**
CO3	apply the normalization rules for database design in business solutions.	**K3**
CO4	examine the effectiveness of various subqueries for a given problem	**K4**
CO5	analyze various PL/SQL stored procedures, stored functions, cursors and packages to provide effective data base solutions	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**							**Hours**	**Credits**
2	**23UBC23CP02**		**Core Practical - 2:** Relational Database Management Systems							**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	2	3	3	2	2	3	1	3	2	3	**2.4**
CO2	3	2	2	3	3	1	3	2	3	2	**2.4**
CO3	2	3	2	3	1	2	1	2	2	1	**1.9**
CO4	3	2	3	2	1	3	3	2	1	3	**2.3**
CO5	2	1	2	1	2	3	2	3	3	2	**2.1**
										Mean Overall Score	**2.25 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
2	23UBC23AC02	**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	Chalk and Talk method, Problem solving

Book 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 465-480)*
   - **Unit IV:** *Chapter 18 (Pages 726-759)*
   - **Unit V:** *Chapter 19 (Pages 769-800)*

Books for Reference

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	**23UBC23AC02**			**Allied Course - 2:** Statistical Methods						**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	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	2	3	2	3	2	3	2	**2.3**
CO4	1	2	2	3	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	23UHE24VE02	**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, January 2012- Human Rights Organizations - NHRC - SHRC.

Teaching Methodology	Chalk and Talk, Power point, Handouts and Group discussion

Book 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** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
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	**23UHE24VE02**			**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**	**PSO 2**	**PSO3**	**PSO 4**	**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	23UHE24AE01	**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 - Scope and Importance - Subsystems of Earth - Various recycling Methods - Environmental Movements in India - Eco- Feminism - Public awareness - Suggestions to conserve environment

UNIT II: Natural Resources **(6 Hours)**

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

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

General structure of ecosystem - Functions of Ecosystem - Energy flow and Ecological pyramids - Levels of Biodiversity - 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 - Issues deals with Population growth.

Teaching Methodology	Chalk and Talk, Power point and Field visit

Book for Study

1. Department of Human Excellence, (2021). *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	**23UHE24AE01**	**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**	**PSO 4**	**PSO 5**	
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	23UTA31GL03	General Tamil - 3	4	3

கற்றலின் நோக்கங்கள்
தனிப்பாடல்களின் பாடற்பொருளை அறிதல்
சிற்றிலக்கியங்களின் வகைகளையும் வகைமைகளையும் அறிதல்
இடைக்காலப் புலவர்களின் பங்களிப்பை உணர்தல்
சிற்றிலக்கியங்களின் பாடுபொருள், தனித்தன்மை, மரபு ஆகியவற்றை அறிதல்
சிற்றிலக்கியங்கள்வழி தமிழின் வளர்ச்சி நிலையை அறிதல்

அலகு - 1 **(12 மணி நேரம்)**

ஔவையார்
காவிரியே தார்வேந்தன் (16) **கற்றது கைமண்ணளவு** (39) **மதியாதார் முற்றம்** (42)
இனியது கேட்கின் (55) **தாயொடு அறுசுவை** (64)
காளமேகப் புலவர் -
நஞ்சிருக்குத் தோலுரிக்கு நாதர்முடி(4) **ஓடுஞ் சுழிசுத்த முண்டமாகும்** (16)
அடிநந்தி சேர்தலால் ஆகம் (22) **செருப்புக்கு வீரரைச் சென்றுழக்கும்** (52)
துதிவாணி வீரம் (80)
இராமச்சந்திர கவிராயர் - **வஞ்சகர்பா னடந்தலைந்த** - 19
பொற்களந்தைப் படிக்காசுத் தம்பிரான் - **குட்டுதற்கோபிள்ளைப் பாண்டிய** - 21
தமிழ்விடுதூது,- கண்ணிகள் 19 **முதல்** 62 **வரை**
கலிங்கத்துப்பரணி -**தேவியைப் பரவியது, பாடல்** 121 **முதல்** 134 **வரை**

அலகு - 2 **(12 மணி நேரம்)**

முக்கூடற்பள்ளு -நாட்டுப்படலம் பாடல்கள் 19 -முதல் 27 வரை
முத்துகுமாரசாமி பிள்ளைத்தமிழ் - அம்புலிப்பருவம் முதல் 5 பாடல்கள்
அறிஞர் அண்ணா - வேலைக்காரி நாடகம்

அலகு - 3 **(12 மணி நேரம்)**

திருக்குற்றாலக்குறவஞ்சி - மலைவளம் (6 பாடல்கள்)
இலக்கியவரலாறு - சிற்றிலக்கியங்கள்
நற்றமிழ்க்கோவை கட்டுரைகள் 7, 8, 9

அலகு - 4 **(12 மணி நேரம்)**

தாயுமானவர் திருப்பாடல்கள் - பராபரக்கண்ணி 7 முதல் 30 வரை உள்ள கண்ணிகள்
இலக்கணம் - அணிகள்
குணங்குடி மஸ்தான் சாகிபு - குறை இரங்கி உரைத்தல் - 7 பாடல்கள்

அலகு - 5 **(12 மணி நேரம்)**

திருவருட்பா - திருக்கதவம் திறத்தல்
இலக்கிய வரலாறு - இடைக்காலப் புலவர்கள், நாடகத்தமிழ்
நற்றமிழ்க்கோவை -கட்டுரைகள் - 10, 11, 12

கற்பித்தல் முறை	**விரிவுரை** (Lecture), **காணொளிக் காட்சி** (Videos), **விளக்கக் காட்சி** (PPT presentation)

பாட நூல்கள்

1. தமிழாய்வுத்துறை (2023), பொதுத்தமிழ்-3, தூய வளனார் கல்லூரி
2. தமிழாய்வுத்துறை (2021), நற்றமிழ்க்கோவை, தூய வளனார் கல்லூரி

பார்வை நூல்கள்

1. செயராமன் ந.வீ. (1967),சிற்றிலக்கியச் செல்வம், மணிவாசகர் பதிப்பகம்
2. பொன்னுசாமி (2023), சிற்றிலக்கிய வரலாறு, இரண்டு தொகுதிகள்,பாரிநிலையம்
3. சண்முகம் பிள்ளை மு. (2022), சிற்றிலக்கிய வகைகள், மணிவாசகர் பதிப்பகம்

Websites and eLearning Sources

1. https://ta.wikipedia.org/wiki/
2. https://www.britannica.com/science/Siddha-medicine

3. https://nischennai.org/main/siddha-medicine/
4. https://tamil.hindustantimes.com/
5. https://www.tamiluniversity.ac.in/english/library2-/digital-library/
6. https://www.tamilelibrary.org/
7. www.projectmadurai.or
8. http://www.tamilvu.org/ta/library-libcontnt-273141
9. https://www.tamildigitallibrary.in/
10. https://noolaham.org/

Course Outcomes		
CO No.	**CO-Statements** ***இப்பாடத்தின் நிறைவில் மாணவர்கள்***	**Cognitive Levels (K - Level)**
CO1	***இடைக்காலப் புலவர்களின் பாட்டுதிதிறனை அறிந்து கொள்வர்***	**K1**
CO2	***சிற்றிலக்கிய வகைகளையும் வகைமைகளையும் அறிந்து கொள்வர்***	**K2**
CO3	***பள்ளு, பரணி, பிள்ளைத்தமிழ், குறவஞ்சி போன்ற இலக்கியங்கள் வழி வீரம், பக்தி, காதல் உணர்வை அறிந்து கொள்வர்***	**K3**
CO4	***சிற்றிலக்கியங்களின்அமைப்பு பாட்டு வடிவங்களை அறிந்து கொள்வர்***	**K4**
CO5	***இடைக்காலத் தமிழ் வளர்ச்சி நிலையை அறிந்து கொள்வர்***	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**	**Credits**	
3	**23UTA31GL03**			General Tamil - 3					**4**	**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	3	2	2	3	2	3	2	3	3	2	**2.5**
CO2	2	2	2	3	3	2	2	3	3	2	**2.4**
CO3	3	3	2	3	3	2	2	3	3	3	**2.7**
CO4	3	2	2	3	2	3	2	3	2	3	**2.5**
CO5	2	3	2	3	2	3	2	3	2	3	**2.5**
										Mean Overall Score	**2.52 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
3	23UFR31GL03	French - 3	4	3

Course Objectives
To analyse the French clothing with respect to its culture
To apply prepositions and understand its usages
To analyse a contemporary text in present tense
To evaluate the French festivals and compare with their own cultural context
To apply the past tense using simple conversation

UNIT I **(12 Hours)**

- TITRE: Vivre la ville
- GRAMMAIRE : la comparaison, les prépositions avec les noms géographiques, les pronoms personnels COI, le pronom y (le lieu)
- LEXIQUE : se repérer sur un plan de ville, la ville, les lieux de la ville
- PRODUCTION ORALE : demander et indiquer une direction dans un dialogue
- PRODUCTION ECRITE : décrire votre ville natale, créez les affiches en appréciant votre ville

UNIT II **(12 Hours)**

- TITRE: Visiter une ville
- GRAMMAIRE : la position des pronoms compléments, les verbes du premier groupe en - ger et - cer, les verbes ouvrir et accueillir
- LEXIQUE : dire les informations sur une ville de votre choix, les transports, les points cardinaux, les prépositions de lieu
- PRODUCTION ORALE : Indiquer le chemin
- PRODUCTION ECRITE : Demander des renseignements touristiques

UNIT III **(12 Hours)**

- TITRE: On vend ou on garde
- GRAMMAIRE : la formation du pluriel, les adjectifs de couleurs, l'adjectif beau, nouveau, vieux
- LEXIQUE : savoir comment s'habiller des grandes occasions, les couleurs, les formes, les matériaux
- PRODUCTION ORALE : comprendre une présentation de catalogues vestimentaires en France
- PRODUCTION ECRITE : adresser des souhaits à quelqu'un

UNIT IV **(12 Hours)**

- TITRE: Ventes d'autrefois, ventes d'aujourd'hui
- GRAMMAIRE : les pronoms relatifs qui et que, l'imparfait, les verbes connaître, écrire, mettre et vendre, la question avec inversion
- LEXIQUE : comprendre la description de personnes dans un extrait de roman, les mesures, l'informatique
- PRODUCTION ORALE : imaginez un dialogue avec un personnage célèbre. Utilisez l'inversion.
- PRODUCTION ECRITE : écrire une biographie en utilisant les pronoms relatifs

UNIT V **(12 Hours)**

- TITRE: Félicitations! / On voyage!
- GRAMMAIRE : les pronoms démonstratifs, les articles : particularités, les pronoms interrogatifs variables : lequel, les adverbes de manières, les verbes recevoir et conduire
- LEXIQUE : les moyens de transports, les voyages, les fêtes, l'aéroport et l'avion, la gare et le train, l'hôtel
- PRODUCTION ORALE : Présenter ses vœux-
- PRODUCTION ECRITE : Faire une réservation

Teaching Methodology	PPT Presentation, Seminar, Video Assignments

Book for Study

1. Dauda, P., Giachino, L., & Baracco, C. (2016). *Generation A1*. Didier.

Books for Reference

1. Girardet, J., & Pecheur, J. (2017). *Echo A1*. (2nd Ed.). CLE International.
2. Mérieux, R., & Loiseau, Y. (2012). *Latitudes A1*. Didier.
3. Fournier, I. (2011). *Talk French.* Goyal Publishers.

Websites and eLearning Sources

1. https://francais.lingolia.com/en/grammar/prepositions
2. https://www.lawlessfrench.com/grammar/present-tense/
3. https://www.thoughtco.com/textures-french-adjectives-and-expressions-1368980
4. https://study.com/academy/lesson/past-tense-in-french.html
5. https://absolutely-french.eu/french-celebrations/?lang=en

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	Relate colours, materials and shapes to the french clothing.	**K1**
CO2	Select appropriate prepositions in giving directions.	**K2**
CO3	construct a text in present tense using different verbs.	**K3**
CO4	examine the travel manners and celebrations of the French.	**K4**
CO5	justify the usage of past tense in a biography.	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
3	**23UFR31GL03**		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	1	2	2	3	2	3	1	2	3	**2.1**
CO2	3	2	3	3	1	2	1	2	2	3	**2.2**
CO3	2	1	3	2	2	3	1	3	2	2	**2.1**
CO4	3	1	3	2	3	3	3	1	2	3	**2.4**
CO5	3	2	3	2	2	3	3	2	2	1	**2.3**
										Mean Overall Score	**2.22 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
3	23UHI31GL03	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)**

- Tera Sneh Na Khooon
- Samband Bodak
- Reethikal - Namakarn
- Tense

UNIT II **(12 Hours)**

- Himadri Thung Sring Se
- Paribakshik Shabdavali
- Smuchaya Bodak
- Reethikal - Samajik Paristhithiyam

UNIT III **(12 Hours)**

- Insan Our Kuthae
- Vismayadi Bodak
- Reethikal - Sahithyik Paristhithiyam
- Reethikal - Salient Features

UNIT IV **(12 Hours)**

- Shokgeeth
- Avikary Shabdh
- Reethikal - Main Divisions
- Social Media and Modern World

UNIT V **(12 Hours)**

- Reethikal - Visheshathayem
- Anuvad
- Bahoo Ki Vidha (One Act Play)

Teaching Methodology	Videos, PPT, Quiz, Group Discussion, Case Based Problem Solving

Books for Study

1. Jain, S.K. (2019). *Anuwad: Siddhant Evam Vyavhar*. Kailash Pustak Sadan.
2. Gupth, K. M. (2020). *Hindi Vyakaran*, Anand Prakashan.
3. Bosalae, S. (2020). *kavya sarang*. Rajkamal Prakashan.

Books for Reference

1. Ramdev. (2016). *Vyakaran Pradeep*. Hindi Bhavan.

2. Singh, L.P. (2017). *Kavya Ke Sopan*. Bharathy Bhavan Prakashan.
3. Shukla, A.R. (2021). *Hindi Sahitya Ka Itihas*, Prabhat Prakashan.
4. Gosamy, K. (2016). *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 this course, the student will able to	**Cognitive Levels (K - Level)**
CO1	find out the dialects of Hindi language.	**K1**
CO2	compare the poems of Sumithra Nandanpanth, Prasad & Bachan in Context with their experience of life.	**K2**
CO3	illustrate the importance given to family ethics by the youth in the modern period according to “Bahoo Ki vidha” One Act play.	**K3**
CO4	categorize the poetics in some selective poems.	**K4**
CO5	justify the social & political conditions of Devotional period in Hindi Literature.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**				**Hours**			**Credits**
3	**23UHI31GL03**			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	23USA31GL03	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

Books for Study

1. Vedic literature
2. Ramodantam

Books for Reference

1. Parameshwara. (2018). *Ramodantam*. LIFCO Chennai.
2. Vadhyar, R. S., & Sons. (2019). *History of Sanskrit Literature,* Book - sellers and publishers , Kalpathu ,Palghat, Kerala , south India.
3. Kulapathy, K.M Saral *Sanskrit Balabodh, Bharathita vidya bhavan,* Munshimarg.

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 On successful completion of this course, students will be able to	Cognitive Levels (K - Level)
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	K3
CO4	Appreciate the Vedic Philosophy	K4
CO5	Evaluate and create new words with upasargas	K5

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
3	**23USA31GL03**		Sanskrit - 3						**4**		**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	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/Week	Credits
3	23UEN32GE03	General English - 3	5	3

Course Objectives
To develop strategies to enhance reading skills through teacher-led practices, promoting comprehension, critical analysis, and creative engagement with various genres.
To strengthen informal and formal letter writing skills.
To analyze and appreciate different literary forms, including anecdotes, biographies, poems, and prose, fostering critical thinking and creative expression.
To practice applying grammatical structures, including the simple future and future continuous tenses, in writing tasks.
To engage in critical discussions through reading and writing about societal issues.

UNIT I: Suggestions to Develop Your Reading Habit **(13 Hours)**

1.0 Introduction
1.1 Objectives
1.2 Listening and Reading Skills through Teacher-led Reading Practice
1.3 Glossary
1.3.1 Words
1.3.2 Phrases
1.4 Reading Comprehension
1.5 Critical Analysis
1.6 Creative Task
1.7 General Writing Skill: Letter Writing: Informal
1.8 Grammar: Simple Present Tense

UNIT II: The Secret of Success: An Anecdote **(13 Hours)**

1.9 Introduction
2.0 Objectives
2.1 Listening and Reading Skills through Teacher-led Reading Practice
2.2 Glossary
2.3.1 Words
2.3.2 Phrases
2.4 Reading Comprehension
2.5 Critical Analysis
2.6 Creative Task
2.7 General Writing Skills: Letter Writing: Formal
2.8 Grammar: Present Continuous Tense

UNIT III: The Impact of Liquor Consumption on the Society **(13 Hours)**

2.9 Introduction
3.0 Objectives
3.1 Listening and Reading Skills through Teacher-led Reading Practice
3.2 Glossary
3.3.1 Words
3.3.2 Phrases
3.4 Reading Comprehension
3.5 Critical Analysis
3.6 Creative Task
3.7 General Writing Skills: Letter to Newspaper
3.8 Grammar: Simple Past Tense

UNIT IV: Dr. A.P.J. Abdul Kalam: A Short Biography **(12 Hours)**

3.9 Introduction
4.0 Objectives
4.1 Listening and Reading Skills through Teacher-led Reading Practice
4.2 Glossary
4.3.1 Words
4.3.2 Phrases
4.4 Reading Comprehension
4.5 Critical Analysis
4.6 Creative Task
4.7 General Writing Skill: Write a letter applying for a job
4.8 Grammar: Past Continuous Tense

UNIT V: Golden Rule: A Poem **(12 Hours)**

4.9 Introduction
5.0 Objectives
5.1 Listening and Reading Skills through Teacher-led Reading Practice
5.2 Glossary
5.3.1 Words
5.3.2 Phrases
5.4 Reading Comprehension
5.5 Critical Analysis
5.6 Creative Task
5.7 Grammar: Simple Future Tense
5.8 General Writing Skill: Circular-Writing

UNIT VI: Hygiene **(12 Hours)**

5.9 Introduction
6.0 Objectives
6.1 Listening and Reading Skills through Teacher-led Reading Practice
6.2 Glossary
6.3.1 Words
6.3.2 Phrases
6.4 Reading Comprehension
6.5 Critical Analysis
6.6 Creative Task
6.7 General Writing Skill: Writing an Agenda for a Meeting
6.8 Grammar: Future Continuous Tense

Teaching Methodology	Lecture Method, Use of ICT Tools and Interactive method

Book for Study

1. Jayraj., & Arul, S.J. et al. (2016). *Trend-Setter*: *An Interactive General English Textbook for Undergraduate Students*. Trinity.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	recall and explain the fundamental components of English language and grammar.	**K1**
CO2	demonstrate their understanding of various texts by summarizing, paraphrasing, and interpreting the contents.	**K2**
CO3	apply their language and comprehension skills to create written communication.	**K3**
CO4	critically analyze the texts presented in the course.	**K4**
CO5	synthesize the language and grammar knowledge to compose creative tasks	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
3	**23UEN32GE03**			General English - 3						**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	23UBC33CC04	**Core Course - 4:** Data Structures and Algorithms	5	4

Course Objectives
To make students understand the basic concepts of data structures and algorithms
Apply data structures to algorithmically design efficient computer programs that will cope with the complexity of actual applications.
To understand the importance of data structures in context of writing efficient programs
Master the implementation of linked data structures such as linked lists and binary trees
Be familiar with several sub-quadratic sorting algorithms including quicksort, merge sort and heapsort

UNIT I: Introduction **(15 Hours)**

Introduction and Overview: Basic Terminology - Elementary Data Organization - DataStructures - Data Structure Operations. Arrays: Introduction - Linear Arrays - Representation- Traversing Insertion and Deletion. Searching**:** Linear Search - Binary Search.

UNIT II: Linked Lists **(15 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: Stacks, Queues and Recursion **(15 Hours)**

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: Trees **(15 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 - Quick Sort.

UNIT V: Algorithm **(15 Hours)**

The Complete development of an Algorithm: Algorithms - Basic Steps. Algorithm Design Methods: Sub goals - Hill Climbing and Working Backward - Heuristics - BacktrackProgramming - Branch and Bound.

Teaching Methodology	Videos, PPT, Quiz.

Books for Study

1. Lipschutz, S. (2014). *Data Structures.* Tata McGraw-Hill Publishing Company Limited.
   UNIT I *Chapter 1 (Sec 1.1, 1.2, 1.3, 1.4)*
   UNIT II *Chapter 5 (Sec 5.1, 5.2, 5.3, 5.4)*
   UNIT III *Chapter 6 (Sec 6.1, 6.2, 6.3, 6.5, 6.7, 6.10)*
   UNIT IV *Chapter 7 (Sec 7.1,7.2,7.3,7.4,7.7,7.8) Chapter 9 (Sec 9.1,9.3,9.4,9.6) Chapter 6(Sec 6.6) Chapter 7 (Sec 7.17)*
2. Goodman, S.E., & Hedetniemi, S.T. (1987). *Introduction to the Design and Analysis of Algorithms.* Tata McGraw-Hill. International Edition.
   UNIT V *Chapter 1 (Sec 1.1, 1.2, 1.3) Chapter 3 (Sec 3.1, 3.2, 3.3)*

Books for Reference

1. Karumanchi, N. (2016). *Data Structures and Algorithms Made Easy: Data Structuresand 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.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	recall the fundamental concepts of Data Structures	**K1**
CO2	extend the logical thinking through the use of Linked List,Stack, Queue and Trees.	**K2**
CO3	apply the suitable data structures and techniques forappropriate 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 todesign Business Solutions.	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
3	**23UBC33CC04**		**Core Course - 4:** Data Structures and Algorithms						**5**		**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	3	3	3	3	3	3	3	3	**3.0**
CO2	3	3	2	2	2	3	3	3	2	3	**2.6**
CO3	3	3	3	2	2	3	3	3	3	3	**2.8**
CO4	3	3	3	3	2	3	3	3	3	3	**2.9**
CO5	3	3	2	2	3	3	3	2	2	3	**2.6**
										Mean Overall Score	**2.78 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
3	23UBC33CC05	**Core Course - 5:** Programming in Java	5	4

Course Objectives
To make students understand the concepts of Java programming
To understand object-oriented programming concepts, and apply them in solving problems
To introduce the principles of inheritance and polymorphism; and demonstrate how they relate to the design of abstract classes
To introduce the implementation of packages and interfaces
To introduce the concepts of exception handling and multithreading.

UNIT I: Introduction to Java **(15 Hours)**

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

UNIT II: Inheritance and Polymorphism **(15 Hours)**

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 aPackage - Package Hierarchy - Access Control Modifiers.

UNIT III: Abstract Windowing Toolkit **(15 Hours)**

Events - Listeners - Event Handling Methods - Inheritance Hierarchy of Control Classes -Windows and Frames - Menus - Dialogs - Mouse Events and their Listeners. ExceptionHandling: Default Exception Handling - Exception and Error Classes - Catch Block SearchingPattern - 'Throw' Statement - 'Throws' Clause - Custom Exceptions.

UNIT IV: Threads **(15 Hours)**

Life Cycle of a Thread - Creating and Running Threads - Methods in the Thread Class - Setting the priority of a thread - Synchronization - Dead Lock - Inter Thread Communication - Applets Involving Threads. I/O STREAMS: Input Stream and Output Stream classes - Reader and Writer classes - Data Output Stream and Data Input Stream Classes.

UNIT V: Networking **(15 Hours)**

TCP Server Socket Class - TCP Socket Class - UDP Datagram Socket and Datagram PacketClasses. DATABASE CONNECTIVITY: JDBC - ODBC Connection.

Teaching Methodology	Videos, PPT, Quiz.

Book for Study

1. Muthu, C. (2011). *Programming with JAVA, (*2nd ed.). Vijay Nicole Imprints Private Limited.
   UNIT I *Chapter 1(Pages 1-6), Chapter 2(Pages 9-20), Chapter 3(Pages 22-29),and Chapter 5 (Pages 47-59)*
   UNIT II *Chapter 6(Pages 62-72), Chapter 7(Pages 77-91)*
   UNIT III *Chapter 9(Pages 118-122), Chapter 10(Pages 150-162),and Chapter 12 (Pages 189-202)*
   UNIT IV *Chapter 13(Pages 203-222), Chapter 14(Pages 223-232)*
   UNIT V *Chapter 15(Pages 248-266), Chapter 18(Pages 318-345)*

Books for Reference

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

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	define the principles and practice of object-oriented concepts.	**K1**
CO2	demonstrate Inheritance and Packages for reusability of modules.	**K2**
CO3	apply the functionality of AWT and Exception Handling in Java	**K3**
CO4	build knowledge of Threads and I/O Streams techniques in Java	**K4**
CO5	simplify and demonstrate the ability to use Networking and JDBCfor web-based applications	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
3	**23UBC33CC05**			**Core Course - 5:** Programming in Java						**5**	**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	2	2	2	3	2	3	3	2	2	3	**2.4**
CO2	2	3	2	2	2	2	3	3	2	2	**2.3**
CO3	2	2	3	2	3	2	2	2	3	2	**2.3**
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	**2.38 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
3	23UBC33CP03	**Core Practical - 3:** Java	3	2

Course Objectives
To write programs using abstract classes.
To write programs for solving real world problems using java collection frame work.
To write multithreaded programs.
To write GUI programs using swing controls in Java.
To impart hands on experience with 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. Streams and Files
11. Networking
12. JDBC Connection

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be ableto	**Cognitive Levels (K - Level)**
CO1	demonstrate applications using object-oriented concepts	**K1**
CO2	show well-structured Java applications	**K2**
CO3	construct the applications using the concepts of multithreading,exception handling and I/O streams.	**K3**
CO4	test for database connections using JDBC for web-basedapplications	**K4**
CO5	build the behavior of JSP and cookies	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**				**Hours**			**Credits**
3	**23UBC33CP03**			**Core Practical - 3:** Java				**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	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/Week	Credits
3	23UBC33AO01A	**Allied Optional -1:** Financial Accounting Package - TallyPrime 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: Stress Management **(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: Cognitive Appraisal of Stress **(9 Hours)**

Getting Started with Tally ERP9 - Mouse/Keyboard Conventions - Company creation - Shut a Company - Select a Company - Alter Company Details - Company Features and Configuration - Ledger - Group

UNIT III: Behavioural Aspects of Stress **(9 Hours)**

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

UNIT IV: Stress and Work Performance **(9 Hours)**

Voucher Entry in Tally ERP.9 - Accounting Vouchers - Types of Vouchers - Contra, Payment, Receipt, Journal, Sales, Purchase, Credit note,
debit note, reversing journals, Memo Voucher Transactions - Display.

UNIT V: Stress Intervention **(9 Hours)**

Inventory Masters In Tally ERP9 - 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 ERP 9- Stock Category - Reports.

Teaching Methodology	PPT, Videos and group discussion

Books for Study

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

Books for Reference

1. Maheshwari S. N. (2020). *Financial Accounting*, (5th Ed.). Vikas Publication, New Delhi.
2. Grewal T.S. (2018), *Introduction to Accounting*, (4th Ed.). 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
4. Lee, K. (2014). *Reset: Make the Most of Your Stress: Your 24-7 Plan for Well-being*. Universe Publishing.
5. Roy, S. (2012). *Managing stress*. Sterling Publication.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be ableto	**Cognitive Levels (K-Level)**
CO1	remembering the role of a Computerized General Ledger System in modern accounting.	**K1**
CO2	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**
CO3	apply and interpret financial reports generated by Tally, including the balance sheet, audit trial, profit and loss account, and ratio analysis..	**K3**
CO4	analyzing practical approaches to inventory handling using Tally, including the creation of stock groups, categories, items, godowns, and units of measure.	**K4**
CO5	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	**23UBC33AO01A**			**Allied Optional -1:** Financial Accounting Package - TallyPrime Basic					**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	2	1	3	3	1	2	3	2	1	2	**2.2**
CO2	3	1	2	3	2	1	3	3	1	3	**2.4**
CO3	2	3	2	3	2	2	2	3	2	1	**2.3**
CO4	3	3	3	2	2	1	2	3	2	1	**2.4**
CO5	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/Week	Credits
3	23UBC33OP01A	**Allied Optional Practical -1:** Financial Accounting Package - TallyPrime Basic	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

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Teaching Methodology	Lab practical

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be ableto	**Cognitive Levels (K-Level)**
CO1	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**
CO2	understanding to create, alter, and display single and multiple ledgers in Tally. Create and manage accounting groups, including primary and secondary groups.	**K2**
CO3	apply Tally to generate financial statements, including Trading and Profit and Loss Account and Balance Sheet	**K3**
CO4	analyzing advanced features of Tally for voucher entry, including handling entry problems in both double-entry and single-entry modes..	**K4**
CO5	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	**23UBC33OP01A**			**Allied Optional Practical -1:** Financial Accounting Package - TallyPrime Basic						**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	2	3	3	3	2	2	2	3	3	2	**2.5**
CO2	3	2	3	2	3	2	2	3	3	2	**2.5**
CO3	1	3	2	1	3	2	1	2	2	3	**2**
CO4	3	1	3	3	1	3	2	3	3	1	**2.3**
CO5	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	23UBC33AO01B	**Allied Optional - 1:** Accounts - 1	6	4

Course Objectives
To understand the meaning and concepts of financial accounting
To enhance preparation of accounting statements in a business concern
To impart the business knowledge on various kinds of business
To apply the knowledge of accounting in different business concerns
To obtain the knowledge on legal provisions of different business establishments

UNIT I: Introduction to Accounting **(18 Hours)**

Need and Importance - Book -Keeping - Accounting - Accountancy, Accountingand Book -Keeping - Users of Accounting Information - Branches of Accounting - Basic accounting terms- Rules for Debiting and crediting - Books of original entry - Journal - Illustrations.

UNIT II Basic Accounting Procedures **(18 Hours)**

Ledger - Meaning - Utility - Format - Posting - Balancing an account - Distinction between journal and Ledger.

UNIT III Subsidiary Books -1 Special Purpose Books **(18 Hours)**

Need - Purchase book - sales book - Returns books - Bills of exchange - bills book - Journal proper. - cash book - Kinds of cash books.

UNIT IV Bank Reconciliation Statement **(18 Hours)**

Pass book - difference between cash book and pass book - Bank Reconciliation statement - procedure for preparing bank reconciliation statement

UNIT V Final Accounts **(18 Hours)**

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

Teaching Methodology	PPT, Videos and group discussion

Book for Study

1. Shukla., & Grewel.(2015). *Advanced Accounts, Vol. I,* (1st Ed.). published by Sultan & Chand PublishingCo., New Delhi.

Books for Reference

1. Reddy., & Moorthy, A.T.S. (2016). *Financial Accounting*, (1st Ed.). Published by Marghampublishers , Chennai.
2. Jain., & Narang. (2015). *Advanced accounting*, (1st Ed.). published by KalyaniPublishers, New Delhi.
3. Nagarajan, Vinaykarn & Mani. (2012). *Principles of Accountancy,* (1st Ed.). Publishedby Eurasia Publishing House, New Delhi,
4. Tulsian, P. C. *Financial Accounting*, (1st Ed.). Published by Tata McGraw Hills, New Dellhi.

Websites and e Learning Sources

1. https://www.slideshare.net/mcsharma1/accounting-for-depreciation-1
2. https://www.slideshare.net/ramusakha/basics-of-financial-accounting
3. https://www.accountingtools.com/articles/what-is-a-single-entry-system.html

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be ableto	**Cognitive Levels (K-Level)**
CO1	know the concepts of financial accounting	**K1**
CO2	understand the consignment and joint venture accounts	**K2**
CO3	explain the concepts of branch accounting and departmental accounting	**K3**
CO4	apply the hire purchase accounts and fire insurance claims methods in business	**K4**
CO5	analyze and prepare the financial statements of partnership firm	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
3	**23UBC33AO01B**			**Allied Optional - 1:** Accounts - 1						**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	3	2	3	3	2	2	3	**2.5**
CO2	2	3	2	1	2	3	3	2	2	3	**2.3**
CO3	2	2	3	2	3	2	3	2	3	2	**2.4**
CO4	1	2	2	3	1	2	3	2	2	3	**2.1**
CO5	2	2	2	2	3	1	3	2	2	3	**2.2**
										Mean Overall Score	**2.3 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
3	23UHE34VE03A	**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

Book 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** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
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**		**Credits**
3	**23UHE34VE03A**		**Value Education - 3:** Social Ethics - 1						**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	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	23UHE34VE03B	**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: God of salvation **(6 Hours)**

UNIT II: Life & Mission of Jesus Christ **(6 Hours)**

UNIT III: The Holy Spirit **(6 Hours)**

UNIT IV: Gospel Values **(6 Hours)**

UNIT V: Mary, the Mother of God **(6 Hours)**

Teaching Methodology	Chalk and Talk, Power point, Assignment and Group discussion

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** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
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**	**Credits**
3	**23UHE34VE03B**			**Value Education - 3:** Religious Doctrine - 1						**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	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	23UTA41GL04B	General Tamil - 4: அறிவியல் தமிழ் (Scientific Tamil)	4	3

கற்றலின் நோக்கங்கள்
அன்றாட வாழ்வில் அறிவியலின் செல்வாக்கை அறிந்துகொள்ளுதல்
பண்டைத்தமிழர் வாழ்வில் இடம்பெற்ற அறிவியல்கூறுகளைக் கண்டறிதல்
அறிவியலின் வளர்நிலைகளையும் வகைப்பாடுகளையும் கண்டுணர்தல்
பண்டைத்தமிழரின் பல்துறைச் சிந்தனைகள்வழி தமிழர் தம் பண்பாட்டு மேன்மையை உணர்தல்
படைப்பாற்றல் திறனைக் கண்டறிந்து வளர்த்தெடுத்தல்

அலகு 1 **(12 மணி நேரம்)**

தொல்காப்பியம்: நிலம் தீ நீர் வளி விசும்போடு (தொல். பொருள் 635)

ஒன்றறிவதுவே (தொல். பொருள் 571)

புறநானூறு

மண் திணித்த நிலனும் (புறம் 2 1- 6) செஞ்ஞா யிற்றுச் செலவும் (புறம் 30 1- 7)

அகநானூறு

அம்ம வாழி, தோழி (அகம் 141: 1-11) செஞ்ஞா யிற்றுச் செலவும் (புறம் 30 1-7)

பதிற்றுப்பத்து

நிலம் நீர் வளி விசும்பு என்ற நான்கின் (பதிற்று 14:1-4)

நெடுவயின் ஒளிறு மின்னுப் பரந்தாங்கு (பதிற்று 24:1-26)

உரைநடைக்கட்டுரை: வியக்க வைக்கும் தமிழரின் அறிவியல்

அலகு 2 **(12 மணி நேரம்)**

சித்தர் பாடல்கள்

பதார்த்த சிந்தாமணி

குளத்து சலந்தானே கொடிதான (27) ஏரிசலம் வாதமிகு மதுவே (31)

அருவிநீர் மேக மகற்றுங் (39) மேவிய சீவன் வடிவது சொல்லிடில் (திருமூலர்)

அணுவில் அணுவினை ஆதிபிரானை (திருமூலர்)

நட்டகல்லைத் தெய்வமென்று (சிவவாக்கியர்)

உரைநடைக்கட்டுரை: தமிழர்களின் மருத்துவ அறிவியல்

அலகு 3 **(12 மணி நேரம்)**

திருக்குறள் (2 அதிகாரங்கள்)

வான் சிறப்பு, மருந்து வலைப்பூக்கள் உருவாக்கல், பராமரித்தல் புதிய அறிவியல் கலைச்சொல்லாக்கங்களை உருவாக்குதல்

உரைநடைக்கட்டுரை: தமிழ் இலக்கியங்களில் வெளிப்படும் நீர் மேலாண்மையியல்

அலகு 4 **(12 மணி நேரம்)**

புதினம்: சொர்க்கத்தீவு - சுஜாதா நூல் - திறனாய்வு அறிவியல் புனைவு

ஆவணப்படம், திரைப்படம் - திறனாய்வு

உரைநடைக்கட்டுரை: தமிழில் அறிவியல் புனைவுகள்

அலகு 5 **(12 மணி நேரம்)**

அறிவியல்; கலைச்சொற்கள் அன்றாட வாழ்வில் அறிவியல் பழமொழிகளைத் தொகுத்தல் மூலிகைகள், கீரைகள் ஆகியவற்றின் முக்கியத்துவத்தைக் காட்சிப்படுத்துதல். தமிழர் அறிவியல் கண்காட்சி நடத்துதல்

உரைநடைக்கட்டுரை: அறிவியல் தமிழின் வளர்ச்சி நிலைகள்;

கற்பித்தல் முறை	விரிவுரை (Lecture), காணொளிக் காட்சி (Videos), விளக்கக் காட்சி (PPT presentation)

பாட நூல்கள்

1. தமிழாய்வுத்துறை (2021), அறிவியல் தமிழ் , தூய வளனார் தன்னாட்சிக் கல்லூரி
2. சுஜாதா (2009), சொர்க்கத்தீவு, லிசா பப்ளிகேஷன்ஸ்,

3. மூர்த்தி அ.கி.(2001) , அறிவியல் கலைச்சொல் அகராதி, மணிவாசகர் பதிப்பகம்.

பார்வை நூல்கள்

1. நெடுஞ்செழியன்(2017), இன்னும் மீதமிருக்கிறது நம்பிக்கை, பூவுலகின் நண்பர்கள் வெளியீடு
2. குழந்தைசாமி.வா.செ., (2001), அறிவியல்தமிழ், பாரதி பதிப்பகம்

Websites and eLearning Sources

1. www.tamilvu.org
2. www.tamildigitallibrary.in
3. https://www.tamiluniversity.ac.in/english/library2-/digital-library/
4. https://www.tamilelibrary.org/

Course Outcomes		
CO No.	**CO-Statements** ***இப்பாடத்தின் நிறைவில் மாணவர்கள்***	**Cognitive Levels (K - Level)**
CO1	பண்டைய தமிழர்களின்; அறிவியல் அறிவை அறிந்து கொள்வர்.	**K1**
CO2	பண்டைய தமிழ் இலக்கியங்களுள் காணாலும் அறிவியல் சிந்தனைகளைப் புரிந்துகொள்வர்.	**K2**
CO3	தமிழரின் அறிவியல் மருத்துவத்தையும், நீர் மேலாண்;மை அறிவையும் அறிந்து கொள்வர்.	**K3**
CO4	இக்கால இலக்கியங்களுள் அறிவியல்துறை பெற்றுள்ள இடத்தை அறிந்து கொள்வர்.	**K4**
CO5	அறிவியல் கலைச்சொற்களைத் தமிழில் கற்றுக் கொண்டு அறிவியல்தமிழ் வளரத் துணைபுரிவர்.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
4	**23UTA41GL04B**			**General Tamil - 4 *அறிவியல் தமிழ்* (Scientific Tamil)**					**4**		**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	1	2	3	2	2	3	3	2	2	2	**2.2**
CO2	2	2	3	2	2	2	3	2	3	2	**2.3**
CO3	1	2	2	3	2	2	2	3	3	3	**2.3**
CO4	2	2	3	2	2	3	2	3	3	2	**2.4**
CO5	3	1	2	2	2	2	3	2	3	3	**2.3**
										Mean Overall Score	**2.3 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	23UFR41GL04	French - 4	4	3

Course Objectives
To analyse the French clothing with respect to its culture
To apply prepositions and understand its usages
To analyse a contemporary text in present tense
To evaluate the French festivals and compare with their own cultural context
To apply the past tense using simple conversation

UNIT I **(12 Hours)**

- TITRE: On fait le mélange!
- GRAMMAIRE : le présent progressif, les pronoms possessifs, la phrase négative
- LEXIQUE : décrire les étapes d'une action, la maison, les taches ménagères
- PRODUCTION ORALE : comprendre le récit d'un voyage
- PRODUCTION ECRITE : raconter ses actions quotidiennes

UNIT II **(12 Hours)**

- TITRE: à propos de logement
- GRAMMAIRE : quelques adjectifs et pronoms indéfinis, les verbes lire, rompre et se plaindre
- LEXIQUE : la localisation et le logement, les pièces, meubles et équipement
- PRODUCTION ORALE : jeu de rôle -votre ami et vous s'installe dans un nouveau meuble
- PRODUCTION ECRITE : décrire votre maison/appartement

UNIT III **(12 Hours)**

- TITRE: Tous en forme!
- GRAMMAIRE : le passé composé et l'imparfait, le passé récent, l'expression de la durée
- LEXIQUE : un souvenir et les événements du passées, le corps humain : extérieur, le corps humain : intérieur
- PRODUCTION ORALE : échanger sur ses projets de vacances
- PRODUCTION ECRITE : raconter un souvenir

UNIT IV **(12 Hours)**

- TITRE: Accidents et catastrophes
- GRAMMAIRE : les adjectifs et les pronoms indéfinis : rien/ personne/aucun, les verbes dire, courir et mourir
- LEXIQUE : savoir les mots et les expressions des catastrophes naturelles, les maladies et les remédies, les accidents, les catastrophes naturelles
- PRODUCTION ORALE : comprendre des personnes qui expriment leur accord ou leur désaccord selon un thème donné
- PRODUCTION ECRITE : écrivez sur une catastrophe naturelle en articulant la cause et la conséquence

UNIT V **(12 Hours)**

- TITRE: Faire ses études a l'étranger/ bon voyage/ la météo
- GRAMMAIRE : les pronoms démonstratifs neutres, le futur simple, situer dans le temps, moi aussi/non-plus - moi non/si, les verbes impersonnels, les verbes croire, suivre et pleuvoir

- LEXIQUE : savoir vivre en France, le système scolaire, les formalités pour partir à l'étranger, la météo
- PRODUCTION ORALE : exprimer son opinion sur la météo/parler de l'avenir
- PRODUCTION ECRITE: comparer le système scolaire français et indien

Teaching Methodology	Workshop, group activity, Sharing contemporary french cultural videos

Book for Study

1. Dauda, P., Giachino, L., & Baracco, C. (2016). *Generation A1*. Didier.

Books for Reference

1. Girardet, J., & Pecheur, J. (2017). *Echo A1*. (2nd Ed.). CLE International.
2. Mérieux, R., & Loiseau, Y. (2012). *Latitudes A1*. Didier.
3. Fournier, I. (2011). *Talk French.* Goyal Publishers.

Websites and eLearning Sources

1. https://www.frenchcourses-paris.com/french-travel-journal/
2. http://www.saberfrances.com.ar/vocabulary/house.html
3. https://www.thoughtco.com/different-past-tenses-in-french-1368902
4. https://www.youtube.com/watch?v=JZdwJM7sEY8
5. https://www.scholaro.com/pro/Countries/France/Education-System

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	recall the vocabulary pertaining to dwelling place.	**K1**
CO2	outline crisis management in France.	**K2**
CO3	develop a travel diary of your own.	**K3**
CO4	simplify the French education system.	**K4**
CO5	interpret past tenses in a text.	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
4	**23UFR41GL04**		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	3	1	3	2	2	3	2	1	2	2	**2.1**
CO2	3	1	2	3	3	3	2	1	3	1	**2.2**
CO3	3	2	3	2	2	3	2	1	3	2	**2.3**
CO4	3	1	2	2	3	3	3	1	3	3	**2.4**
CO5	2	2	3	3	1	3	1	2	3	2	**2.2**
										Mean Overall Score	**2.24 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	23UHI41GL04	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)**

- Computer Ka Yug
- Prathyay
- Adhunik Kal - Namakarn
- Namakaran

UNIT II **(12 Hours)**

- Vigyan Hani/Labh
- Paryayvachy Shabdh
- Adhunik Kal - Samajik Paristhithiyam
- Samanarthy Shabdh

UNIT III **(12 Hours)**

- Nari Shiksha
- Upasarg
- Adhunik Kal - Sahithyik Paristhithiyam
- Adhunik Kal - Salient Features

UNIT IV **(12 Hours)**

- Review- Book/Film
- Paryavaran Pradookshan
- Adhunik Kal - Main Divisions
- Adhunik Kal - Visheshathayem

UNIT V **(12 Hours)**

- Sapnom Kee Home Delivery (Novel)
- Anuvad

Teaching Methodology	Debate Participation, Videos, PPT, Quiz, Project Work

Books for Study

1. Bosalae, S. (2020). *kavya sarang*. Rajkamal Prakashan.
2. Gupth, M. K. (2020). *Hindi Vyakaran*. Anand Prakashan.
3. Jain, S.K. (2019). *Anuwad: Siddhant Evam Vyavhar*. Kailash Pustak Sadan.

Books for Reference

1. Chaturvedi, R.P. (2015). *Hindi vyakarana*. Upakar Prakashan.
2. Ramdev. (2016). *Vyakaran Pradeep*. Hindi Bhavan.
3. Gosamy, K. (2016). *Anuvad vigyan ki Bhumika*. Rajkamal Prakashan.

4. Shukla, A. R (2021). *Hindi Sahitya Ka Itihas*, Prabhat 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 this course, the student will able to	**Cognitive Levels (K - Level)**
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	analyze the human values expressed in life and literature of Hindi Novelist “Mamatha Kaliyah”.	**K4**
CO5	evaluate the film & Literary works in Hindi.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**				**Hours**		**Credits**	
4	**23UHI41GL04**			Hindi - 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	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	23USA41GL04	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

Books for Study

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

Books for Reference

1. Vadhyar, R.S. & Sons. (2019). *History of Sanskrit Literature.* Book - sellers and publishers , Kalpathu ,Palghat, Kerala, south India,
2. Kulapathy, Saral, K.M. (2018). *Sanskrit Balabodh , Bharathita vidya bhavan* , Munshimarg.
3. Bharathi. (2019). *Vadatu sanskritam - Samaskara Binduhu.* S. Aksharam 8th cross, 2nd phase Giri nagar Bangalore.

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** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
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	**K3**
CO4	appreciate ancient Sanskrit dramas	**K4**
CO5	create new conversational sentences and to Improve self-character (Personality Development)	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
4	**23USA41GL04**			Sanskrit - 4					**4**		**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	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/week	Credits
4	23UEN42GE04	General English - 4	5	3

Course Objectives
To develop and enhance language proficiency in listening, reading, and writing skills through teacher-led reading practice, and comprehension exercises.
To encourage creative thinking through creative tasks and essay writing.
To foster effective communication skills by engaging in tasks that require note-taking, note-making, précis writing, paragraph writing, and the synthesis of information from different sources.
To strengthen grammatical skills by focusing on the application of different tenses and to emphasise grammatical accuracy in various writing tasks.
To encourage students to critically engage with media content and evaluate information.

UNIT I: Women Through the Eyes of Media **(13 Hours)**

1.0 Introduction
1.1 Objectives
1.2 Listening and Reading Skills through Teacher-led Reading Practice
1.3 Glossary
1.3.1 Words
1.3.2 Phrases
1.4 Reading Comprehension
1.5 Critical Analysis
1.6 Creative Task
1.7 General Writing Skill: Writing Minutes of a Meeting
1.8 Grammar: Present Perfect Tense

UNIT II: Effects of Tobacco Smoking **(13 Hours)**

1.9 Introduction
2.0 Objectives
2.1 Listening and Reading Skills through Teacher-led Reading Practice
2.2 Glossary
2.3.1 Words
2.3.2 Phrases
2.4 Reading Comprehension
2.5 Critical Analysis
2.6 Creative Task
2.7 General Writing Skill: Note-Taking
2.8 Grammar: Present Perfect Continuous Tense

UNIT III: Short Message Service (SMS) **(13 Hours)**

2.9 Introduction
3.0 Objectives
3.1 Listening and Reading Skills through Teacher-led Reading Practice
3.2 Glossary
3.3.1 Words
3.3.2 Phrases
3.4 Reading Comprehension
3.5 Critical Analysis
3.6 Creative Task
3.7 General Writing Skill: Note-Making
3.8 Grammar: Past Perfect Tense

UNIT IV: An Engineer Kills Self as Crow Sat on his Head: A Newspaper Report **(12 Hours)**

3.9 Introduction
4.0 Objectives
4.1 Listening and Reading Skills through Teacher-led Reading Practice
4.2 Glossary
4.3.1 Words
4.3.2 Phrases
4.4 Reading Comprehension
4.5. Critical Analysis
4.6. Creative Task
4.7 General Writing Skill: Précis Writing
4.8 Grammar: Past Perfect Continuous Tense

UNIT V: Traffic Rules **(12 Hours)**

4.9 Introduction
5.0 Objectives
5.1 Listening and Reading Skills through Teacher-led Reading Practice
5.2 Glossary
5.3.1 Words
5.3.2 Phrases
5.4 Reading Comprehension
5.5 Critical Analysis
5.6 Creative Task
5.7 General Writing Skill: Paragraph Writing
5.8 Grammar: Future Perfect Tense

UNIT VI: A Handful of Answers: A Zen Tale **(12 Hours)**

5.9 Introduction
6.0 Objectives
6.1 Listening and Reading Skills through Teacher-led Reading Practice
6.2 Glossary
6.3.1 Words
6.3.2 Phrases
6.4 Reading Comprehension
6.5 Critical Analysis
6.6 Creative Task
6.7 General Writing Skill: Writing Short Essays on Current Issues/General Topics
6.8 Grammar: Future Perfect Continuous Tense

Teaching Methodology	Lecture Method, Use of ICT Tools and Interactive method

Book for Study

1. Jayraj., & Arul, S.J. et al. (2016). *Trend-Setter: An Interactive General English Textbook for Under Graduate Students*. Trinity.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	identify and explain key concepts and topics discussed in the course.	**K1**
CO2	understand the content by summarising, paraphrasing, and interpreting the materials presented.	**K2**
CO3	apply their knowledge to create various forms of written communication, such as meeting minutes, notes, précis, paragraphs, and essays.	**K3**
CO4	analyse the application of different tenses in various texts.	**K4**
CO5	synthesise their knowledge by creating creative tasks, including short essays on current issues and general topics	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
4	**23UEN42GE04**			General English - 4					**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
4	23UBC43CC06	**Core Course - 6:** Software Engineering	5	4

Course Objectives
To provide the idea of decomposing the given problem into Analysis, Desing, 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.
Demonstrate the ability to work effectively as a team member and/or leader in an ever-changing professional environment
Progress through advanced degree or certificate programs in computing, science, engineering, business, and other professionally related fields.

UNIT I: Software Engineering **(15 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. Agile Development: Agility and the Cost of Change - Extreme Programming and other Agile Process Models - A Tool Set for the Agile Process.

UNIT II: Requirements Understanding **(15 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. Requirements Modeling - Behavior, Patterns and Web/Mobile Apps: Creating aBehavioral Model - Identifying Events with the Use Case - State Representations - Patterns forRequirements Modeling - Requirements Modeling for Web and Mobile Apps.

UNIT III: Design Concepts **(15 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: User Interface Design **(15 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: Software Testing **(15 Hours)**

Software Testing Strategies: A Strategic Approach to Software Testing - Strategic Issues - Test Strategies for conventional Software - Test Strategies for Object-Oriented Software - Test Strategies for Web Apps - Test Strategies for Mobile Apps - Validation Testing - System Testing - The Art of Debugging. Maintenance and Reengineering: Software Maintenance - Software supportability - Reengineering - Business Process Reengineering - Software Reengineering - Reverse reengineering - Restructuring - Forward Engineering - The Economics of Reengineering.

Book for Study

1. Roger, R. S., & Maxim, B. R. (2019). *Software Engineering - A Practitioner's Approach.* (8th Ed.). McGraw-Hill.
   UNIT I *Chapter 2, Chapter 3, Chapter 4(Sec. 4.1, 4.2), Chapter 5*
   UNIT II *Chapter 8, Chapter 11*
   UNIT III *Chapter 12, Chapter 13(Sec. 13.1, 13.2, 13.3 13.4)*
   UNIT IV *Chapter 15, Chapter 19*

UNIT V Chapter *22, Chapter 36*

Books for Reference

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

Course Objectives		
CO No.	**CO-statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	recall the basic concepts of Software Engineering and Software Development Life Cycle Models.	**K1**
CO2	comprehend the concepts of Requirement Analysis.	**K2**
CO3	understand the Software Design Concepts.	**K3**
CO4	apply User Interface Design, quality factors to evaluate the software solutions.	**K4**
CO5	distinguish Software Testing Strategies.	**K5**

Course Outcomes											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
4	**23UBC43CC06**			**Core Course - 6:** Software Engineering						**5**	**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	1	1	2	1	3	2	2	1	1	**1.7**
CO2	1	3	2	1	1	2	2	2	3	2	**1.9**
CO3	3	3	3	3	2	3	3	3	3	3	**2.9**
CO4	3	2	2	3	2	2	3	3	3	3	**2.6**
CO5	2	3	2	2	1	2	2	3	2	2	**2.1**
										Mean Overall Score	**2.24 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	23UBC43CC07	**Core Course - 7:** Web Technologies	5	4

Course Objectives
To introduce the fundamentals of Internet, and the principles of web design
Construct basic websites using HTML and Cascading Style Sheets
Able to develop a web application using PHP
To Gain the skills and project-based experience needed for entry into web application and development careers
To develop modern interactive web applications using PHP and MySQL

UNIT I: Introduction to HTML **(15 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. VIDEO, AUDIO, 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: CSS **(15 Hours)**

Introduction To CSS: Importing a Style sheet - 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: PHP **(15 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: PHP Functions - Including and Requiring Files - PHP Version Compatibility.

UNIT IV: PHP OBJECTS **(15 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: MySQL **(15 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 - Using EXPLAIN - Backing Up and Restoring. Accessing MySQL Using PHP: Querying a MySQL Database with PHP - A PracticalExample - Practical MySQL - Preventing Hacking Attempts - Using MySQLi Procedurally.

Books for Study

1. Castro, E., & Hyslop, B. (2012). *HTML5 & CSS3.* (7th Ed.). Peachpit Press.
   UNIT I - *Chapter 15, Chapter 16, Chapter 17, Chapter 18*
2. Nixon, R. (2018). *Learning PHP, MySQL & JavaScript with jQuery, CSS & HTML5.* (5th Ed.).O'Reilly Media. Inc.
   UNIT II - *Chapter 18, Chapter 19*
   UNIT III - *Chapter 3, Chapter 4, Chapter 5 (Page no. 95 - 105)*
   UNIT IV - *Chapter 5 (Page no. 106 - 120), Chapter 6, Chapter 7*
   UNIT V - *Chapter 8, Chapter 9, Chapter 10*

Books for Reference

1. Gibbs, P. (2020). *PHP Tutorials: Programming with PHP and MySQL: Learn PHP 7 / 8 with MySQL.* (5th Ed.).
2. Prettyman, S. (2020). *Learn PHP 8: Using MySQL, JavaScript, CSS3, and HTML5.* A Press.
3. DT, Editorial Services. (2018). *Web Technologies,* Dreamtech Press.

Course Objectives		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	list the HTML form controls	**K1**
CO2	demonstrate the basic concepts and functions in PHP	**K2**
CO3	apply Cascading Style Sheets to develop dynamic web pages.	**K3**
CO4	create PHP objects for server-side Programming	**K4**
CO5	build simple database using mysql for Software Solutions.	**K5**

Course Outcomes											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
4	**23UBC43CC07**			**Core Course - 7:** Web Technologies					**5**		**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	1	2	3	2	2	3	2	2	3	3	**2.3**
CO2	2	2	3	2	3	2	2	2	2	3	**2.3**
CO3	1	2	2	2	2	2	3	3	3	3	**2.3**
CO4	2	2	2	2	3	2	3	3	2	3	**2.4**
CO5	2	3	2	2	2	2	3	3	2	3	**2.4**
										Mean Overall Score	**2.34 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	23UBC43CP04	**Core Practical - 4:** Web Technologies	3	2

Course Objectives
Students will Analyze the web page and identify its elements and attributes.
Create web pages using XHTML and Cascading Style Sheets.
Build dynamic web pages using PHP
Design and develop static and dynamic web pages.
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

1. Conditional statements and looping
2. PHP Functions
3. PHP Objects
4. Arrays in PHP
5. File handling in PHP
6. Accessing MySQL database with queries
7. Student Mark list using MySQL

Course Objectives		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K- Level)**
CO1	show attractive web pages using Cascading Style Sheets.	**K1**
CO2	demonstrate dynamic web forms using HTML and PHP	**K2**
CO3	apply PHP functions and objects for modular programming	**K3**
CO4	construct PHP programs using arrays and files for text manipulation	**K4**
CO5	design database using mysql for real-time problems	**K5**

Course Outcomes											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
4	**23UBC43CP04**			**Core Practical - 4:** Web Technologies					**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	1	3	2	3	2	3	2	2	3	3	**2.4**
CO2	2	2	3	2	3	2	2	2	2	3	**2.3**
CO3	1	2	3	2	2	3	2	3	3	3	**2.4**
CO4	1	3	2	2	3	2	3	3	2	3	**2.4**
CO5	2	2	3	2	2	2	3	3	2	3	**2.4**
										Mean Overall Score	**2.38 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	23UBC43AO02A	**Allied Optional - 2:** Financial Accounting Package - TallyPrime 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: Stress Management **(9 Hours)**

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

UNIT II: Cognitive Appraisal of Stress **(9 Hours)**

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

UNIT III: Behavioural Aspects of Stress **(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: Stress and Work Performance **(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: Stress Intervention **(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

Teaching Methodology	PPT, Videos and group discussion

Books for Study

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

Books for Reference

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

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K-Level)**
CO1	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**
CO2	understanding to create, alter, and display single and multiple ledgers in Tally. Create and manage accounting groups, including primary and secondary groups.	**K2**
CO3	apply Tally to generate financial statements, including Trading and Profit and Loss Account and Balance Sheet	**K3**
CO4	analyzing advanced features of Tally for voucher entry, including handling entry problems in both double-entry and single-entry modes..	**K4**
CO5	evaluating Tally for managing various taxation aspects, including E-mailing in Tally ERP9	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
4	**23UBC43AO02A**			**Allied Optional - 2:** Financial Accounting Package - TallyPrime Advanced					**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	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	2	3	2	3	2	3	2	**2.3**
CO4	1	2	2	3	1	2	3	2	2	3	**2.1**
CO5	1	2	2	2	3	1	3	2	2	3	**2.1**
										Mean Overall Score	**2.3 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	23UBC43OP02A	**Allied Optional Practical - 2:** Financial Accounting Package - TallyPrime Advanced	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-Statements** On successful completion of this course, students will be ableto	**Cognitive Levels (K-Level)**
CO1	understand the step-by-step process for selecting a company for operations.	**K1**
CO2	proficient creation and management of accounting groups, encompassing primary and secondary group categorizations.	**K2**
CO3	utilize Tally software proficiently to generate comprehensive financial statements, encompassing Trading and Profit & Loss Account and Balance Sheet formats.	**K3**
CO4	demonstrate proficiency in resolving entry discrepancies encountered in both double-entry and single-entry modes.	**K4**
CO5	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	**23UBC43OP02A**			**Allied Optional Practical - 2:** Financial Accounting Package - TallyPrime Advanced						**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	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	2	3	1	2	3	2	2	3	**2.1**
CO4	2	3	2	1	2	3	3	2	2	3	**2.3**
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
4	23UBC43AO02B	**Allied Optional - 2:** Accounts - 2	6	4

Course Objectives
To apply critical thinking skills to analyze complex transactions and determine the necessary adjustments for final accounts preparation.
To understand the role of technology: Students will explore how modern accounting software and financial management tools can facilitate the budgeting process and improve cash flow management efficiency.
To explore the fundamental structure and dynamics of partnerships in business, including types of partnerships, legal considerations, and governance structures.
To explore the legal and financial procedures involved in the retirement of a partner from a partnership, including the implications on the partnership agreement, assets, liabilities, and taxation.
To understand the purpose and importance of cost sheets in financial management.

UNIT I: Final Accounts - Adjustments **(18 Hours)**

Adjustments - closing stock - outstanding expenses - prepaid Expenses - Accrued Incomes - Incomes received in Advance - Interest on Capital - Interest on Drawings - Interest onLoan - Interest on Investments - Depreciation - Bad Debts - Provision for Bad And Doubtful Debts - Provision for Discount on Debtors - Provision for Discount on Creditors - preparation ofFinal Accounts

UNIT II: Cash Budget **(18 Hours)**

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

UNIT III: Partnership - Admission **(18 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: Partnership - Retirement of A Partner **(18 Hours)**

Introduction - Adjustments - Revaluation of Assets and Liabilities - Undistributed Profit or Loss - Accumulated Reserve - Treatment of Goodwill - Revaluation Account, Capital Accounts Bank Account and Balance sheet of the Reconstituted Partnership Firm.

UNIT V: Cost Sheet **(18 Hours)**

Preparation of cost sheet - tender quotation.

Teaching Methodology	PPT, Videos and group discussion

Books for Study

1. Shukla & Grewel. (2024). *Advanced Accounts, Vol. I*, (1st Ed.). published by Sultan & Chand Publishing Co., New Delhi.

Books for Reference

1. Reddy & Moorthy, A.T.S. (2023). *Financial Accounting*, (1st Ed.). Published by Marghampublishers , Chennai.
2. Jain & Narang. (2023). *Advanced Accounting*, (1st Ed.). published by Kalyani Publishers, New Delhi.
3. Nagarajan, Vinaykarn & Mani. (2023). *Principles of Accountancy*, (1st Ed.). Published by Eurasia Publishing House, New Delhi,
4. Tulsian, P. C. *Financial Accounting*, (1st Ed.). published by Tata McGraw Hills, New Delhi.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K-Level)**
CO1	know the concepts of financial accounting	**K1**
CO2	understand the consignment and joint venture accounts	**K2**
CO3	explain the concepts of branch accounting and departmental accounting	**K3**
CO4	apply the hire purchase accounts and fire insurance claims methods in business	**K4**
CO5	analyze and prepare the financial statements of partnership firm	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
4	**23UBC43AO02B**			**Allied Optional - 2:** Accounts - 2						**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	3	2	3	3	2	2	3	2.5
CO2	2	3	2	1	2	3	3	2	2	3	2.3
CO3	2	2	3	2	3	2	3	2	3	2	2.4
CO4	1	2	2	3	1	2	3	2	2	3	2.1
CO5	2	2	2	2	3	1	3	2	2	3	2.2
Mean Overall Score											**2.3 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
4	23UHE44VE04A	**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: Counselling for Adolescents **(6 Hours)**

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

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 Adolescence, page no: 211-224 (2011).
2. Larry, R. C. (2000). *Disaster Management and Preparedness,* Lewis Publications.
3. Hurlock, E.B. (2001). *Developmental Psychology: A: Life-Span Approach*. (5th Ed.). Tata McGraw-Hill.
4. Sangha., & Kamaljit. (2015). *Ways to Live in Harmony with Nature: Living Sustainably and Working with Passion.* Australia, Woodslane 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** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
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	**23UHE44VE04A**			**Value Education - 4:** Social Ethics - 2					**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
4	23UHE44VE04B	**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	Chalk and Talk, Power point, assignment and Group discussion

Book for Study

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

Book 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** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
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	**23UHE44VE04B**		**Value Education - 4:** Religious Doctrine - 2						**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	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
5	23UBC53CC08	**Core Course 8:** Programming with ASP.NET	4	3

Course Objectives
Students 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 Provide the knowledge of working with variables, data types, standard programming skills and windows forms.
To impart the knowledge of machine learning

UNIT I **(12 Hours)**

Introduction: The .NET Framework - Learning .NET Languages - Understanding Namespaces & Assemblies - Setting up ASP.NET and IIS. Using visual studio.net: Starting VS.NET Project - Web Form Designer - Writing Code.

UNIT II **(12 Hours)**

Web controls: Stepping Up to Web Controls - Web Control Classes - AutoPostBack and Web Control Events. Validation & Rich controls: Calendar - AdRotator - Validation Controls - Server Side Validation - Understanding Regular Expression.

UNIT III **(12 Hours)**

State Management: View State - Transferring Information-Cookies - Session State - Session State Configuration - Application State. Ado.Net Overview: Characteristics of ADO.NET - ADO.NET Object Model.

UNIT IV **(12 Hours)**

Ado.Net Data Access: Creating a Connection - Using Command with Data Reader - Updating Data - Accessing Disconnected Data. Data list and Data grid - Using Templates with Data List - Data Binding with Multiple Templates - Selecting Items - Editing Items - Paging with DataGrid - Sorting with DataGrid.

UNIT V **(12 Hours)**

Building Intelligent Apps Using Machine Learning: Understanding machine learning - Understanding ML.NET - Making product recommendations. Building Windows Desktop Apps: Understanding legacy Windows application platforms - Understanding the modern Windows platform - Creating a modern Windows app - Using resources and templates - Using data binding.

Teaching Methodology	Videos, PPT, Demonstration

Books for Study

1. McDonald, M. (2017). *ASP.NET: The Complete Reference*. Tata McGraw Hill Ltd.
   Unit I - Chapter 5, Chapter 6
   Unit II - Chapter 7, Chapter 8
   Unit III - Chapter 11, Chapter 14
   Unit IV - Chapter 13, Chapter 15, Chapter 18
2. Mark J. P. (2019). *C# 8.0 and NET Core 3.0 - Modern Cross-Platform Development*. (4th Ed.).Packt Publishing Ltd.
   Unit V - Chapter 19, Chapter 20

Books for References

1. Andrew, T., & Japikse, P. (2020). *Pro C# 8 with .NET Core 3 Foundational Principles and Practices in Programming*. (9th Ed.). Apress.
2. Adam, F. (2020). *Pro ASP.NET Core 3*. (8th Ed.). Apress.
3. Balagurusamy, E. (2015). *Programming in C#*. (4th Ed.). McGraw Hill Education Private Limited.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Level (K- Level)**
CO1	understand the fundamental concepts of .NET frame work	**K1**
CO2	infer State Management techniques in asp.net webpages	**K2**
CO3	discuss the use of various web controls and rich controls	**K3**
CO4	examine intelligent applications using ML and Construct windows desktop applications	**K4**
CO5	discover the database connectivity in ASP.NET	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
5	**23UBC53CC08**			**Core Course 8:** Programming with Asp.Net					**4**		**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	1	2	3	3	2	3	3	2	3	3	**2.5**
CO2	2	2	2	2	3	2	2	3	2	3	**2.3**
CO3	1	3	3	3	2	3	2	2	2	3	**2.4**
CO4	2	2	2	3	3	2	2	3	2	3	**2.4**
CO5	2	2	3	2	2	2	3	2	3	3	**2.4**
										Mean Overall Score	**2.4 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	23UBC53CC09	**Core Course - 9:** R Programming	4	3

Course Objectives
To exercise the fundamentals of statistical analysis in R environment.
To analyse data for the purpose of exploration using Descriptive and Inferential Statistics.
To understand Probability and Sampling Distributions and learn the creative application of Linear Regression in multivariate context for predictive purpose.
To write custom R functions.
Develop the knowledge of data visualization.

UNIT I: Introduction to R Language **(12 Hours)**

Introduction To R Programming: Overview of R - Installation of R - Loading R Packages - R Basic Syntax - Data Types and Objects - Variables - Constants - Comments- Debuting in R. Data Definition and Categorisation: Overview of Data -Sources of Data - Big Data - Data Categorisation - Data Cube

UNIT II: Control Statements and Functions **(12 Hours)**

Control Statements: if Statement - for statement - while loop - repeat and break Statements - next Statement - switch Statement - Functions.

UNIT III: Vectors and Matrices **(12 Hours)**

Vectors: Overview of Vector - Creating a Vector - Accessing Elements of a Vector -Vector Manipulation and Vector Arithmetic - Deleting a Vector - Vector Element Sorting Matrices: Creating a Matrix -Matrix Subsetting - Matrix Operations - Combining Matrices - Special Matrices - Eigen Vectors and Eigen Values - Arrays.

UNIT IV: List and Data Frames **(12 Hours)**

Lists: Introduction to Lists - Creating a List - General List Operations - Accessing and Manipulating Elements of a List - Merging Lists - Applying Functions to a List - Sorting and Searching. Data Frames: Introduction to Data Frames - Creating a Data Frame - General Operations on Data Frames - Extending a Data Frame - Applying Functions to Data Frame.

UNIT V: Factors and Tables **(12 Hours)**

Factors and Tables: Introduction to Factors - Creating a Factor - Factor Levels - Summarising a Factor - Ordered Factors - Converting Factors - Common Functions used with Factors - Introduction to Tables and Creating Tables - Table Related Functions - Cross Tabulation. Graphics In R: Creating Graphs - Histograms - Bar Plot - Line Chart - Pie Chart - Box Plot _ Scatter Plot - Saving Graphs to a File.

Teaching Methodology	Videos, PPT, Demonstration

Books for Study

1. Arora, S. & Malik, L. (2020). *R Programming for Beginners*, Universities Press India (P) Ltd.
   UNIT I *Chapter 1, Chapter 2*
   UNIT II *Chapter 4*
   UNIT III *Chapter 6, Chapter 7*
   UNIT IV Chapter*8, Chapter 9*
   UNIT V Chapter*10, Chapter 14*

Books for Reference

1. Matloff, N. (2011). *The Art of R Programming: A Tour of Statistical Software Design*. No Starch Press.
2. Gardener, M. (2013). *Beginning R - The Statistical Programming Language*. Wiley.
3. *EMC Education Services Data Science & Big Data Analytics: Discovering, Analysing. Visualizing and Presenting Data*. (2016). Wiley & Sons. Inc Publications.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	recall the basic concepts used in R Programming structure	**K1**
CO2	define the R programming in terms of constructs, control statements, string functions.	**K2**
CO3	apply the R programming from a statistical perspective.	**K3**
CO4	compare various statistical methods using R tool	**K4**
CO5	distinguish the graphics model using R language.	**K5**

Semester	**Course Code**			**Title of the Course**				**Hours**		**Credits**
5	**23UBC53CC09**			**Core Course - 9:** R Programming				**4**		**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	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	1	3	3	2	2	2	**2.3**
CO5	3	3	3	2	1	3	3	3	2	1	**2.4**
										Mean Overall Score	**2.38 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	23UBC53CP05	**Core Practical - 5:** Programming with ASP. NET	3	2

Course Objectives
Explain how to create dynamic Web pages by using ASP.NET
To learn about basic features of ASP.NET and its controls
Introduce to .Net IDE Component Framework
Programming concepts in .Net Framework
Able to develop simple data binding applications using ADO.Net connectivity

List of Exercises:

1. Build a console application
2. Demonstrate the conditional statements and looping
3. Write a program using functions
4. Inheritance
5. Interface
6. Create a database using entity framework
7. Query and manipulate data with entity framework
8. Build website using RAZOR pages
9. Build website using MVC model
10. Build website using Piranha CMS
11. Testing North wind CMS website
12. Build a program with ML.NET

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	show console applications for simple problems	**K1**
CO2	demonstrate the concepts of Model View Controller	**K2**
CO3	contrast webpages using RAZOR and CMS to improve dynamic websites	**K3**
CO4	apply machine learning concepts to solve business analytics problems.	**K4**
CO5	construct a data base using Entity Framework for back end operations	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**				**Hours**			**Credits**
5	**23UBC53CP05**			**Core Practical - 5:** Programming with ASP. NET				**3**			**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	2	2	1	3	2	2	3	3	2	3	**2.3**
CO2	1	2	3	2	3	2	3	2	3	3	**2.4**
CO3	1	2	3	2	3	2	3	2	2	3	**2.3**
CO4	2	3	3	2	2	2	3	2	3	2	**2.4**
CO5	2	2	2	3	3	2	3	2	3	3	**2.5**
										Mean Overall Score	**2.38 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	23UBC53CP06	**Core Practical - 6:** R Programming	3	2

Course Objectives
Students will learn to use the R and RStudio interactive environment.
Expand R by installing R packages.
Explore and understand how to use the R documentation.
Read Structured Data into R from various sources.
Utilize and R Data types for developing programs.

Lab Exercises

1. R Basics
   a) R&R Studio Installation
   b) Datatypes
   c) Operators in R
   d) Decision Making and Looping
2. Data Pre-processing
   a) Raw data
   b) Tidy data
   c) Clean data
3. Statistical Concepts
   a) Descriptive Statistics
   b) Inferential Statistics
   c) Hypothesis Testing
4. Predictive Modelling
   a) Linear Regression
   b) Multiple Regression
   c) Logistic Regression
5. Data Visualisation in R using GG Plot
   a) Box Plot
   b) Histograms
   c) Scatter Plot
   d) Line chart
   e) Bar Chart
   f) Heatmaps

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	recall the features and basic constructs in r programming	**K1**
CO2	show how to transform the raw data into cleansed data set by employing pre-processing techniques	**K2**
CO3	apply different predictive modelling approaches inrto disentangle real time analytics problems	**K3**
CO4	analyse and interpret the visualization results effectively	**K4**
CO5	discover how to link data, statistical methods, and actionable questions	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
5	**23UBC53CP06**			**Core Practical - 6:** R Programming					**3**		**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	1	2	1	2	2	1	2	3	2	3	**1.9**
CO2	3	2	3	3	2	2	2	3	2	2	**2.4**
CO3	3	2	3	3	2	3	2	3	3	3	**2.7**
CO4	2	3	3	3	3	3	3	3	2	2	**2.7**
CO5	3	2	2	2	2	3	3	2	1	3	**2.3**
										Mean Overall Score	**2.4 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	23UBC53ES01A	**Discipline Specific Elective - 1:** Operating Systems	5	3

Course Objectives
Understand Functions, Services and structure of Operating Systems
Understand processes, threads, schedulers and explanation of CPU scheduling
Understand issues related to Process Synchronization and focus on principles of Deadlock and related problems
Comprehend the mechanisms used in Memory Management and VirtualMemory.
Understand the concepts of File System, secondary storage management and Disk Scheduling

UNIT I: Introduction **(15 Hours)**

Introduction: Operating Systems - Computer System Organization - Computer System Architecture - Operating System Structure - Operating System Operations - Process Management Memory Management - Storage Management- Protection and Security - Kernel Data Structures -Computing Environments - Open Source Operating Systems. Operating System Structures: Operating System Services - System Calls -Types of System Calls.

UNIT II: Process Management **(15 Hours)**

Process Management: Processes- Process Concept- Operation on Processes-Inter-Process Communication. Process Synchronization: Background - Critical - Selection Problem-Semaphores. CPU Scheduling: Basic Concepts - Scheduling Algorithms - Real Time Scheduling. Deadlocks: System Model - Methods for Handling Deadlocks - Deadlock Avoidance - Recovery from Deadlock.

UNIT III: Memory Management **(15 Hours)**

Memory Management: Background - Swapping - Segmentation - Paging. Virtual Memory: Demand Paging - Page Replacement - Allocation of Frames - Thrashing.

UNIT IV: File Management **(15 Hours)**

File - System Interface: File Concept - Access Methods - Directory and Disk Structures File-System Implementation: File - system Structure - Allocation Methods - Efficiency and Performance - Recovery. Mass Storage Structure: Disk Structure - Disk Scheduling - Swap - Space Management - Stable - Storage Implementation.

UNIT V: Protection **(15 Hours)**

Protection: Goals of Protection - Access Matrix - Capability Based Systems - Language - based Protection. SECURITY: The Security Problem - Cryptograph yasa Security Tool - User Authentication. Distributed Systems: Advantages of Distributed Systems - Types of Networks based Operating Systems - Communication Structure.

Teaching Methodology	Videos, PPT, Demonstration

Books for Study

1. Abraham, S., Galvin, P.B., & Gagne, G. (2013). *Operating System Concepts*. (9th Ed.). John Wiley & Sons Inc.
   UNIT I *Chapter1 (Sec: 1.1,1.12), Chapter 2(Sec:2.1,2.3, 2.4)*
   UNIT II *Chapter 3(Sec:3.1,3.3,3.4), Chapter 5(Sec:5.1,5.2,5.6),*
   Chapter 6(Sec:6.1,6.3,6.6), Chapter7 (Sec: 7.1,7.3,7.5,7.7)
   UNIT III *Chapter 8 (Sec: 8.1,8.2, 8.4, 8.5),*
   Chapter 9(Sec: 9.2, 9.4, 9.5,9.6)
   UNIT IV *Chapter 11(Sec: 11.1, 11.2, 11.3), Chapter 12(Sec: 12.1, 12.4, 12.6)*
   Chaptr 10(Sec:10.2, 10.4,10.6, 10.8)
   UNIT V *Chapter 14 (Sec:14.1, 14.4, 14.8,14.9), Chapter 15(Sec: 15.1, 15.4,15.5),*
   Chapter 17 (Sec:17.1, 17.2,17.4)

Books for Reference

1. Homas A., Michael, D. (2015). *Operating Systems: Principles and Practice*. (Kindle Edition). Kindle Direct Publishing.
2. Darnell, L. (2016). *Create Your Own Operating System*. (Kindle Edition). Kindle Direct Publishing.
3. Marshall, S. (2020). *Guide to Make Your Own Operating System*. (Kindle Edition). Kindle Direct Publishing.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Level (K-Level)**
CO1	recall the fundamental concept of computer system and operating system.	**K1**
CO2	explain the ideas of process and process or management with deadlocks and cpu scheduling to solve real times scenario	**K2**
CO3	make use of the memory management and apply the virtual memory concepts in areal time situation.	**K3**
CO4	analyze the security issues in operating system and distributed systems in by providing proper Protection Mechanisms in order to provide solutions to the technological challenges.	**K4**
CO5	distinguish the correct mass storage devices according to the customer requirements for lifelong needs.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
5	**23UBC53ES01A**			**Discipline Specific Elective - 1:** Operating Systems					**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	3	2	3	3	3	2	1	2	3	2	**2.4**
CO2	3	2	3	3	3	2	1	3	2	3	**2.5**
CO3	2	3	2	2	1	1	2	2	3	2	**2.0**
CO4	2	2	3	1	2	3	1	3	3	3	**2.3**
CO5	3	3	1	2	3	2	3	2	2	2	**2.3**
										Mean Overall Score	**2.3 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	23UBC53ES01B	**Discipline Specific Elective - 1:** Linux Programming	5	3

Course Objectives
To understand and make effective use of linux utilities and shell scripting language to solve problems
To implement in C some standard linux utilities like mv, cp, ls etc.
To Develop the skills the necessary for systems programming including file system programming, process and signal management and inter process communication
To develop the basic skills required to write network programs using sockets
To understand the file systems and file structures.

UNIT I: Linux Introduction and Installation **(15 Hours)**

Linux-Advantages-RedHatLinux-NewFeatures-InstallationProceduresandMethods-Using Desktop - GNOME - KDE. Accessing And Running Applications: Installing Red Hat Linux Applications - Running Window Application - Running Window - DOS and Macintosh Applications.

UNIT II: Multimedia in Red Hat Linux **(15 Hours)**

Audio - Webcams and TV cards - Digital camera - Creating music CDs. Tools for Using Internet and Web: Internet Tools - Browsing the Web - Communicating with E-mail - Using Remote Login - Copy and Execution.

UNIT III: System Administration **(15 Hours)**

Root Login - Super User - GUI Tools - Commands and Log Files - Configuring Hardware - File Systems and Disk Space Management - Monitoring System Performances.

UNIT IV: Setting Up and Supporting Users **(15 Hours)**

Creating User Accounts - Setting User Defaults - Creating Portable Desktops - Providing Support to Users - Modifying Accounts - Deleting User Accounts - Checking Disk Quotas - Sending Mail to All Users.

UNIT V: Security Issues **(15 Hours)**

Hacker versus Cracker -Password Protection - Protection from Break-ins - Filtering NetworkAccess - Firewalls - Detecting Intrusions from Log Files - Detect Tampered Files - Denial-of-ServiceAttacks-Encryption Techniques-Logand Port Sentry.

Teaching Methodology	Videos, PPT, Demonstration

Book for Study

1. Christopher, N. (2013). *Red Hat Linux 9 Bible*. Wiley Publishing Pvt. Ltd.
   UNIT I *Chapters 1, 2, 3, 5*
   UNIT II *Chapter 8, 9*
   UNIT III *Chapter 10*
   UNIT IV *Chapter 11*
   UNIT V *Chapter 14*

Books for References

1. Christopher, N. (2015). *Linux Bible*. (9th Edition). John Wiley & Sons. Inc.
2. Herbert, S. (2017). *The Complete Reference Linux*. (6th Edition). Tata McGraw Hill.
3. William, S. (2019). *The Linux Command Line: A Complete Introduction*. (2nd Edition). No Starch press.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	define the principles of Linux.	**K1**
CO2	demonstrate to implement music cds.	**K2**
CO3	apply the commands and logfiles.	**K3**
CO4	simplify and demonstrate the encryption techniques.	**K4**
CO5	determine the security risks in computer	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
5	**23UBC53ES01B**			**Discipline Specific Elective - 1:** Linux Programming						**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	2	2	3	2	3	3	2	2	3	**2.4**
CO2	2	3	2	2	2	2	3	3	2	2	**2.3**
CO3	2	2	3	2	3	2	2	2	3	2	**2.3**
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	**2.38 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	23UBC53ES02A	**Discipline Specific Elective - 2:** Communication Networks	5	3

Course Objectives
To understand the working principle of various communication protocols.
To analyze the various routing algorithms.
To know the concept of data transfer between nodes.
To demonstrate the TCP/IP and OSI models with merits and demerits
To explore the various layers of OSI model

UNIT I: Introduction **(15 Hours)**

Data Communication: Introduction-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 **(15 Hours)**

Band width Utilization: Multiplexing and Spreading - Multiplexing - Spread Spectrum. Switching: Circuit Switched Networks - Datagram Networks - Virtual Circuit Networks.

UNIT III: Network Layer **(15 Hours)**

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

UNIT IV: Wireless Networks **(15 Hours)**

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

UNIT V: Security **(15 Hours)**

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

Teaching Methodology	Videos, PPT, Demonstration

Books for Study

1. Behrouz A. F. (2012). *Data Communications and Networking*. (5th Edition). Tata McGraw Hill Publications.
   UNIT I: *Chapter 1,2,3,7 (Sec1.1, 2.2, 2.3, 2.4, 3.1, 3.4, 7.1, 7.2)*
   UNIT II: *Chapter 6,8(Sec6.1,6.2, 8.1,8.2, 8.3)*
   UNIT III: *Chapter 19,21, 22 (Sec19.1, 19.2, 21.1,21.2, 21.3, 22.1) and Chapter23 (sec23.1,23.2, 23.3)*
2. James F. K., Keith, R. (2017). *Computer Networking- a Top-down Approach*. (7th Edition). Hoboken. Pearson.
   UNIT IV: *Chapter7(Sec7.1, 7.2,7.3, 7.4, 7.5,7.7, 7.8)*
   UNIT V: *Chapter 8(Sec8.1, 8.2,8.3, 8.4, 8.5,8.7, 8.8, 8.9)*

Books for Reference

1. Doug, L. (2018). *Networking - All in one for Dummies.* (7th Ed.). John Wiley & Sons.
2. Behrouz A. F.. (2017). *Data Communication and Networking*. (4th Ed.). McGraw Hill Publication.
3. Pinaki, M. (2020). *Recent Trends in Communication Networks*. (1st Ed.). Intech Open Publication.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	recall the different aspects of networks, protocols and network design models.	**K1**
CO2	understand the modes of transmission and switching techniques for data communication	**K2**
CO3	identify the important aspects and functions of network layer, mobile networks and wireless LAN' sin internetworking.	**K3**
CO4	classify different routing algorithms and network addressing scheme	**K4**
CO5	distinguish different security mechanisms for secured network communication.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
5	**23UBC53ES02A**			**DSE - 2:** Communication Networks					**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	3	3	3	3	3	3	3	3	2	2	**2.8**
CO2	3	3	3	2	2	3	3	2	3	3	**2.7**
CO3	3	3	3	2	2	2	2	3	3	3	**2.6**
CO4	3	3	3	3	2	3	2	3	3	2	**2.7**
CO5	3	3	3	3	3	3	3	2	2	3	**2.8**
										Mean Overall Score	**2.38 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	23UBC53ES02B	**Discipline Specific Elective - 2:** Software Testing	5	3

Course Objectives
Develop methods and procedures for software development that can scale up for large systems and that can be used to consistently produce high-quality software at low cost and with a small cycle time
Learn systematic approach to the development, operation, maintenance, and retirement of software
Study how to use available resources to develop software, reduce cost of software and how to maintain quality of software
Methods and tools of testing and maintainace of software's.
Describe test suites for software

UNIT I: Introduction **(15 Hours)**

Introduction to Testing as an Engineering Activity: The Role of Process in Software Quality - Testing as a Process - Overview of the Testing Maturity Model. Testing Fundamentals: Introduction - Basic Definitions - Software Testing Principles - The Tester's Role in a Software Development Organization. Defects, Hypotheses, and Tests: Origins of Defects - Defect Classes, the Defect Repository, and Test Design.

UNIT II: Software Development Life Cycle Models **(15 Hours)**

Phases of Software Project - Quality, Quality Assurance and Quality Control - Testing, Verification, and Validation - Process Model to Represent Different Phases - Life Cycle Models - Whitebox testing - black box testing.

UNIT III: Strategies and Methods for Test case Design **(15 Hours)**

Introduction to Testing Design Strategies - The Smart Tester - Test Case Design Strategies - Random Testing - Equivalence Class Partitioning - Boundary Value Analysis - Other Black Box Test Design Approaches - Test Adequacy Criteria - Coverage and Control Flow Graphs - Covering Code Logic - Paths: Their Role in White Box - Based Test Design - Additional White Box Test Design Approaches.

UNIT IV: Levels of Testing **(15 Hours)**

The Need for Levels of Testing - Unit Test: Functions, Procedures, Classes, and Methods as Units - Unit Test: The Need for Preparation - Unit Test Planning - Designing the Unit Tests - The Class as a Testable Unit: Special Considerations - The Test Harness - Running the Unit Tests and Recording Results - Integration Test: Goals - Integration Strategies for Procedures and Functions - Integration Strategies for Classes - Designing Integration Tests - Integration Test Planning - System Test: The Different Types - Regression Testing.

UNIT V: Test Management and Automation **(15 Hours)**

Introduction - Test Planning - Test Management - Test Process - Test Reporting. Software Test Automation: Introduction - Terms Used in Automation - What to Automate, Scope of Automation - Design and Architecture for Automation - Selecting a Test Tool.

Teaching Methodology	Videos, PPT, Demonstration

Books for Study

1. Ilene, B. (2003). *Practical Software Testing*. Springer International Edition.
   UNIT I - *Chapter 1, Chapter 2, Chapter 3.*
   UNIT III-*Chapter 4, Chapter 5.* **UNIT IV**-*Chapter6.*
2. Srinivasan, D., Gopalaswamy, R. (2007). *Software Testing - Principles and Practices*. Pearson Education.
   UNIT II - *Chapter 2, Chapter 3, Chapter 4.*
   UNIT V-*Chapter15, Chapter16.*

Books for References

1. Naresh, C. (2016). *Software Testing - Principles and Practices*. (Second edition). Oxford University Press.
2. Mukesh, S. (2016). *Software Testing 2020; Preparing for New Roles*. Auerbach Publications.
3. William E. L., David, D., Gunasekaran, V. (2017). *Software Testing: A Continuous Quality Improvement*. (Third Edition). Auerbach Publications.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	adapt the fundamentals of software testing and quality assurance concepts.	**K1**
CO2	demonstrate the testing and activities using modern software tools.	**K2**
CO3	construct test cases from software requirement specifications.	**K3**
CO4	examine the ways of judging test case adequacy and how to manage tests	**K4**
CO5	examine the different levels of testing and its functions.	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
5	**23UBC53ES02B**		**Discipline Specific Elective - 2:** Software Testing						**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	3	3	3	3	3	1	2	2	3	3	**2.6**
CO2	3	2	3	3	3	2	3	1	2	3	**2.5**
CO3	3	3	3	1	2	3	3	3	3	3	**2.7**
CO4	3	1	3	3	3	3	3	3	2	2	**2.6**
CO5	3	2	2	2	3	2	2	3	3	3	**2.5**
										Mean Overall Score	**2.58 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	23UBC53SP01	**Self-paced Learning:** Cloud Computing	-	2

Course Objectives
Identify the technical foundations of cloud systems architectures
Analyze the problems and solutions to cloud application problems
Apply principles of best practice in cloud application design and management.
To understand different various Avenues for Cloud Computing and Virtualization
Identify and define technical challenges for cloud applications and assess their importance

UNIT I: Introduction

Cloud Computing at a Glance - Historical Developments - Building Cloud Computing Environments - Computing Platforms and Technologies. Virtualization: Introduction - Characteristics of Virtualized Environments - Taxonomy of Virtualization Techniques - Virtualization and Cloud Computing - Pros and Cons of Virtualization - Technology Examples.

UNIT II: Cloud Computing Architecture

Cloud Reference Model - Types of Clouds - Economics of the Cloud. Cloud Platforms in Industry: Amazon Web Services: Compute Services - Storage Services - Communication Services - Additional Services. Google App Engine: Architecture and Core Concepts - Application Life Cycle - Cost Model. Microsoft Azure: Azure core Concepts - SQL Azure.

UNIT III: Data Intensive Computing

Map-Reduce Programming - Characterizing Data-Intensive Computations - Challenges ahead - Historical Perspective - Technologies for Data - Intensive Computing - Programming Platform. Cloud Applications: Scientific Applications - Healthcare - Biology - Geoscience - Business and Consumer Applications: CRM and ERP - Productivity - Social Networking - Media Applications.

UNIT IV: Advanced Topics in Cloud Computing

Energy Efficiency in Clouds - Market Based Management of Cloud: Market-Oriented Cloud Computing - A Reference Model for MOCC - Technologies and Initiatives supporting MOCC. Federated Clouds / Inter Cloud: Characterization and Definition - Cloud Federation Stack - Aspects of Interest - Technologies for Cloud Federations.

UNIT V: Secure Distributed Data Storage in Cloud Computing

Introduction - Cloud Storage: from LANs TO WANs - Technologies for Data Security in Cloud Computing. Data Security in the Cloud: An Introduction to the Idea of Data Security - The Current State of Data Security in the Cloud - Homo Sapiens and Digital Information - Cloud Computing and Data Security Risk Cloud Computing and Identity - The Cloud, Digital Identity, and Data Security - Content Level Security - Pros and Cons.

Teaching Methodology	Videos, PPT, Demonstration

Books for Study

1. Rajkumar, B., Christian, V., Selvi, S.T. (2013). *Mastering Cloud Computing.* (1st Reprint). McGraw Hill Education Private Limited Publications.
   UNIT I: *Chapter 1(Sec1.1, 1.2, 1.3, 1.4), Chapter 3 (Sec3.1, 3.2, 3.3, 3.4, 3.5,3.6)*
   UNIT II: *Chapter 4(Sec4.1,4.2, 4.3) Chapter 9(Sec9.1,9.2, 9.3)*
   UNIT III: *Chapter 8(Sec 8.1,8.2), Chapter10 (Sec10.1, 10.2)*
   UNIT IV: *Chapter 11(Sec 11.1, 11.2, 11.3)*
2. Rajkumar, B., James, B. Andrzej, G.. (2011). *Cloud Computing; Principles and Paradigms*. John Wiley & Sons. Inc. Publications.
   UNIT V: *Chapter 8(Sec8.1, 8.2, 8.3) Chapter 23(23.1, 23.2, 23.3, 23.4, 23.5, 23.6, 23.7)*

Books for Reference

1. Anand, N. (2019). *Hand book of Cloud Computing*. First Edition. BPB Publication.

2. Surbhi, R. (2021). *Cloud Computing Simplified: Explore Application of Cloud, Cloud Deployment Models, Service Models and Mobile Cloud Computing*. (1st Ed.). BPB Publications.
3. John, R. V. (2020). *Cloud Computing Security Foundations and Challenges*. (Second Edition). CRC Press.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	list the importance of protocols and standards in cloud services.	**K1**
CO2	interpret the models of distributed and cloud computing.	**K2**
CO3	identify the comparative advantages and disadvantages of Virtualization technology.	**K3**
CO4	analyze authentication, confidentiality, and privacy issues in cloud computing.	**K4**
CO5	discover the knowledge of big data analytics in enterprises.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
5	**23UBC53SP01**			**Self-paced Learning:** Cloud Computing					**-**		**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	3	3	2	2	3	3	3	2	2	**2.6**
CO2	3	3	3	2	2	3	3	3	2	3	**2.7**
CO3	3	3	3	2	3	3	2	3	3	2	**2.7**
CO4	3	3	2	3	3	3	2	3	3	3	**2.8**
CO5	3	3	3	2	3	3	3	2	3	3	**2.8**
										Mean Overall Score	**2.72 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
5	23USS54SE01	**Skill Enhancement Course - 2:** 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 group discussions

UNIT I: Communication Skills

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

*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

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

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

UNIT V: **Test of Reasoning**

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

Book 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.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	analyse problems directed at testing their cognitive abilities	**K3**
CO2	present the best of themselves as job seekers and communicate effectively in all contexts	**K4**
CO3	assess themselves, set goals, and manage conflicts that are expected of a good leader	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**					**Hours**		**Credits**
5	**23USS54SE01**			**Skill Enhancement Course - 2:** Soft Skills					**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	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**
										Mean Overall Score	**2.5 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	23UBC63CC10	**Core Course - 10:** NoSql with MongoDB	4	3

Course Objectives
Distinguish the different types of NoSQL databases, need and purpose of NoSQL Databases
Analyse and perform sharding and replication
Apply CRUD operation on some queries to understand concept
Understand the impact of the cluster on database design
To build projects with NoSQL databases

UNIT I: No SQL Database **(12 Hours)**

RDBMSVs NOSQL - Data Management with Distributed Databases - ACID and BASE - Four types of NOSQL Databases. Key Value Databases: Introduction to key value databases - Essential Features of Key - value Databases - Key - Value Database Data Modelling Terms - Key - Value Architecture Terms - Key - Value Implementation Terms.

UNIT II: Document Database **(12 Hours)**

Introduction to Document Database: Document managing Multiple Document in Collection - Basic Operations on document Database - Types of Partitions- Data modelling and Query Processing Normalization, De-normalization, and the Search for proper Balance.

UNIT III: Introduction to MongoDB **(12 Hours)**

Documents- Collections- Databases- Starting MongoDB - Data Types - Inserting and Saving Documents - Removing Documents - Updating Documents - Introduction to find- Query Criteria- Type- Specific Queries- $where Queries- Introduction to Indexing- Using explain() and hint()- Types of Indexes.

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

The Aggregation Framework- Pipeline Operations- Map Reduce- Aggregation Commands- Normalization versus Denormalization- Optimizations for Data Manipulation- When Not to Use MongoDB.

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

Introduction to Replication - Configuring a Replica Set - Changing Your Replica Set Configuration - How to Design a Set - Member Configuration Options - Components of a Replica Set. Sharding: Introduction to Sharding - Understanding the Components of a Cluster - Starting the Servers - How MongoDB Tracks Cluster Data.

Teaching Methodology	Videos, PPT, Demonstration

Books for Study

1. Dan, S. (2015). *No SQL for Mere Mortal.* Addison - Wesley.
   UNIT I *Chapter2, Chapter3*
   UNIT II *Chapter 6*
2. Kristina, C. (2013). *MongoDB: The Definitive Gu*ide. O'Reilly.
   UNIT III *Chapter 2, Chapter3, Chapter4, Chapter 5*
   UNIT IV *Chapter 7*
   UNIT V *Chapter 9, Chapter10*

Books for Reference

1. Kyle, B., Piter, B., & Shaun, V. (2016). *MongoDB in Action*. Dream tech Press.
2. David, H., Eelco, P., Peter, M., & Tim, H. (2013). *The Definitive Guide to MongoDB.* Apress.
3. Pramod, J. S., & Martin, F.. (2012). *NoSQL Distilled. A Brief Guide to the Emerging World of Polyglot Persistence*. Pearson.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	show the fundamental concepts of nosql and key value to engage the database.	**K1**
CO2	comprehend the structure of nosql to implement mongodb.	**K2**
CO3	apply the basic queries on mongodb to solve real time problem.	**K3**
CO4	analyze the different concept of aggregation to implement and retrieve the data using mathematical methods.	**K4**
CO5	examine the various strategies replication and sharing for implementing various software solutions.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
6	**23UBC63CC10**			**Core Course - 10:** NoSql with MongoDB						**4**	**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	2	2	3	3	3	2	3	2	2	**2.4**
CO2	2	2	3	3	2	3	3	3	2	3	**2.6**
CO3	2	2	2	2	2	2	3	3	2	3	**2.3**
CO4	3	2	2	3	2	2	3	2	2	3	**2.4**
CO5	2	2	3	2	3	2	3	3	2	3	**2.5**
										Mean Overall Score	**2.44 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	23UBC63CC11	**Core Course -11:** Fundamentals of React JS	4	3

Course Objectives
Enable participants to develop elegant and responsive Front-end by leveraging latest technologies
Build strong foundations in entry level engineers thereby making them job ready as per industry requirement
Learn how to create and manage React components, and understand the component lifecycle
By the end of the program participants will be become an industry-ready engineer who can be readily deployed in a project
Enable students to learn new technologies by applying foundation paradigms

UNIT I The Foundation Of React **(12 Hours)**

The Foundation of React: Introduction - The Philosophy of React. JSX: JSX is Not HTML- JSX - Syntax Basics of JSX. All About Components: Components VS Elements - Built in Components - User Defined Components - Types of Components.

UNIT II All About Components **(12 Hours)**

All About Components: Function Components - React Component Children - The Component Life Cycle - Rendering Components.

UNIT III React Dev Tools **(12 Hours)**

React Dev Tools: Installation and Getting Started - Inspecting Components -Editing Component Data in DevTools - Working With additional DeVTools Functionality - Profiling. React Data Flow: One-Way Data Flow - Probs

UNIT IV Events **(12 Hours)**

Events: Introduction - Synthetic Event- Event Listener Attributes - The Event Object - Supported Events - Event Handler Functions. Forms: Controlled Inputs vs Uncontrolled Inputs - Lifting up Input State - Uncontrolled Inputs - Different Form Elements.

UNIT V REFS **(12 Hours)**

REFS: Introduction- Creating Ref in a class component - Creating Ref in a Function Component - Using Refs - Creating Callback Refs - When to use Refs- When not to use Refs. Styling React: The importance of Styles - Importing CSS into the HTML File - Using Plain Old CSS in Components - Writing Inline Styles- CSS Modules - CSS in JS and Styled Components.

Teaching Methodology	Videos, PPT, Demonstration

Books for Study

1. Minnick, C. (2022). *Beginning ReactJS foundations building user interfaces with ReactJS: An Approachable Guide.* OReillly.
   Unit I - Chapter 2, Chapter 3, Chapter 4.
   Unit II - Chapter 4
   Unit III - Chapter 5, Chapter 6
   Unit IV - Chapter 7, Chapter 8
   Unit V - Chapter 9, Chapter 10

Books for Reference

1. Alex , B., & Eve, P. (2017). Learning React: *Functional Web Development with React and Redux*. (1st Edition). O'Reilly Publishers.
2. Anthony, A., Nate, M., Ari, L., Clay, A., David, G., & Tyler, M.C. (2020). *Full Stack React*. newline.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	recall the fundamental concepts of React JS.	**K1**
CO2	understanding the different types of Components.	**K2**
CO3	discuss React Dev and their components and Tools.	**K3**
CO4	analyze different Synthetic Events and its Listeners.	**K4**
CO5	examine the Form Elements and its input and outputs	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
6	**23UBC63CC11**		**Core Course - 11:** Fundamentals of React JS						**4**		**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	3	3	3	2	1	3	2	3	2	3	**2.5**
CO2	2	3	3	2	2	2	3	2	1	3	**2.3**
CO3	3	2	3	2	2	3	2	2	2	2	**2.3**
CO4	3	3	2	2	2	3	3	3	2	3	**2.6**
CO5	2	3	3	2	1	3	3	2	2	3	**2.6**
										Mean Overall Score	**2.53(High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	23UBC63CP07	**Core Practical - 7**: MongonDB	3	2

Course Objectives
Distinguish the different types of NoSQL databases, need and purpose of NoSQL Databases
Analyse and perform sharding and replication
Apply CRUD operation on some queries to understand concept
Understand the impact of the cluster on database design
To build projects with NoSQL databases

List of Exercises:

1. Basic Queries Using Mongo DB
2. Indexes
3. Comparison operations
4. Project
5. Group
6. Match
7. Sort
8. Search Text
9. Logical Operations
10. Set Operations
11. Replication
12. Sharding

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	understand the fundamental design concepts of data base using mongodb.	**K1**
CO2	comprehend the regular expression and indexing for solving real time problem.	**K2**
CO3	apply distributed techniques for querying documents and modification.	**K3**
CO4	analyze clustering and projecting techniques to interpret the data set.	**K4**
CO5	classify the various strategies to manipulate data.	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
6	**23UBC63CP07**		**Core Practical - 7**: MongonDB						**3**		**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	2	2	2	2	3	3	2	3	2	2	**2.3**
CO2	3	2	3	3	2	3	3	3	2	3	**2.7**
CO3	2	2	2	2	3	2	3	2	2	2	**2.2**
CO4	3	2	2	3	2	3	2	3	2	3	**2.5**
CO5	2	3	3	2	3	3	3	3	2	2	**2.6**
										Mean Overall Score	**2.46 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	23UBC63CP08	**Core Practical - 8**: React JS	3	2

Course Objectives
Enable participants to develop elegant and responsive Front-end by leveraging latest technologies
Build strong foundations (ex: Design pattern) in entry level engineers thereby making them job ready as per industry requirement
Learn how to create and manage React components, and understand the component lifecycle
By the end of the program participants will be become an industry-ready engineer who can be readily deployed in a project
Enable students to learn new technologies by applying foundation paradigms

List of Exercises:

1. Simple Web Page Creation
2. Website Creation
3. build a Chat module
4. create a simple calculator Application using React JS
5. create a voting application using React JS
6. create and Build a Password Strength Check
7. create and Build a star rating system
8. Create a Simple Login form using React JS
9. Create a project on Grocery delivery application
10. Connecting our TODO React JS Project with Firebase

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	recall the fundamental concepts of React JS.	**K1**
CO2	understanding the different types of Components.	**K2**
CO3	discuss React Dev and their components and Tools.	**K3**
CO4	analyze different Synthetic Events and its Listeners.	**K4**
CO5	examine the Form Elements and its input and outputs	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
6	**23UBC63CP08**			**Core Practical - 8**: React JS						**3**	**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	2	2	2	2	3	2	2	3	2	2	**2.2**
CO2	2	3	3	3	2	2	3	2	2	3	**2.5**
CO3	3	2	3	3	3	3	2	2	3	2	**2.6**
CO4	3	3	2	2	3	3	3	3	2	3	**2.7**
CO5	2	3	3	3	2	3	2	3	3	3	**2.7**
										Mean Overall Score	**2.55 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	23UBC63ES03A	**Discipline Specific Elective - 3:** Information Security	5	3

Course Objectives
Learn fundamentals of cryptography and its application to network security.
Acquire background on hash functions; authentication; firewalls; intrusion detection techniques.
Indentify and mitigate software security vulnerabilities in existing systems.
Apply methods for authentication, access control, intrusion detection and prevention.
Understand vulnerability analysis of network security

UNIT I: Introduction to Information Security **(15 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: Security **(15 Hours)**

The Need for Security: Business needs first - Threats - Attacks - Secure Software Development.

UNIT III: Law and Ethics in Information Security **(15 Hours)**

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

UNIT IV: Security Technology **(15 Hours)**

Security Technology: Intrusion Detection and Prevention Systems, and Other Security Tools: Intrusion Detection and Prevention Systems - Scanning and Analysis Tools.

UNIT V: Cryptography **(15 Hours)**

Foundations of Cryptology - Cipher Methods - Cryptographic Algorithms - Cryptographic Tools - Attacks on Cryptosystems.

Teaching Methodology	Videos, PPT, Demonstration

Books for Study

1. Michael E.W., & Herbert J.M. (2012). *Principles of Information Security*. (4th Edition). Course Technology. Cengage Learning.
   - **UNIT I** *Chapter 1*
   - **UNIT II** *Chapter2*
   - **UNIT III** *Chapter 3, 5*
   - **UNIT IV** *Chapter7*
   - **UNIT V** *Chapter 8*

Books for Reference

1. William, S. (2017). *Cryptography and Network Security: Principles and Practice*. (7th Ed.). Pearson Education Inc.
2. Behrouz, A.F. (2015). *Cryptography and Network Security*. (3rd Ed.).). Tata McGraw Hill.
3. Mark, S. (2022). *Information Security: Principles and Practice*. Wiley Blackwell Publications.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	relate the need for security in different aspects	**K1**
CO2	explain legal, ethical, and professional aspects of Information Security	**K2**
CO3	identify a network security threat and familiarize in intrusion detection and Prevention	**K3**
CO4	apply security policy in system design and analyze network security protocols	**K4**
CO5	distinguish the concept of Cryptography and recognize its Tools	**K5**

Relationship Matrix											
Semester	**Course Code**		**Title of the Course**						**Hours**		**Credits**
6	**23UBC63ES03A**		**Discipline Specific Elective - 3:** Information Security						**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	3	2	3	3	2	3	2	3	2	2	**2.5**
CO2	2	3	1	3	2	3	2	1	2	3	**2.2**
CO3	3	3	2	2	2	2	2	2	2	3	**2.3**
CO4	2	3	2	2	2	3	2	2	3	2	**2.3**
CO5	3	3	2	3	2	3	3	3	2	3	**2.7**
										Mean Overall Score	**2.4 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	23UBC63ES03B	**Discipline Specific Elective - 3:** Data Warehousing and Data Mining	5	3

Course Objectives
Be familiar with mathematical foundations of data mining tools.
Understand and implement classical models and algorithms in data warehouses and data mining
Characterize the kinds of patterns that can be discovered by association rule mining, classification and clustering.
Master data mining techniques in various applications like social, scientific and environmental context.
Develop skill in selecting the appropriate data mining algorithm for solving practical problems.

UNIT I Data warehouse, Data Warehouse Schema **(15 Hours)**

Data warehouse: The Need for an Operational Data Store (ODS) - Operational Data Store - Data Warehouse - Data Marts - Comparative Study of Data Warehouse with OLTP and ODS. Data Warehouse Schema: Introduction to Data Warehouse Schema - Star Schema - Snowflake Schema - Fact Constellation Schema - Comparison among Star, Snowflake, and Fact Constellation Schema.

UNIT II OLAP, Introduction to Data Mining **(15 Hours)**

Online Analytical Processing: Introduction to Online Analytical Processing - Representation of Multi-dimensional Data - Types of OLAP Servers - OLAP Operations. Introduction to Data Mining: Need of Data Mining - Online Analytical Processing: Data Mining Do and Not Do - Data Mining Applications - Data Mining Process - Data Mining Techniques - Difference between Data Mining and Machine Learning.

UNIT III Data Preprocessing, Association Mining, Frequent Itemset Mining Methods **(15 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. Frequent Itemset Mining Methods: Apriori Algorithm: Finding Frequent Itemsets by Confined Candidate Generation.

UNIT IV Classification, Introduction to the Decision Tree Classifier **(15 Hours)**

Classification: Introduction to Classification - Types of Classification - Input and Output Attributes - Working of Classification - Guidelines for Size and Quality of the Training Dataset. 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 Cluster Analysis, Distance Metrics, Partitioning **(15 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 Methods: k-Means: A Centroid-Based Technique.

Teaching Methodology	Videos, PPT, Demonstration

Books for Study

1. Parteek, B. (2019). *Data Warehousing and Data Mining*. (1st Ed.). Cambridge University Press.
   UNIT I: Chapter 12, Chapter 13
   UNIT II: Chapter 14, Chapter 2
   UNIT III: Chapter 4, Chapter 9
   UNIT IV: Chapter 5
   UNIT V: Chapter 7

2. Jaiwei, H., & Micheline, K., Kamber., & Jian, P. (2012). *Data Mining Concepts and Techniques*. Third Edition. Morgan Kaufmann Publishers is an imprint of Elsevier.
   UNIT III: Chapter 6
   UNIT V: Chapter 10 (Sec 10.2.1)

Books For Reference

1. Sreedhar G. (2017). *Web Data Mining and The Development of Knowledge - Based Decision Support Systems*. (First Edition). IGI Global.
2. Mohammed J. Z., & Wagner , M. Jr. (2020). *Data Mining and Machine Learning - Fundamental Concepts and Algorithms*. (Second Edition). Cambridge University Press.
3. Rohit, R., Nagwanshi, K.K., Kumar, S., and Ramya, L.K. (2022). *Data Mining and Machine Learning Applications*. (First Edition). Scrivener Publishing LLC.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	recall the fundamental concepts of data warehouse	**K1**
CO2	summarize the various OLAP operations	**K2**
CO3	make use of association rule mining in data mining	**K3**
CO4	examine decision tree classifier	**K4**
CO5	recommend the metrics to assess classifiers	**K5**

Relationship Matrix											
Semester	**Course Code**	**Title of the Course**							**Hours**		**Credits**
6	**23UBC63ES03B**	**Discipline Specific Elective - 3:** Data Warehousing and Data Mining							**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	2	2	2	3	2	2	3	2	2	**2.2**
CO2	2	3	3	3	2	2	3	2	2	3	**2.5**
CO3	3	2	3	3	3	3	2	2	3	2	**2.6**
CO4	3	3	2	2	3	3	3	3	2	3	**2.7**
CO5	2	3	3	3	2	3	2	3	3	3	**2.7**
CO6	3	2	3	2	2	3	3	2	3	3	**2.6**
										Mean Overall Score	**2.55 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	23UBC63ES04A	**Discipline Specific Elective - 4:** Fundamentals of IoT	5	3

Course Objectives
Understand the concepts of Internet of Things and able to build IoT applications
students know the IoT ecosystem and to provide an understanding of the technologies and the standards relating to the Internet of Things
Student develop skills on IoT technical planning
students should be able to design and deploy multiple IoT devices that could connect to the gateway.
To learn Big Data Processing Techniques

UNIT I: Overview of IoT **(15 Hours)**

The Flavour of the Internet of Things - The "Internet" of "Things" - The Technology of the Internet of Things - Enchanted Objects - Making the Internet of Things. Internet Principles - Internet Communication - IP Addresses - MAC Address - TCP and UDP Ports - Application Layer Protocols.

UNIT II: Prototyping **(15 Hours)**

Thinking About Prototyping: Sketching - Familiarity - Costs vs Ease of Prototyping - Open Source vs Closed Source - Tapping into the Community. Prototyping Embedded Devices: Electronics - Embedded Computing Basics.

UNIT III: Embedded Devices **(15 Hours)**

Prototyping Embedded Devices: Arduino - Raspberry PI - Beagle bone Black - Other Notable Platforms

UNIT IV: IoT Platforms **(15 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: IoT Smart Use Cases **(15 Hours)**

Introduction - 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	Videos, PPT, Demonstration

Books for Study

1. Adrian, M.E., & Hakim, C. (2014). *Designing the Internet of Things*. John Wiley and Sons.
   UNIT I *Chapter1, Chapter 3*
   UNIT II *Chapter 4, Chapter 5(Pages:87-96)*
   UNIT III *Chapter 5 (96-144)*
2. Pethuru ,R., & Anupama, C. R.. (2017). *The Internet of Things Enabling Technologies, Platforms and Use Cases*. CRC Press.
   UNIT IV *Chapter 5*
   UNIT V *Chapter 11*

Books for Reference

1. David, H., Gonzalo, S., Patrick, G., Robert , B., & ad Jerome, H. (2017). *IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things.* Cisco Press.
2. Maciej, K. (2016). *Building the Internet of Things: Implement New Business Models, Disrupt Competitors, Transform Your Industry*. Wiley.
3. Cuno, P. F. (2011). *Getting Started with the Internet of Things: Connecting Sensors and Micro controllers to the Cloud*. Maker Media.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	find the rudiments of the Internet and its applications.	**K1**
CO2	classify the different applications of the Internet of Things.	**K2**
CO3	build IoT prototype solutions for prospective commercial and social requirements.	**K3**
CO4	distinguish various embedded devices and peripherals.	**K4**
CO5	compare the various scenarios where IoT can be applied by reviewing various use cases.	**K5**

Relationship Matrix											
Semester	**Course Code**			**Title of the Course**						**Hours**	**Credits**
6	23UBC63ES04A			**Discipline Specific Elective - 4:** Fundamentals of IoT						**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	3	2	3	3	2	2	2	3	2	2	**2.4**
CO2	2	3	3	2	2	3	2	1	2	2	**2.2**
CO3	2	3	3	2	2	2	2	3	3	2	**2.4**
CO4	3	2	3	2	2	2	3	2	2	1	**2.2**
CO5	3	2	2	2	3	3	2	2	2	3	**2.4**
										Mean Overall Score	**2.32 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	23UBC63ES04B	**Discipline Specific Elective - 4:** Mobile App Development	5	3

Course Objectives
To learn the basics of mobile application development
Illustrate user interfaces for interacting with apps and triggering actions
Learn to setup Android application development environment
Student to learn the Android SDK features
Appraise the role of security and performance in Android applications

UNIT I: Introduction to Mobile Computing **(15 Hours)**

Introduction - Added Dimensions of Mobile Computing - Condition of the Mobile User - Architecture of Mobile Software Applications. Introduction to Mobile Development Frameworks and Tools: Fully Centralized Frameworks and Tools - N-Tier Client-Server Frameworks and Tools - Java.

UNIT II: Android **(15 Hours)**

Getting To Know Android: Android - The Open Handset Alliance - The Android Execution Environment - Components of an Android Application - Android Activity Lifecycle - Android Service Lifecycle. Setting Android Development Environment: Creating an Android Development Environment. Android Development Environment For Real Application: Android and Social Networking - The Project Root Folder - The Source Folder - The Resource Folder - Building and Running the micro jobs Application.

UNIT III: Layouts **(15 Hours)**

Layouts: Frame Layout - Linear Layout - Table Layout - Absolute Layout - Relative Layout. Building A View: Android GUI Architecture. Widget Bestiary: Android Views - Text view and Edit text - Button and Image button Adapters and Adapter views - Checkboxes, Radio buttons, and Spinners - View groups - Gallery And Grid view - List view And List activity - Scroll view.

UNIT IV: Graphics **(15 Hours)**

Drawing 2D and 3D Graphics: Rolling Your Own Widgets - Layout - Canvas Drawing - Drawables - Bitmaps Bling - Shadows, Gradients, and Filters - Animation - OpenGL Graphics. Inter Process Communication: Inter-Process Communication: Intents: Simple, Low Overhead IPC - Getting A Result via Inter-Process Communication.

UNIT V: Location and Mapping **(15 Hours)**

Location-Based Services - Mapping - The Google Maps Activity - The Map view and Map activity.

Teaching Methodology	Videos, PPT, Demonstration

Books for Study

1. Reza, B. (2005). *Mobile Computing Principles Designing and Developing Mobile Applications with UML and XML*. United States of America by Cambridge University Press.
   UNIT I Chapter 1 (Sec: 1.1, 1.2, 1.3, 1.4), Chapter 2 (Sec 2.1, 2.2, 2.3).
2. Rick, R., John, L., Zigurd, M., & Blake, M. (2010). *Android Application Development*. O'Reilly. Shroft Publishers & Distributors Pvt Ltd.
   UNIT II (Chapter 1, Chapter 2, Chapter 3),**UNIT III** (Chapter 10, Chapter 11)
   UNIT IV (Chapter 12, Chapter 13)
   UNIT V (Chapter 9)

Books for Reference

1. Michael, B. (2015). *Android App Development for Dummies*. (3rd Ed.). Wiley Publication.
2. Rick, B. (2018). *Android 9 Development Cookbook*. (3rd Ed.). Packt Publishing.
3. Sujit, K.M. (2020). *Fundamentals of Android App Development*. English Edition. BPB Publication.

Course Outcomes		
CO No.	**CO-Statements** On successful completion of this course, students will be able to	**Cognitive Levels (K - Level)**
CO1	understand the various dimensions of mobile computing and n-Tier client server framework in the domain of mobile Application	**K1**
CO2	demonstrate the android development environment and understand the user interface to be user-Friendly	**K2**
CO3	apply the java programming languages and to build and roid mobile apps for users.	**K3**
CO4	design and develop the android applications using layouts, buttons and widgets to solve the user requirements.	**K4**
CO5	discover the android 2D and 3D digital graphics and animation to enrich themselves to be skillful for the society.	**K5**

Relationship Matrix											
Semester	**Course Code**	**Title of the Course**							**Hours**		**Credits**
6	**23UBC63ES04B**	**Discipline Specific Elective - 4:** Mobile App Development							**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	1	3	3	3	2	1	2	3	2	**2.2**
CO2	1	2	3	3	3	2	2	3	2	2	**2.3**
CO3	2	3	2	2	1	1	2	2	3	2	**2.0**
CO4	1	2	3	2	2	3	1	3	3	2	**2.2**
CO5	2	3	1	3	3	2	3	3	2	2	**2.4**
										Mean Overall Score	**2.22 (High)**

Semester	Course Code	Title of the Course	Hours/Week	Credits
6	23UBC63CE01	Comprehensive Examination	-	2

UNIT I
C Programming, Relational Database Management Systems

UNIT II
R Programming, Digital Computer Fundamentals

UNIT III
Java, Networks

UNIT IV
ASP. Net, Web Technologies

UNIT V
Python, Android

Course Outcomes		
CO No.	CO-Statements On successful completion of this course, students will be able to	Cognitive Levels (K - Level)
CO1	recall the basic concept of computer system and operating system structure with simple examples.	K1
CO2	summarize java and its advance concepts in application programs.	K2
CO3	apply the fundamental principles of digital electronics and memories to problems.	K3
CO4	analyze the concepts of PHP with mysqlin simple problems	K4
CO5	examine the basic concepts of oop and apply it in problem solving	K5

Relationship Matrix											
Semester	Course Code	Title of the Course							Hours		Credits
6	23UBC63CE01	Comprehensive Examination							-		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	1	2	2	3	3	2	2	3	3	2	2.3
CO2	3	1	3	2	2	3	2	2	3	3	2.4
CO3	2	2	2	1	2	2	3	2	3	2	2.1
CO4	3	2	2	3	2	3	2	3	2	3	2.5
CO5	3	2	3	2	3	2	2	3	2	2	2.4
										Mean Overall Score	2.4 (High)