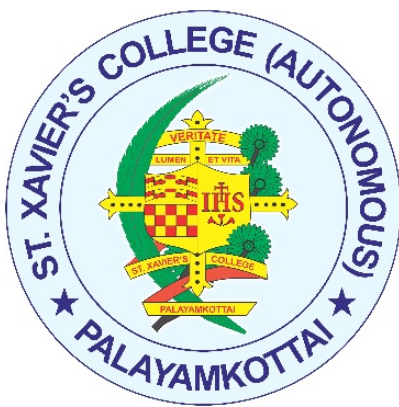


BACHELOR OF COMPUTER APPLICATIONS

LOCF SYLLABUS 2026



Department of Computer Applications

School of Computing Sciences

St. Xavier's College (Autonomous), Palayamkottai

Tirunelveli – 627 002, Tamil Nadu, India

w.e.f. 2026–27

Vision

To mould young men and women as leaders in all walks of life so that they may serve the people especially the poor and the oppressed of our nation in truth, justice and love.

Mission

- To achieve a synthesis of academic excellence and the formation of character.
- To ensure social justice through equity and access
- To include the excluded for empowerment
- To equip students with global competencies
- To engage in relevant research activities.
- To promote Lab to Land through the Outreach Programme – Student Training and Action for Neighbourhood Development (STAND)

SCHOOLS OF EXCELLENCE WITH CHOICE-BASED CREDIT SYSTEM (CBCS)

Undergraduate Courses

While the Tamil Nadu State Council of Higher Education (TANSCHE) came forward to introduce CBCS in all the affiliated colleges in Tamil Nadu in June 2008, St. Xavier's College had already introduced CBCS as early as June 2002 for UG courses and in June 2003 for PG courses. The aim of the Choice-Based Credit System is to provide ample choice of subjects to students, based on the weighted credit point system. This system offers the learners a chance to match their aptitude and interest with the subjects of their choice and learn at their own pace. Thus St. Xavier's College gives every student an opportunity to study his / her discipline - specific courses and pursue other courses from any other department simultaneously.

Essential Features of CBCS

Standardisation of degree courses to internationally accepted levels

Focus on skill-based curriculum

Emphasis on value education

Institution - Industry collaboration

Provision for earning more credits

Development of communication skills

Credit system

The credit system at St. Xavier'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 150 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)

Outcome-Based Education (OBE) is a student-centric teaching and learning methodology that focuses on measuring student performance through clearly defined outcomes. For St. Xavier's College, with its commitment to excellence and NAAC/NBA accreditation requirements, OBE is not just a regulatory expectation but a pathway to academic quality, global competitiveness, and improved employability of graduates.

We prepare students to meet future industry requirements and reinforce St. Xavier's College, Palayamkottai, as a leader in quality higher education. St. Xavier's College introduced OBE in 2018, and for the Attainment Calculation, we developed our own method in 2018. From the academic year 2025-26 onwards, in examinations, for each question we mark Course Outcome (CO), Competency and Performance Indicator, Programme Outcome / Programme Specific Outcome, Bloom's Revised Cognitive Level and we follow the OBE procedure for the calculation of the Attainment of Outcome for each student, course, semester, programme.

EVALUATION PATTERN (UG)

Continuous Internal Assessment

There is no internal minimum for any paper. However, Continuous Internal Assessment (CIA) is a mandatory requirement for all students. A student must take at least one CIA test out of two tests and must fulfil at least one mode of assessment among assignments, quiz, seminars, etc., otherwise he/she will not be permitted to write the semester examination.

S.No	Component	Marks Allotted
1	I CIA Test	50
2	II CIA Test	50
	Total	100

The total CIA marks of 100 will be converted to 70 marks. An additional 30 marks will be awarded through other internal assessment components.

The Continuous Internal Assessment (CIA) consists of two component tests, each carrying 15 marks (15 + 15).

The final internal assessment marks will be calculated out of 100 (70 + 30). The obtained marks will be **converted to 50 marks**.

Semester (External) Examination

- The External Semester Examination will be conducted for **100 marks**.
- The obtained marks will be **converted to 50 marks**.

Question Pattern

UG Semester Examinations Part- I & II & III (3 Hours)

PART	TYPE	Mark Distribution	Total Marks
A	MCQ	20X1	20
B	ALL	5X3	15
C	Either/or	5X7	35
D	3 out of 5	3X10	30
		Total	100

UG Semester Examinations Part- IV (2 Hours)

PART	TYPE	Mark Distribution	Total Marks
A	MCQ	5X1	5
B	ALL	5X2	10
C	Either/or	5X5	25
D	1 out of 2	1X10	10
		Total	50

UG Internal Examinations Part- I & II & III (1.30 Hours)

PART	TYPE	Mark Distribution	Total Marks
A	MCQ	6X1	6
B	ALL	3X3	9
C	Either/or	3X5	15
D	2 out of 3	2X10	20
		Total	50

UG Internal Examinations Part- IV (1.00 Hour)

PART	TYPE	Mark Distribution	Total Marks
A	MCQ	5X1	5
B	ALL	5X3	15
C	2 out of 3	2X7.5	15
		Total	35

Grading System

Range of Marks	Letter Grade	Grade Point	Description
90-100	A+	9.0-10.0	Outstanding
80-89	A	8.0-8.9	Excellent
70-79	B+	7.0-7.9	Very Good
60-69	B	6.0-6.9	Good
50-59	C	5.0-5.9	Above Average
40-49	D	4.0-4.9	Average
00-39	U	0	Reappear

PROGRAMME OUTCOMES (PO) FOR UG PROGRAMMES

Students of all Undergraduate Degree Programmes at the time of graduation will be able to attain the following:

PO1. Critical Thinking: Acquire the knowledge in the respective field and take informed actions.

PO2. Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

PO3. Social Interaction: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional practice.

PO4. Effective Citizenship: Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO5. Ethics: Recognize different value systems and apply ethical principles and commit to professional ethics and responsibilities and norms of different value systems.

PO6. Environment and Sustainability: Demonstrate the issues of environmental contexts and sustainable development.

PO7. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern IT tools including prediction and modeling to complex activities with an understanding of the limitations.

PO8. Self-directed and Life-long Learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of socio-technological changes.

PROGRAMME SPECIFIC OUTCOMES (PSOS)

PSO1: Application Development and Software Craftsmanship: Design and develop robust desktop, web, and mobile applications using contemporary programming languages (C++, Java, Python, PHP, .NET, Android) with sound architectural principles and best coding practices.

PSO2: Software Engineering and Systems Thinking: Apply software engineering principles to plan, model, implement, and evaluate data-driven solutions using version control, testing methodologies, documentation strategies, and project management frameworks.

PSO3: Computational Problem Solving and Analytics: Solve computational problems using structured and object-oriented approaches, supported by logical reasoning, data structures, algorithm design, numerical methods, and statistical analysis.

PSO4: Data Management and Backend Integration: Demonstrate proficiency in data management using relational databases and SQL/PL-SQL operations, while integrating backend systems with client interfaces through secure data transactions.

PSO5: User Interface Design and Interactive Systems: Develop platform-aware user interfaces and implement event-driven programming with GUI frameworks and visualization tools.

PSO6: System Administration and Operating Environments: Configure and manage operating systems, system-level programming, shell scripting, and virtualized environments using industry-standard tools.

PSO7: Intelligent Systems and Networked Computing: Utilize theoretical and applied knowledge in Artificial Intelligence, Data Analytics, and Computer Networks to develop intelligent systems that demonstrate cognition, connectivity, and real-time computation.

PSO8: Integrative Learning and Societal Impact: Undertake interdisciplinary projects and internships integrating computing with societal contexts, demonstrating technical depth, professional competency, and social relevance.

COMPUTER APPLICATIONS (BCA)
(With Effect from June 2026)

Sem	Part	Status	Sub. Code	Title of the Paper	Hrs	Cdt
I	I	Lang	26UGTL11	General Tamil – I		
	I	Lang	26UGHL11	Hindi – I		
	I	Lang	26UGFL11	French – I	6	3
	II	Lang	26UGEL11	General English - I	6	3
	III	Core-T1	26UCAC11	Object Oriented Programming with C++	5	5
	III	Core-P1	26UCAC12	Practical: C++ Programming	5	4
	III	EC-T1	26UCAE11	Discrete Mathematics / Computer Organization and Architecture	4	4
	IV	SEC1	26UCAN11	MS-Word and PowerPoint (NME)	2	2
	IV	FC	26UHER11/ 26UHEE11	Foundation Course: Religion: Catholic Doctrine/ Ethics	2	2
					30	23
II	I	Lang	26UGTL21	General Tamil – II		
	I	Lang	26UGHL21	Hindi – II		
	I	Lang	26UGFL21	French – II	6	3
	II	Lang	26UGEL21	General English - II	6	3
	III	Core-T2	26UCAC21	Programming in Java	4	5
	III	Core-P2	26UCAC22	Practical: Programming in Java	4	3
	III	EC-T2	26UCAE21	Operation Research / Microprocessor and Microcontroller	4	3
	III	EC-P1	26UCAE22	Practical: Operation Research using C++ / Microprocessor and Microcontroller	2	2
	IV	SEC2	26UCAN21	MS-Excel for Data Management (NME)	2	2
	IV	SEC3	26UHEI21	Integrated Personality Development	2	2
					30	23
III	I	Lang	26UGTL31	General Tamil – III		
	I	Lang	26UGHL31	Hindi – III		
	I	Lang	26UGFL31	French – III	6	3
	II	Lang	26UGEL31	General English – III	6	3
	III	Core-T3	26UCAC31	Python Programming	4	4
	III	Core-P3	26UCAC32	Practical: Python Programming	3	3
	III	EC-T3	26UCAE31	Data Structures and Algorithms / Visual Basic	4	3
	III	EC-P2	26UCAE32	Practical: Data Structures and Algorithms / Visual Basic	3	3
	IV	SEC4	26UHEL31	Life Issues & Entrepreneurial Skill Development	2	2
	IV	SEC5	26UCAS31	Practical: Photoshop	2	2
					30	23

IV	I	Lang	26UGTL41	General Tamil – IV		
	I	Lang	26UGHL41	Hindi – IV		
	I	Lang	26UGFL41	French – IV	6	3
	II	Lang	26UGEL41	General English – IV	6	3
	III	Core-T4	26UCAC41	Relational Database Concepts	4	4
	III	Core-P4	26UCAC42	Practical: Oracle	3	3
	III	EC-T4	26UCAE41	Web Designing with Markup Languages / Computer Graphics	3	3
	III	EC-P3	26UCAE42	Practical: Web Designing with Markup Languages / Computer Graphics	2	2
	IV	EC-T5	26UCAE43	Software Engineering / E-Commerce	4	4
	IV	EVS	26UEVS41	Environmental Studies	2	2
	V	Extension Activities		STAND (Student Training and Action for Neighbourhood Development)	-	1
					30	25
V	III	Core-T5	26UCAC51	Net Programming using C#	5	5
	III	Core-T6	26UCAC52	PHP Programming	5	5
	III	Core-P5	26UCAC53	Practical: .Net Programming using C#	5	3
	III	Core-P6	26UCAC54	Practical: PHP Programming	5	3
	III	EC-T6	26UCAE51	Operating Systems and LINUX / Data Analytics Using R Programming	4	3
	III	EC-P4	26UCAE52	Practical: LINUX / R Programming	4	3
	IV	VE	26UVEH51	Human Rights & Social Analysis	2	2
	IV	Internship	26UCAI51	Internship	-	2
					30	26
VI	III	Core-T7	26UCAC61	Android Programming	4	4
	III	Core-T8	26UCAC62	J2EE	4	4
	III	Core-P7	26UCAC63	Practical: Android Programming	5	2
	III	Core-P8	26UCAC64	Practical: J2EE	5	2
	III	Core	26UCAC65	Project with Viva Voce	6	3
	III	EC-T7	26UCAE61	Computer Networks / Introduction to Block Chain Technology	4	3
	IV	SEC6	26UCAS61	Professional Competency Skill	2	2
					30	20
				TOTAL	180	140
				Additional Compulsory Courses		
				I Year (Add – On Course)		2
				II Year (Value – Added Course)		2
				III Year (Extra – Credit Course)		2
				Field Visit / Industrial Visit		1
				MOOC		2
				Cocurricular / Extra-curricular Activities		1
				TOTAL	180	150

EC – Elective Course FC – Foundation Course VE – Value Education SEC – Skill Enhancement Course

Add On Courses

Sem.	Course Code	Title of the Course	Credits
I	26UCAAO1	MS Office	2
II	26UCAAO2	C Programming	2

Value Added Courses

Sem.	Course Code	Title of the Course	Credits
III	26UCAVA1	Introduction to Artificial Intelligence	2
IV	26UCAVA2	UI/UX design using Figma	2

Extra Credit Courses

Sem.	Course Code	Title of the Course	Credits
I	26UCAEC1	Fundamentals of Computers	2
II	26UCAEC2	Cloud Computing	2
III	26UCAEC3	Data mining	2
IV	26UCAEC4	Wireless Technology	2
V	26UCAEC5	Internet of Things	2
VI	26UCAEC6	Social Networks	2

பொதுத்தமிழ் - I
26UGTL11

Sem	Course Code	Course Category	Hours	Credit	MARK FOR EVALUATION		
					CIA	ESE	TOTAL
I	26UGTL11	GT	6 Hrs	3	100	100	100
COURSE TITLE		பொதுத்தமிழ் - I					
COURSE OUTCOMES: (பயன்கள்)							
CO1	பாரதியார் காலந்தொட்டுத்தற்காலப் புதுக்கவிதைகள் வரையிலானகவிதைகளை அறிமுகப்படுத்துவதால் படைப்பாற்றல் திறன் பெறுதல் (K1, K2)						
CO2	புதுக்கவிதை வரலாற்றினை அறிந்துகொள்ளுதல்.(K2)						
CO3	இக்கால இலக்கியவகையினைக் கற்பதன் மூலம் படைப்பாக்கத்திறனைப்பெறுதல்.(K4)						
CO4	மொழிஅறிவோடுசிந்தனைத் திறன் அதிகரிக்கச் செய்தல்.(K3)						
CO5	தமிழ்மொழியைப் பிழையின்றிஎழுதவும்,புதியகலைச்சொற்களைஉருவாக்கவும் அறிந்து கொள்ளுதல்.(K4)						
CO6	காலந்தோறும் சமூகச் சிந்தனைகள் மாறுவதை இலக்கியவரலாற்றின் மூலம் புரிந்துகொள்ளுதல்.(K6)						

UNITS	SYLLABUS CONTENTS	HOURS
I	மரபுக் கவிதை 1. பெ.சுந்தரனார் - தமிழ்த்தெய்வவணக்கம் 2. இராமலிங்கஅடிகளார் - வள்ளலார் பாடல்கள் 3. பாரதியார் - பாரத ஜனங்களின் தற்கால நிலைமை 4. பாரதிதாசன் - சிறுத்தையே வெளியில் வா 5. மு.நல்லசுவாமிபண்டிதர் - சிலுவைத் தியானமாலை - மரியாள் புலம்பல் 6. கவிமணிதேசிகவிநாயகம்பிள்ளை -புத்தரும் ஏழைச்சிறுவனும் 7. முடியரசன் - மொழிஉணர்ச்சி 8. கண்ணதாசன் - ஆட்டனத்திஆதிமந்தி - ஆதிமந்திபுலம்பல் 9. கல்யாணசுந்தரம் - பட்டுக்கோட்டையார் பாடல்	30
	புதுக்கவிதை 1. கவிக்கோஅப்துல் ரகுமான் - வீட்டுக்கொருமரம் வளர்ப்போம் 2. சிற்பி- கவிதைமுடியவில்லை 3. மு.மேத்தா- வாழைமரத்தின் சபதம் 4. வைரமுத்து- புத்தகப்புராணம் 5. ஞானக்கூத்தன் - அம்மாவின் பொய்கள் 6. அறிவுமதி-வள்ளுவம் பத்து 7. நா.முத்துக்குமார் - ஆனந்தயாழை மீட்டுகிறாய் 8. சுகிர்தாராணி- சபிக்கப்பட்டமுத்தம் 9. அபிமானி - தலித்தியக்கவிதைகள் - 10. வைகைச் செல்வி - அம்மி 11. நாட்டுப்புறப்பாடல்	

II	சிறுகதைகள் 1. புதுமைப்பித்தன் - கடவுளும் கந்தசாமிப் பிள்ளையும் 2. கு.ப.ராஜ கோபாலன் - விடியுமா? 3. கி.ராஜநாராயணன் - கதவு 4. வண்ணதாசன் - ஒருசிறுஇசை 5. உமாமகேஷ்வரி - மரப்பாச்சி உரைநடை 1. இலக்கியத்தின் உயிர்- இரா.மோகன் 2. இருபதாம் நூற்றாண்டுக்கவிதைகளில் தொழிலாளர் நிலை- இரா.மோகன் 3. எண்பதுகளில் புதுக்கவிதைப் போக்குகள் - இரா.மோகன் 4. தமிழ்ச் சிறுகதைகளில் முன்னிலைஉத்தி- இரா.மோகன் 5. வளமுடன் வாழ - அருள்முனைவர் ச.இன்னாசிமுத்து.சே.ச.	15
III	தமிழ் இலக்கியவரலாறு (இக்கால இலக்கியம்)	15
IV	இலக்கணம் - எழுத்து 1. தொல்காப்பியத்தின் எழுத்துவகை 2. முதல் எழுத்துக்கள் 3. சார்பெழுத்துக்கள் 4. மொழிமுதல் எழுத்துக்கள் 5. மொழி இறுதிஎழுத்துக்கள் 6. மொழி இடைஎழுத்துக்கள் 7. போலி 8. பதவிலக்கணம் 9. புணர்ச்சி இலக்கணம்	15
V	பிழையின்றிஎழுதுவோம் 1. பிழைப்பட எழுதும் சொற்களும், திருத்தங்களும் 2. சொற்பொருள் வேறுபாடு 3. பிழையான வாக்கியங்களும், திருத்தங்களும் 4. நிறுத்தற்குறிகள் 5. மரபு 6. வல்லெழுத்து (க்,ச,த்,ப்) மிகுமிடங்கள் 7. வல்லெழுத்துமிகா இடங்கள் 8. வாக்கியம் :வகைகளும்,மாற்றங்களும் 9. வழ(ழு)க்குத் தமிழ் 10.உவமைகள் - பழமொழிகள் - மரபுத் தொடர்கள்	15
TEXT BOOKS (பாடநூல்கள்)		
- தமிழ்த்துறை வெளியீடு- தூய சவேரியார் கல்லூரி,(தன்னாட்சி)பாளையங்கோட்டை. - வகைமைநோக்கில் தமிழ் இலக்கியவரலாறு- பாக்கியமேரி		
REFERENCE BOOKS (பார்வைநூல்கள்)		
- தமிழ் இலக்கியவரலாறு- சிறப்பிபாலசுப்பிரமணியன் - புதியநோக்கில் தமிழ் இலக்கியவரலாறு- தமிழண்ணல் - தமிழ் இலக்கியவரலாறு- சேதுராமன்		
WEB SOURCES(இணையதளங்கள்)		
- Tamil Heritage Foundation – www.tamilheritage.org - Tamil Virtual University Library – www.tamilvu.org/library - Project Madurai – www.projectmadurai.org - Chennai Library – www.chennailibrary.com - Tamil University Library – www.ulib.prg - Tamil E-books downloads – tamilebooksdownloads.blogspot.com - Tamil Books online – books.tamilcube.com - Catalogue of the Tamil Books in the library of British congress archive.org		

பொதுத்தமிழ் - II
26UGTL21

Sem	Course Code	Course Category	Hours	Credit	MARK FOR EVALUATION		
					CIA	ESE	TOTAL
II	26UGTL21	GT	6 Hrs	3	100	100	100
COURSE TITLE		பொதுத்தமிழ் - II					
COURSE OUTCOMES (பயன்கள்)							
CO1	பக்தி இலக்கியத்தின்தோற்றம்,வளர்ச்சி சிற்றிலக்கியத்தின் தோற்றம்,வளர்ச்சி குறித்து அறிந்துகொள்வர்.(K1)						
CO2	பக்தி இலக்கியங்கள் ,சிற்றிலக்கியங்கள் முதலியவற்றின் இலக்கண மற்றும் இலக்கிய அமைப்பை விளங்கிக் கொள்வர் (K2)						
CO3	பக்தி இலக்கியப் பாடல்களில் காணப்படும் தெய்வவழி பாட்டுணர்வு, சிற்றிலக்கியங்களில் காணலாகும் சமூகநீதிக் கருத்துகளை, இன்றைய வாழ்வோடு தொடர்புபடுத்தி நோக்குவர் (K3)						
CO4	பக்தி இலக்கியம் சிற்றிலக்கியங்களின் வழி இலக்கண இலக்கியச்சிறப்புகளை ஒப்பிட்டுப் பேதங்களைக் காண்பர். (K3)						
CO5	பக்தி இலக்கிய, சிற்றிலக்கியங்களின் வழி தமிழ்மொழி, பண்பாடு, மதம், தத்துவம் ஆகியவற்றினை மதிப்பிட்டுச் சீர்தூக்கிப் பார்ப்பர் (K5)						
CO6	கற்ற இலக்கியங்களை அடிப்படையாகக் கொண்டு,சிறுபக்திக் கவிதைகள் அல்லது சிற்றிலக்கிய மரபில் பாடல் இயற்றும் திறன் பெறுவர்.,(K6)						

UNITS	SYLLABUS CONTENTS	HOURS
I	பக்தி இலக்கியம் -1 1. திருஞானசம்பந்தர் - திருக்கோடிக்கா 2. திருநாவுக்கரசர் - திருப்பாதிரிப்புலியூர் 3. திருப்பாவை - ஆண்டாள் 4. குலசேகரஆழ்வார் - 5 ஆம் பதிகம் 5. சித்தர் பாடல்கள் - அழகணிசித்தர் (தேர்ந்தெடுக்கப்பட்டபாடல்கள்) சிற்றிலக்கியம்: 2 1 கலிங்கத்துப்பரணி - களம் பாடியது 2. திருக்குற்றாலக் குறவஞ்சி - மலைவளம் 3. திருக்காவலூர்க்கலம்பகம் - சமூகஉல்லாசம் 4. முக்கூடற்பள்ளு-நாட்டு வளம் 5. தமிழ்விடுதாது - தூதுக்கானகாரணம்	30
II	ஊரைநடை 1. இறைநம்பிக்கையும் மனிதவாழ்வும் 2. இயேசுபிரான் குறிப்பிடும் எண்வகைமனிதர்கள் 3. நபிகள் நாயகத்தின் வாழ்வியல் நெறிகள் 4. திருமூலர் காட்டும் இறைநெறி 5. வள்ளலார் கூறும் வாழ்வியல் நாவல் - கருப்பாயி என்கிற நூர்ஜஹான் -அன்வர் பாலசிங்கம்	15
III	தமிழ் இலக்கியவரலாறு (பக்திஇலக்கியம்,சிற்றிலக்கியம் தொடர்பானபகுதிகள்)	15
IV	இலக்கணம் சொல்லின் இலக்கணம்-பெயர் ,வினை, இடை,உரிச்சொற்கள் பிறமொழிச் சொற்களைத் தமிழில் வழங்கும் முறை	15

V	மொழிபெயர்ப்பு ஆட்சிச் சொல்லகராதி - மரபுத் தொடர்கள் -பழமொழிகள் - திருக்குறள்	15
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TEXT BOOKS (பாடநூல்கள்)

1. தமிழ்த்துறைவெளியீடு - தூயசவேரியார் தன்னாட்சிக் கல்லூரி,பாளையங்கோட்டை.
2. வகைமைநோக்கில் தமிழ் இலக்கியவரலாறு - முனைவர்பாக்கியமேரி
3. கருப்பாயின்கிறநூர்ஜஹான் -அன்வர் பாலசிங்கம்

REFERENCE BOOKS (பார்வைநூல்கள்)

- தமிழ் இலக்கியவரலாறு - சிற்பி. பாலசுப்பிரமணியன்
- புதியநோக்கில் தமிழ் இலக்கியவரலாறு - தமிழண்ணல்
- தமிழ் இலக்கியவரலாறு- சேதுராமன்

WEB SOURCES (இணையதளங்கள்)

- Tamil Heritage Foundation- www.tamilheritage.org
- Tamil virtual University Library- [www.tamilvu.org/ library](http://www.tamilvu.org/library) <http://www.virtualvu.org/library>
- Project Madurai - www.projectmadurai.org.
- Chennai Library- www.chennailibrary.com .
- Tamil Universal Digital Library- www.ulib.prg .
- Tamil E-Books Downloads- [tamilebooksdownloads. blogspot.com](http://tamilebooksdownloads.blogspot.com)

பொதுத்தமிழ் - III
26UGTL31

Sem	Course Code	Course Category	Hours	Credit	MARK FOR EVALUATION		
					CIA	ESE	TOTAL
III	26UGTL31	GT	6 Hrs	3	100	100	100
COURSE TITLE		பொதுத்தமிழ் - III					

COURSE OUTCOMES (பயன்கள்)

CO1	மாணவர்கள் காப்பியம், உரைநடை, ஊடகத்தமிழ், இலக்கணம், யாப்பு ஆகியவற்றின் அடிப்படைக் கருத்துக்கள்,பண்புகள், வரலாற்றுப் பின்னணிகளை அறிதல். (K1)
CO2	மாணவர்கள் தமிழ் இலக்கியவடிவங்கள் (காப்பியம்,உரைநடை) மற்றும் இலக்கணக் கூறுகளைப் (எழுத்து,சொல்,பொருள்,யாப்பு) புரிந்துகொண்டு அவற்றின் தனித்துவங்களைவிளங்கிக் கொள்ளல். (K2)
CO3	மாணவர்கள் கற்ற இலக்கணவிதிகள் மற்றும் யாப்புமுறைகளைப் பயன்படுத்தி சரியான தமிழ் வாக்கியங்களையும் செய்யுள்களையும் உருவாக்கப் பயிற்சியளித்தல். (K3)
CO4	மாணவர்கள் காப்பியங்கள் மற்றும் உரைநடைப் படைப்புகளைப் பகுத்து, ஆய்வுசெய்து,அதன் கருத்து,கட்டமைப்பு, இலக்கியநயம் ஆகியவற்றை ஆராய்தல். (K4)
CO5	மாணவர்கள் இலக்கியப் படைப்புகளைதரம்,மொழிநடை, இலக்கணஅமைப்பு ஆகியவற்றைவிமர்சனமுறையில் மதிப்பீடுதல், (K5)
CO6	மாணவர்கள் தமிழ் இலக்கணம் மற்றும் யாப்புஅடிப்படையில் சுயமாக செய்யுள்,கட்டுரை,உரைநடைப் படைப்புகளைஉருவாக்கப் பயிற்சியளித்தல்;.(K6)

UNITS	SYLLABUS CONTENTS	HOURS
I	1. சிலப்பதிகாரம் - வழக்குரைக் காதை. 2. மணிமேகலை- ஆபுத்திரன் திறம் அறிவித்தகாதை. 3. சீவகசிந்தாமணி- பதுமையர் இலம்பகம். 4. கம்பராமாயணம் - மந்தரைச் சூழ்ச்சிப் படலம்.	30
	1. சூளாமணி 2. உதயணகுமாரகாவியம் 3. இயேசுகாவியம் 4. மருமக்கள் வழி மான்மியம்	
II	ஊரைநடை 1. காளத்திவேடனும் கங்கைவேடனும். 2. தீமையை இயற்றும் தன்மையினர் கூனி இயாகோ. 3. சிலம்புகாட்டும் சீர்மிகு சிந்தனைகள். 4. மணிமேகலை காப்பியத்தில் மானுட விழுமியங்கள். நாடகம் - வேலைக்காரி - அறிஞர் அண்ணா.	15
III	தமிழ் இலக்கிய வரலாறு (காப்பியங்கள்)	15
IV	இலக்கணம் - யாப்பு,எழுத்து, அசை. சீர்,தளை, அடி,தொடை,பா வகைகள்	15
V	ஊடகத்தமிழ் - விளக்கம், வகைகள்,செயல்பாடுகள் 1.இதழ்கள்	15

	2.வானொலி 3.தொலைக்காட்சி 4.திரைப்படம்	
TEXT BOOKS (பாடநூல்கள்)		
- தமிழ்த்துறைவெளியீடு-தூயசவேரியார்க் கல்லூரி,(தன்னாட்சி) பானையங்கோட்டை. - வகைமைநோக்கில் தமிழ் இலக்கியவரலாறு-பாக்கியமேரி		
REFERENCE BOOKS (பார்வைநூல்கள்)		
- தமிழ் இலக்கியவரலாறு-சிற்பிபாலசுப்பிரமணியன் - புதியநோக்கில் தமிழ் இலக்கியவரலாறு-தமிழண்ணல் - தமிழ் இலக்கியவரலாறு-சேதுராமன்		
WEB SOURCES (இணையதளங்கள்)		
- Tamil Heritage Foundation – www.tamilheritage.org<http://www.tamilheritage.org> - Tamil Virtual University Library – www.tamilvu.org/library http://www.virtualvu.org/library - Project Madurai – www.projectmadurai.org - Chennai Library – www.chennailibrary.com<http://www.chennailibrary.com - Tamil University Library – www.ulib.prg<http://www.ulib.prg> - Tamil E-books downloads – tamilebooksdownloads.blogspot.com - Tamil Books online – books.tamilcube.com - Catalogue of the Tamil Books in the library of British congress archive.org		

பொதுத்தமிழ் - IV
26UGTL41

Sem	Course Code	Course Category	Hours	Credit	MARK FOR EVALUATION		
					CIA	ESE	TOTAL
IV	26UGTL41	GT-IV	6 Hrs	3	100	100	100
COURSE TITLE		பொதுத்தமிழ்- IV					
COURSE OUTCOMES (பயன்கள்)							
CO1:	பழந்தமிழ் இலக்கியவரலாற்றறிவைப் பெறுதல் (K1, K2)						
CO2:	சங்க இலக்கிய அறிமுகங்களின் ஊடாகத் தமிழர் வாழ்வியல் நெறிகளை உணர்தல். (K2,K3)						
CO3:	தமிழ் இலக்கியங்களின் செய்யுள் உருவம்,உள்ளடக்கம், படைப்பியல் கொள்கைகளைப் புரிந்துகொள்ளுதல். (K4)						
CO4:	அகத்திணை,புறத்திணைவாழ்வியல் நெறிப்பாடுகளின் ஊடாகத் தமிழர்ப்பண்பாட்டு அடிப்படைகளை மதிப்பிடும் திறன் பெறுதல். (K2,K3)						
CO5:	மொழித்திறன்,படைப்புத்திறன் பெறுதல். (K3,K4)						
CO6:	நாடக இலக்கியஅனுபவத்தின் வழியாகதமிழ்ச் சமூகநிலைகளை இலக்கியமாக்கும் நுட்பங்களைப் பெறுதல். (K2,K6)						

UNITS	SYLLABUS CONTENTS	HOURS
I	செய்யுள் பகுதி 1 1. நற்றிணை (5பாடல்கள்) 2. குறுந்தொகை (5பாடல்கள்) 3. அகநானூறு (2பாடல்கள்) 4. புறநானூறு (5பாடல்கள்)	30
	செய்யுள் பகுதி 2 1. நெடுநல்வாடை முழுமையும் 2. திருக்குறள் (விருந்தோம்பல், நட்பாராய்தல், குறிப்பறிதல்) 3. நாலடியார் (கல்வி)	
II	உரைநடைக் கட்டுரைகள் 1. ஊரும் பேரும் - ரா.பி. சேதுபிள்ளை 2. தமிழர் பண்பாடும்அதன் சிறப்பியல்புகளும் - தனிநாயகம் அடிகளார் 3. இலக்கியஉருவாக்கமும் பயனும் - சேதுமணிமணியன் பயண இலக்கியம் 1. மண் புதிது - சுப்பராத்மிமணியன்	15
III	தமிழ் இலக்கியவரலாறு 1. சங்ககாலம் 2. சங்கம் மருவியகாலம்	15
IV	இலக்கணம் -பொருள் 1. அகப்பொருள் 2. புறப்பொருள் 3. அணியிலக்கணம் (உவமை,உருவகம்,பிறிதுமொழிதல்,வஞ்சப்புகழ்ச்சி,தற்குறிப்பேற்ற அணி)	15
V	மொழிப்பயிற்சி 1. ஒப்பும் மறுப்பும் (ஒருகருத்தினை வெட்டி,ஒட்டி எழுதும் பயிற்சி) 2. விண்ணப்பம் எழுதுதல் (பயிற்சி) 3. தமிழில் தன்விவரக் குறிப்புவரைதல் (பயிற்சி) 4. மேடைப்பேச்சு நுட்பங்கள் (நேர்முகப் பயிற்சிமற்றும் மதிப்பீடு)	15

TEXT BOOKS (பாடநூல்கள்)
1. பொதுத்தமிழ் பாடநூல், தமிழ்த்துறை வெளியீடு ,தூய சுவேரியார் கல்லூரி,பாளையங்கோட்டை. 2. பாக்கியமேரி,தமிழ் இலக்கியவரலாறு,பதினொன்றாம் பதிப்பு - 2025 ,பூவேந்தன் பதிப்பகம்,மயிலாப்பூர்,சென்னை. 3. சுப்பராரதிமணியன்இமண் புதிது,முதல் பதிப்பு 2018 அறிவுப்பதிப்பகம்,சென்னை.
REFERENCE BOOKS (பார்வைநூல்கள்)
பார்வை நூல்கள் 1. மது.ச.விமலானந்தம்தமிழ் இலக்கியவரலாறு, 2. மு. வரதராசனார்,தமிழ் இலக்கியவரலாறு, 3. தமிழண்ணல்,புதியநோக்கில் தமிழ் இலக்கியவரலாறு.
WEB SOURCES (இணையதளங்கள்)
• Tamil Heritage Foundation – www.tamilheritage.org<http://www.tamilheritage.org> • Tamil Virtual University Library – www.tamilvu.org/library http://www.virtualvu.org/library • Project Madurai – www.projectmadurai.org • Chennai Library – www.chennailibrary.com<http://www.chennailibrary.com • Tamil University Library – www.ulib.prg<http://www.ulib.prg> • Tamil E-books downloads – tamilebooksdownloads.blogspot.com • Tamil Books online – books.tamilcube.com • Catalogue of the Tamil Books in the library of British congress archive.org

HINDI

SEMESTER 1

UNIT I: GRAMMAR

- Swar(स्वर),
- Vyanjan(व्यंजन),
- Barah Khadi(बारहखड़ी),
- Shabd aur Vakya Rachna (शब्द और वाक्य रचना)

UNIT II: SUBODH HINDI RACHNA

- Binna binna arth(भिन्न भिन्न अर्थ),
- Numbers (गिनती1-100),
- Vaakyong mein Prayag kijiye (वाक्यों में प्रयोग कीजिये)
- Rishto ke Naam (रिश्तो के नाम)
- Gharelu padartho ke Naam (घरेलु पदार्थों के नाम)

UNIT III: PROSE

- Sadharan Vakya aur Sangya (संज्ञा),
- Sarvanaam(सर्वनाम)
- Visheshan(विशेषण)
- Kriya (क्रिया)

UNIT IV: SHORT STORIES

- Bacho ki Kahaniya

UNIT V: COMPREHENSION

- Sant Tiruvalluvar, संत तिरुवल्लुवर,
- Hamara desh, (हमारा देश,)
- Paryavaran Sanrakshan, (पर्यावरण संरक्षण)
- Naari Sashaktikaran, (नारी सशक्तिकरण)
- Rastriya janvar(राष्ट्रीय जानवर)

Reference Books

Hindi sentences - Chaturbhuj Sahay

Subodh Hindi Grammar - Phoolchand Jain

Sankshipt Hindi Grammar - Kamta Prasad

Practical Hindi - Nagappa

Abhinav Hindi Grammar – Nagappa

Saral Hindi Grammar - Shyamchandra Kapur

Grammar Pradeep - Ramdev

Laghu Bal Kathaye - Ramashankar

Captivating Stories - Premchand

CONCISE GRAMMAR OF THE HINDI LANGUAGE - H.C Scholberg

Hindi Grammar - Edwin Greaves

SEMESTER II

UNIT I: Hindi Ekankiya

- Sooryodhaya(सूर्योदय),
- Mayoppiya (मायोपिया),
- Udhayan (उदयन),
- Upendranath Ashk – Lakshmi ka Swagat

Characters: (Tippani)

- Nirjarani (निर्झरणी),
- Sudhi(सुधी)
- Thathagath(तथागत),
- Udhayan (उदयन),

UNIT II: Hindi Kahaniya

- Premchand – Bade Ghar ki Beti
- Malathi Joshi – Vo Tera Ghar Yah Mera Ghar
- Gyanranjan - Pita

UNIT III: ANCIENT POETRY

- Pathya Chayanika– KabeerDhoha–Saaki (साखी) 1 to 10.

UNIT IV: Vyakaran

- Kriya Visheshan (क्रियाविशेषण),
- Sambandh Bodhak (संबंधबोधक),
- Samuchay Bodhak (समुच्चयबोधक)
- Vismayadi Bodhak (विस्मयादिबोधक) aadi shabdo ka prayog

UNIT V:

Pratiyogi Pariksha par aadharit Nimnalikhit Vishayo se sambandhit Prashikshan Karya

- Tamil Bhasha: Mahakavi Bharatiyar
- Sanket Vikas dwara Lekhan kala aur Kahani Lekhan ka Vikas
- Gadyansh dekhkar sahi Shirshak chunna
- Pathit Vyakaran par aadharit Vakya rachna
- Vibhinna Pratiyogi parikshao ke bare mein suchna pradan dena

Reference Books

- Sooryodaya (Dakshin Bharat Hindi Pracharsabha publications)
- Aath Ekanki Natak - Ed. Dr. Ramkumar Verma
- Das Ekanki

SEMESTER III

Niji Patra – Arth aur Bhed, Pitaji/Mataji ke naam patra, Mitra, Bhai aadi ke naam patra

UNIT I: Niji Patra Lekhan

- Niji Patra - Arth aur Bhed
- Pitaji/Mataji ke naam patra
- Mitra, Bhai aadi ke naam patra
- Paribhashik Shabdawali - 20 words

Unit II

- Samajik Patra Lekhan
- Aavedan Patra - Noukri, Chutti aadi
- Dak Adhikari ke naam patra
- Paribhashik shabdawali - 20 words

Unit III

- Vyavasayik Patra Lekhan
- Vyavasayik Patra - Arth aur Bhed
- Prakashak ke naam patra
- Shikayathi
- Paribhashik shabdawali - 20 words

Unit IV

- Samanya Parichay
- Sarkari Patra
- Ardh-Sarkari Patra
- Gyapan, Paripatra
- Anusmarak
- Paribhashik Shabdawali - 20 words

Unit V

- Precis Writing And Applied Grammar (Ling, Vachan and Karak)
- Karak (कारक)
- Vachan badaliye(वचन बदलिए),
- Ling badaliye(लिंग बदलिए)

Reference Books

- Viyavaharik Hindi, Hindi Prachar press, T.Nagar, Madras-600 017
- Alekhan aur Tippan - Prof. Viraj
- Alekhan Kichlu

SEMESTER IV

UNIT I: STORIES (दक्षिणी कथाएं)

- Meri pathni(मेरी पत्नी),
- Thotha aur Mynah(तोता और मैना),
- Noorunisha(नूरनिशा),
- Mruthudhand (मृत्यु दंड),
- Karmaveer(कर्मवीर) and their Characters.

UNIT II: Proud yogiki aur Hindi

- Unicode
- Dewanagari Lipi
- Hindi ki Vibhinna Website - Ek Parichay

UNIT III: POETRY (काव्यशास्त्र)

Ras :

- Kavyaras (काव्यरस),
- Veer ras (वीररस),

Sandh:

- Chowpayi (चौपाई),
- Rola(रोला),

Alankar:

- Yamakalankar (यमकअलंकार),
- Upmaalankar (उपमाअलंकार).

UNIT IV:

AUTOBIOGRAPHY (Sathya ka Swar–Gandhiji ki Jeevani)

- Ma, bap aur Janma(मां, बाप और जन्म)
- Ladakpan (लड़कपन)
- High school mein (हाई स्कूल में)
- Vivah aur Mamsabhakshan(विवाह और मांस भक्षण)
- Ankhen Kuli (आंखें खुली)

Unit V :Pratiyogi priksa par aadharit Computer sambandhit prashikshan Karya

- Hindi mein Powerpoint banana
- Hindi mein Google Document taiyar karna
- Hindi mein Google form taiyar karna
- Vibhinna pratiyogi pariksha ke bare mein suchna pradan karna

Reference Books

- Social Networking: Naye Samay ka Samvad – Ed. Sanjay Dwivedi
- Jansanchar aur Maas Culture - Jagdeeshwar
- Media: Bhumandalikaran aur Samaj - Ed. Sanjay Dwivedi
- Naye Jamane ki Patrakarita - Sourabh Shukla
- Patrakarita se Media tak - Manoj Kumar

French semester-I

UNIT. I

Communication:	Decrire la salle de classe et le professeur.
Grammaire :	Les articles indefinis et defines, les verbes reguliers et irreguliers.
Culture:	Les symbols de la France.
Projet:	Desiner les objets dans le sac et dans la trousse.

UNIT. II

Communication:	Parler de la journee.
Grammaire :	Les verbes pronominux,Affirmatif Negatif et interrogatif
Culture:	Les Frontieres de la France.
Projet:	Faire un rapport sur la journee des parents.

UNIT. III

Communication:	se presenter, parler de la nationlite, dire son numero de telephone.
Grammaire :	Les prepositions , Accord adjective nom, verbes aller venir.
Culture:	Les fete en France trditions et multiculturalisme.
Projet:	faire une liste des camarades et noter leurs numeros de telephone a

haute

voix et demander a un ami de verifier.

UNIT. IV

Communication:	parler de la nourriture et des repas simples et sains.Decrire les
Grammaire :	L'impertif,Les articles partitifs,
Culture:	Les plats francais.
Projet:	Dessiner et decrire l nourriture que les gens mangent dans leur pays,

UNIT. V

Communication:	Exprimer ses gouts.
Grammaire :	Les adjectifs qulificatifs, les adjectifs possessifs, La negation.
Culture:	La France et ses regions.
Projet:	qu'est-ce que tu aimes faire pendant ton temps libre?

- Lecon 1.** La vie scolaire de luc
- Lecon 2.** La vie quotidienne de luc
- Lecon 3.** Le monde multiculturel
- Lecon 4.** La bonne nourriture
- Lecon 5.** Parlons de nos preferences

Ref.Avenir method de francais 3

**French
Semester-II**

UNIT. I

Communication:	Demander et donner les directions , Situer un endroit (sur la carte)
Grammaire :	Les prepositions L'interrogation.
Culture:	Les vetements francais.
Projet:	Faire une carte de la ville imaginaire.

UNIT. II

Communication:	Parler de la semaine ,Parler des activites faites pendant la semaine.
Grammaire :	Les articles contractes,Les adjectifs demonstratifs, les expressions avec les verbes Faire et Avoir.
Culture:	Les villes connues en France.
Projet:	Preperer un employ du temps avec des activites faites pe dant la semaine.

UNIT. III

Communication:	Parler du passe, Raconter le week end dernier.
Grammaire :	Le passe compose avec l'auxilaire avoir, La formation du participle passe.
Culture:	Noel
Projet:	Faire un petit dossier sur les activites faites pendant les vacances d'ete.coller les photos de ces activites faites.

UNIT. IV

Communication:	Parler du passe, Rconter les vacances dernieres
Grammaire :	Le passe compose avec l'auxilaire etre.
Culture:	Les montagnes en France.
Projet:	Preparer un dossier sur la fete favorite celebree l'annee derniere.

UNIT. V

Communication:	Parler de la ville de demain , Exprimer des projets et des predictions.
Grammaire :	Le future proche, Le future simple.
Culture:	Les monuments en France.
Projet:	Imginer et presenter la ville du future

- Lecon 6.** Sara cherche son chemin
- Lecon 7.** Ma semaine en action
- Lecon 8.** Mon weekend dernier
- Lecon 9.** Mon sejour a Annecy
- Lecon 10.** La ville du futur

Ref.Avenir method de francais 3

French

semester-III

UNIT. I

Communication:	Decrier ce que les Francais aiment faire , Parler de la vie des Francais.
Grammaire :	Les articles indefinis et defins ,Les articles partitifs,Les articles contractes.
Culture:	La France dans le Coeur des Francais.
Projet:	Preparer un dossier sur ce que les gens du pays aiment faire.

UNIT. II

Communication:	Comparer la vie des adolescents d'autrefois et d'aujourd'hui.
Grammaire :	Le negation, Les articles.
Culture:	Les sous cultures adolescents.
Projet:	Decrivez la vie des adolescents d'hier et d'aujourd'hui.

UNIT. III

Communication:	Parler d'un sport.
Grammaire :	L'imperatif,L'interrogation questions/reponses,Lesconjonctins.
Culture:	Le sport en France.
Projet:	Parler du sport favort.

UNIT. IV

Communication:	Decriver les vacances,Racontredes experiences,Envoyerles mails.
Grammaire :	Le passe compose.
Culture:	La France ,une destination touristique.
Projet:	Dessiner ou coller les images de l'anniversaire fete l'annee derniere, rediger un petit texte pour raconter ce jour.

UNIT. V

Communication:	Parler d'une sortie scolaire,Ecrire un e-mail.
Grammaire :	Le passe recent, le futur proche .
Culture:	Les penitures celebres du muse du Louvre.
Projet:	Ecris sur une visite au muse.

- Lecon 1.** Esprit Francais.
- Lecon 2.** Les ados modernes
- Lecon 3.** Une grande aventure a velo
- Lecon 4.** Un sejour a nice
- Lecon 5.** La sortie au muse scientifique

Ref.Avenir method de francais 4

French
Semester-IV

UNIT. I

Communication:	Parler de l'automobile
Grammaire :	Les adjectifs les verbes .
Culture:	Les automobiles en France.
Projet:	Faire un dossier sur ta voiture .Coller une photo de cette voiture et decrire cette voiture.

UNIT. II

Communication	Reflechir aux villes a venir,Parler des projets d'avenir.
Grammaire :	Le futur simple ,le futur proche.
Culture:	Les projets d'avenir en France
Projet:	preparer un dossier sur les changements attendus dans la ville .

UNIT. III

Communication:	partager la recette , Parler de la nourriture.
Grammaire :	Les adverbs de quantite,l'adjectif indefini.
Cultur	les fetes et les traditions.
Projet:	Preparerun dossier sur un dessert prefereet parle de son origine.

UNIT. IV

Communication:	Discuter les avantages d'internet,Ecrire un blog.
Grammaire :	Les adjectifs demonstratifs , Les adjectifs possessifs ,Les prepositions.
Culture:	Les principaux medias francais.
Projet:	Faire un rapport sur les avantages et les inconvenients d'internet.

UNIT. V

Communication:	Rediger des invitations , Ecrire des .messages les consignes, Repondre a une invitation.
Grammaire :	Les verbes pronominaux , les verbes pronominaux a l'impertif.
Culture:	Les arts du spectacle en France.
Projet:	Rediger une belle invitation pour feter l'anniversaire d'un grand parent.

Lecon 6. Le monde des automobiles

Lecon 7. La vie en 2050

Lecon 8. L'epiphanie en France

Lecon 9. La vie en ligne

Lecon 10. On fait quoi ce week-end?

Ref.Avenir method de francais 4

GENERAL ENGLISH

DEPARTMENT OF ENGLISH

UG – PART II - GENERAL ENGLISH

(The Seven-Tier Pattern recommended by UGC Curriculum Development Centre and Identified as Best Practice by NAAC)

	Stream A (For learners of high entry level proficiency)	Stream B (For learners of average entry level proficiency)	Stream C (For learners of low entry level proficiency)
Courses in Semester I	IV 26UGEL14	III 26UGEL13	I 26UGEL11
Courses in Semester II	V 26UGEL25	IV 26UGEL24	II 26UGEL22
Courses in Semester III	VI 26UGEL36	V 26UGEL35	III 26UGEL33
Courses in Semester IV	VII 26UGEL47	VI 26UGEL46	IV 26UGEL44

GENERAL COURSE OUTCOMES

CO1 Acquire the four language skills (Listening, Speaking, Reading, and Writing)

CO2 Develop the skill of independent reading and interpreting of graded texts

CO3 Expand and consolidate active and passive vocabulary

CO4 Acquire the skills needed to participate in a conversation that builds knowledge collaboratively

CO5 Acquire a clear understanding of English Grammar to facilitate the accuracy of communication.

CO6 Develop the skills of formal written communication to be used in academic and career-related contexts

TEXTS

Course I – *SPARK I: An Integrated Course Text for General English*, Department of English, St. Xavier's College (Autonomous), Palayamkottai.

Course II - *SPARK II: An Integrated Course Text for General English*, Department of English, St. Xavier's College (Autonomous), Palayamkottai.

Course III - *SPARK III: An Integrated Course Text for General English*, Department of English, St. Xavier's College (Autonomous), Palayamkottai.

Course IV - *SPARK IV: An Integrated Course Text for General English*, Department of English, St. Xavier's College (Autonomous), Palayamkottai.

Course V - *SPARK V: An Integrated Course Text for General English*, Department of English, St. Xavier's College (Autonomous), Palayamkottai.

Course VI – *SPARK VI: An Integrated Course Text for General English*, Department of English, St. Xavier's College (Autonomous), Palayamkottai.

Course VII - *SPARK VII: An Integrated Course Text for General English*, Department of English,
St. Xavier's College (Autonomous), Palayamkottai.
Courses I –VI –*Intermediate English Grammar* by Raymond Murphy. Cambridge University Press,
1999.

EXTERNAL EXAMINATION

❖ External Examination has two components:

1) Written Examination and 2) Spoken English Viva Voce

❖ A three-hour written examination will be conducted for 100 marks for all General English papers and the scores will be converted to 40 marks, with a pass minimum of 16 marks.

❖ At the end of every semester, Spoken English Viva Voce will be conducted for all the students for 100 marks (four components) and the scores will be converted to 10 marks, with a required pass minimum of 4 marks.

❖ To pass in any General English paper, a student must secure the pass minimum of 40 out of 100 (16/40 in Written Examination and 4/10 in Spoken English Viva Voce Examination).

Distribution of marks: **Written Exam** (100 marks) Converted to 40 marks
 Spoken English Viva voce (100 marks) Converted to 10 marks
 TOTAL (40+10) = 50 marks

INTERNAL ASSESSMENT

❖ Two Internal Examinations shall be conducted for 50 marks each along with the Continuous Internal Assessments for 30 marks.

❖ The internal assessment for the courses may include skill-based activities such as seminar presentation/spoken English /critical podcast/ video essay/ creating a 5–8 slides on a topic/ composing a poem/ submitting a relevant photo with description etc.

In both the Internal Examinations and Semester Written Examination, 40% of the mark is allotted for literature-based questions, and 60% of the mark is allotted for grammar and composition exercises.

General English Evaluation Procedure

Internal Examination			Converted to	Total
CIA 1 (Written)	50	Converted to 70	50	
CIA 2 (Written)	50			
Two Classroom Assessments (Spoken/Skill-based Activities) 2x 15	30	30		
External Examination			Converted to	
Semester Exam (Written)	100	Converted to 40/ (Pass Min. 16)	50	
Semester Viva Voce 4x25 (Spoken)	100	Converted to 10/ (Pass Min. 4)		

Course I

Hours: 6

Course Code: 26UGEL11

Credits: 3

LEARNING OUTCOMES

LO1 To provide an ambience to acquire the basic language skills, listening, speaking, reading, and writing

LO2 To make the learners learn the basic elements of grammar

LO3 To enable them to involve in basic communicative activities

LO4 To develop basic vocabulary

LO5 To help the learners comprehend and respond in English

LO6 To build confidence in using English to communicate

UNIT – I POETRY (READING AND WRITING SKILLS)

1. Sarojini Naidu- “Indian Weavers”
2. Robert Burns – “My Love is like a Red Red Rose”

UNIT – II SHORT STORIES (READING AND WRITING SKILLS)

1. W. Somerset Maugham – “The Ant and the Grasshopper”
2. Guy De Maupassant – “The Necklace”

UNIT –III GRAMMAR AND VOCABULARY SKILLS

1. Use of Verbs: Verb Grid (Positive, Negative & Question), Regular Verbs, Irregular Verbs & Modal
2. Tenses: Active Voice Tenses & Passive Voice Tenses
3. Use of Nouns: Forms of Personal Pronouns, Use of Nouns as Subject, Object, Complement and Object of the Preposition
4. Sentence Patterns: SV, SVO, SVC, SVA, SVOA, SVIODO
5. Punctuation and Capitalisation
6. Reading Comprehension (5 Anecdotes and 5 Wisdom Stories)

UNIT – IV LISTENING AND SPEAKING SKILLS

1. Listening Practice –Listen and Do exercises: Listening to English songs, simple Indian short stories, homonyms/homophones
2. Pronunciation Practice: Vegetables, Fruits, Flowers, Trees, Spices, Eatables
3. Introducing Oneself
4. Introducing Others

UNIT –V LISTENING AND SPEAKING SKILLS

1. Greetings
2. Making Request
3. Reading Aloud (From the text)
4. Describing a place / a picture (With hints)

COURSE OUTCOMES

Learners will be able to

CO1 Use grammatical structures in meaningful constructions

CO2 Use oral communication for day-to-day activities

- CO3 Use simple sentences for oral and written communication
 CO4 Use punctuation and capitalisation accurately
 CO5 Comprehend what they listen to, and respond to it at the primary level
 CO6 Read and appreciate simple stories and anecdotes

TEXT BOOKS

- *SPARK I: An Integrated Course Text for General English*, Department of English, St. Xavier's College (Autonomous), Palayamkottai.
- *Intermediate English Grammar* by Raymond Murphy. Cambridge University Press, 2019.

REFERENCE

- *Spoken English: A Foundation Course* by Kamalesh Sadanand and Susheela Punitha, Orient Longman Private Limited, 2008, ISBN 81-250-3467-6.
- *Spoken English for You* by G. Radhakrishna Pillai and K. Rajeevan, Emerald Publishers, 1987, ISBN 978-81-7966-023-2.
- *Better English Pronunciation* by Thakur KBP Sinha, Vijay Nicole Imprints, 2005, ISBN 81-8209-068-7.
- Bhatnagar, R. P. *English for Competitive Examinations*, India: Trinity Press, 2017
- Sinha, R. P. *Current English Grammar and Usage with Composition*. India: Oxford University Press, 2018.

QUESTION PATTERN

SEMESTER EXAMINATION	Marks
PART A - MCQs (7 from each of the Units I, II & 6 from Unit III)	20
PART B - Compulsory - Units I, II & III (5X3)	15
• Unit I - Short answer/ ERC • Unit II - Short answer/ ERC • Verb Grid (be verb) • Verb Grid (possessive) • Verb Grid (action/passive)	
PART C – Compulsory- Unit III (5x7)	35
• Use of Verbs: Verb Grid • Tenses • Use of Nouns • Sentence Patterns • Punctuation and Capitalisation	
PART D - (3x10)	30
• Essay (250 words) Unit I (Either/or) • Essay (250 words) Unit II (Either/or) • Compulsory -Comprehension	
TOTAL	100

INTERNAL EXAMINATIONS Marks

PART A - MCQs 6X1(2 from each of the Units I, II & III)	6
PART B- Compulsory - one question from each of the Units I, II & III 1 Short answer/ 1 ERC / Grammar (3X3)	9
PART C –Compulsory (Unit III) (3X5)	15
PART D- (2X10) • Essay - Either /or Units – I & II 250 words • Compulsory- Grammar/ Composition	20
TOTAL	50

INTERNAL ASSESSMENTS Marks

Skill-based activity - 2x15 30
(Seminar presentation/Spoken English/Critical Podcast/ Video Essay/ Creating a 5–8 slide on a topic/
Composing a poem/ Submitting a relevant photo with description, etc.)
TOTAL 30

Viva Voce Components: 100 Marks

1. Introducing Oneself / Others (25)
2. Reading Aloud (From the text) (25)
3. Describing a place / a picture (With hints) (25)
4. Conversation with the examiner (Greetings/ Making Request) (25)

COURSE II

Hours: 6

Course Code: 26UGEL22

Credits: 3

LEARNING OUTCOMES

LO1 To provide an ambience to acquire the basic language skills, listening, speaking, reading, and writing

LO2 To make the learners frame questions and answers

LO3 To enable them to involve in basic communicative activities

LO4 To develop a comprehensible use of adjectives

LO5 To help the learners comprehend and respond in English

LO6 To develop oral communication for day-to-day activities

UNIT – I POETRY (READING AND WRITING SKILLS)

1. Rabindranath Tagore – “Leave this Chanting and Singing”
2. Gerard Manley Hopkins- “God’s Grandeur”

UNIT – II SHORT STORIES (READING AND WRITING SKILLS)

1. Sister Nivedita - “The Judgement Seat of Vikramaditya”
2. Stephen Leacock - “With the Photographer”

UNIT – III GRAMMAR AND VOCABULARY SKILLS

1. Use of Adjectives
2. Use of Conditional ‘If’ (Probable & Improbable Conditions)
3. Use of ‘who’, ‘which’, ‘where’ & ‘that’ in combining sentences
4. Framing questions – ‘Wh –’ & ‘Yes’ / ‘No’ Questions
5. Prefixes and Suffixes
6. Developing Hints into a Paragraph

UNIT – IV LISTENING AND SPEAKING SKILLS

1. Listening Practice – Listen and Do exercises: Sound patterns and words ending ‘s’ endings and ‘d’ endings, and Listening to English songs and Indian short stories
2. Pronunciation Practice: Medical Terms/ Names of Ailments/People /Currency/ Countries and Capitals/World-famous Cities
3. Making Requests
4. Offering help

UNIT – V LISTENING AND SPEAKING SKILLS

1. Seeking Permission
2. Expressing Gratitude
3. Reading Aloud (from the Prescribed Text)
4. Narrating a Story (from Hints)

COURSE OUTCOMES

Learners will be able to

CO1 Use grammatical structures in meaningful contexts

CO2 Use oral communication for day-to-day activities

CO3 Use simple sentences for oral and written communication

CO4 Use enhanced vocabulary

CO5 Comprehend and respond to what they listen to at the secondary level

CO6 Read and appreciate simple pieces of fiction and non-fiction

TEXT BOOKS

- *SPARK II: An Integrated Course Text for General English*, Department of English, St. Xavier's College (Autonomous), Palayamkottai.
- *Intermediate English Grammar* by Raymond Murphy. Cambridge University Press, 2019.

REFERENCE

- *Spoken English: A Foundation Course* by Kamalesh Sadanand and Susheela Punitha, Orient Longman Private Limited, 2008, ISBN 81-250-3467-6.
- *Spoken English for You* by G. Radhakrishna Pillai and K. Rajeevan, Emerald Publishers, 1987, ISBN 978-81-7966-023-.
- *Better English Pronunciation* by Thakur KBP Sinha, Vijay Nicole Imprints, 2005, ISBN 81-8209-068-7.
- Bhatnagar, R. P. *English for Competitive Examinations*, India: Trinity Press, 2017.
- Sinha, R. P. *Current English Grammar and Usage with Composition*. India: Oxford University Press, 2018.

QUESTION PATTERN

SEMESTER EXAMINATION

Marks

PART A – MCQs (7 from each of the Units I, II, and 6 from Unit III)	20
PART B – Compulsory Units I, II & III - Short answers/ ERC/Grammar (5X3) • Unit I - Short answer/ ERC • Unit II - Short answer/ ERC • Prefixes • Suffixes • Adjectives	15
PART C – Compulsory Unit III (5x7) • Adjectives • Use of 'who' & 'where' in combining sentences • Use of 'which' & 'that' in combining sentences • Framing questions – 'Wh –' & 'Yes' / 'No' Questions • Developing Hints into a Paragraph	35
PART D – (3x10) • Essay (250 words) Unit I (Either/or) • Essay (250 words) Unit II (Either/or) • Compulsory -Use of Conditional 'If' (Probable & Improbable Conditions)	30

TOTAL

100

INTERNAL EXAMINATIONS		Marks
PART A - MCQs 6X1(2 from each of the Units I, II & Unit III)		6
PART B- Compulsory-one question from each of the Units I, II & III		
1 Short answer/ 1 ERC/ Grammar (3X3)		9
PART C –Compulsory (Unit III) (3X5)		15
PART D – (2X10)		20
• Essay - Either /or Units – I & II 250 words • Compulsory - Grammar/ Composition		
TOTAL		50

INTERNAL ASSESSMENTS Marks

Skill based activity – 2x15 30
 (Seminar presentation/Spoken English/Critical Podcast/ Video Essay/ Creating a 5–8 slide on a topic/
 Composing a poem/ Submitting a relevant photo with description, etc.)
TOTAL 30

Viva-Voce Components: 100 Marks

1. Pronunciation: Medical Terms/ Names of Ailments/People /Currency/ Countries and Capitals/
World famous Cities (25)
2. Conversation: Making Requests/Offering help/Seeking Permission /Expressing Gratitude (25)
3. Reading Aloud (from the Prescribed Text) (25)
4. Narrating a Story (from Hints) (25)

COURSE III

Hours: 6

Course Code: 26UGEL13, 26UGEL33

Credits: 3

LEARNING OUTCOMES

LO1 To involve the learners in reading and interpreting English in poetry and prose (Fiction and Non-fiction)

LO2 To enable learners to write about prescribed literature

LO3 To help learners learn the appropriate use of articles, prepositions and adverbs

LO4 To help learners develop vocabulary register through homonyms, homophones and homographs

LO5 To facilitate in learners, the ability to create a narration based on hints

LO6 To build confidence in the learners to speak English for specific purposes

UNIT – I POETRY (READING AND WRITING SKILLS)

1. William Shakespeare – “All the World’s a Stage”
2. P. B. Shelley – “Ozymandias”
3. Oliver Goldsmith – “The Village Schoolmaster”

UNIT – II SHORT STORIES/ PROSE (READING AND WRITING SKILLS)

1. O. Henry – “The Gift of the Magi”
2. Katherine Mansfield – “A Cup of Tea”
3. Mark Twain – “A Day at Niagara”

UNIT – III GRAMMAR AND VOCABULARY SKILLS

1. Articles
2. Prepositions
3. Adverbs
4. Spotting Errors (Articles/ Prepositions / Adverbs)
5. Homonyms, Homophones, Homographs
6. Constructing a story using hints

UNIT –IV LISTENING AND SPEAKING SKILLS

1. Listening Practice: Listen and Do exercises: Listening to short passages , short stories (Indian and British) , English songs, *Mind your Language* (Episodes:1-2)
2. Pronunciation Practice : Words related to professions
3. Words generally mispronounced
4. Telephonic Conversation
5. Making Suggestions

UNIT – V LISTENING AND SPEAKING SKILLS

1. Complimenting / Congratulating
2. Expressing Sympathy
3. Reading aloud
4. Describing a picture/ Describing a process
5. Personal Conversation (Habits, Hobbies, Future Plan)

COURSE OUTCOMES

Learners will be able to

CO1 Read and understand English in poetry and prose (Fiction and Non-Fiction)

CO2 Write coherent essays about the prescribed literature

CO3 Use articles, prepositions and adverbs appropriately

CO4 Use homonyms, homophones, and homographs appropriately, ensuring clarity and precision in their spoken and written English

CO5 Create a narration from hints

CO6 Speak English confidently in a descriptive as well as expository style

TEXT BOOKS

- *SPARK III: An Integrated Course Text for General English*, Department of English, St. Xavier's College (Autonomous), Palayamkottai.
- *Intermediate English Grammar* by Raymond Murphy. Cambridge University Press, 2019.

REFERENCE

- *Spoken English: A Foundation Course* by Kamalesh Sadanand and Susheela Punitha, Orient Longman Private Limited, 2008, ISBN 81-250-3467-6.
- *Spoken English for You* by G. Radhakrishna Pillai and K. Rajeevan, Emerald Publishers, 1987, ISBN 978-81-7966-023-2.
- *Better English Pronunciation* by Thakur KBP Sinha, Vijay Nicole Imprints, 2005, ISBN 81-8209-068-7.
- Bhatnagar, R. P. *English for Competitive Examinations*, India: Trinity Press, 2017.
- Sinha, R. P. *Current English Grammar and Usage with Composition*. India: Oxford University Press, 2018.

QUESTION PATTERN

SEMESTER EXAMINATION

Marks

PART A - MCQs (7 from each of the Units I, II, and 6 from Unit III)

20

PART B - Compulsory - Units I, II & III (5X3)

15

- Unit I - Short answer/ ERC
- Unit II - Short answer/ ERC
- Articles
- Prepositions
- Adverbs

PART C – Compulsory - Unit III (5x7)

35

- Articles
- Prepositions
- Adverbs
- Homonyms, Homophones, Homographs
- Constructing a story using hints

PART D - (3x10)

30

- Essay (250 words) Unit I (Either/or)

- Essay (250 words) Unit II (Either/or)
- Compulsory -Spotting Errors (Articles/ Prepositions / Adverbs)

TOTAL 100

INTERNAL EXAMINATIONS

Marks

PART A - MCQs 6X1(2 from each of the Units I, II &Unit III)

6

PART B- Compulsory one question from each of the Units I, II & III

1 Short answer/ 1 ERC/ Grammar (3X3)

9

PART C – Compulsory- (Unit III) (3X5)

15

PART D- (2X10)

20

- Essay - Either /or Units – I & II 250 words

- Compulsory- Grammar/ Composition

TOTAL 50

INTERNAL ASSESSMENTS Marks

Skill based activity – 2x15 30

(Seminar presentation/Spoken English/Critical Podcast/ Video Essay/ Creating a 5–8 slide on a topic/
Composing a poem/ Submitting a relevant photo with description etc.)

TOTAL 30

Viva-Voce Components: 100 Marks

1. Pronunciation: Words related to professions /Words generally mispronounced (25)
2. Conversation: Making Suggestions /Complimenting / Congratulating /Expressing Sympathy /
Habits, Hobbies, Future Plan (25)
3. Reading aloud (25)
4. Describing a picture/ Describing a process (25)

COURSE IV

Hours: 6

Course Code: 26UGEL14, 26UGEL24, 26UGEL44

Credits: 3

LEARNING OUTCOMES

LO1 To make learners read and understand intermediate level poetry and prose

LO2 To encourage learners to continue building a vocabulary register as the students interpret, speak, and write about prescribed literature

LO3 To make learners use tenses and concord in meaningful constructions

LO4 To enable learners to employ appropriate synonyms and antonyms in written and spoken communication

LO5 To help learners learn the different types of letters, resumes and the art of composing e-mails and the use of appropriate language

LO6 To build confidence in students to speak English naturally and clearly, moving from basic sounds and reading practice to advanced conversations about books and real-world issues

UNIT – I POETRY (READING AND WRITING SKILLS)

1. John Milton – “On His Blindness”
2. Lewis Carroll – “The Walrus and the Carpenter”
3. Rudyard Kipling – “If”

UNIT – II SHORT STORIES /DRAMA (READING AND WRITING SKILLS)

1. Rabindranath Tagore – “The Postmaster”
2. Ernest Hemingway– “Cat in the Rain”
3. Fritz Karinthy – “The Refund”

UNIT – III GRAMMAR AND VOCABULARY SKILLS

1. Tenses
2. Concord
3. Spotting Errors (Tenses and Concord)
4. Describing a thing / a place / an event
5. Synonyms and Antonyms (Bhatnagar)
6. Letter Writing (Formal & Informal), Resumes and Composing emails

UNIT – IV LISTENING AND SPEAKING SKILLS

1. Listening Practice: Listen and Do exercises: Listening to conversations, announcements, interviews of popular personalities, and *Mind your Language* (Episodes: 3-4)
2. Complaining
3. Apologising
4. Offering encouragement and responding to them
5. Warning Someone

UNIT –V LISTENING AND SPEAKING SKILLS

1. Pronunciation Practice: Vowels and Diphthongs & Strong and Weak forms of words
2. Reading Aloud
3. Issue-based conversation
4. Speaking about prescribed literature

5. Speaking on a given topic

COURSE OUTCOMES

Learners will be able to

CO1 Read, interpret, and analyse intermediate level of English in poetry, prose, and fiction

CO2 Write coherent essays on prescribed literature

CO3 Use the various tense forms accurately with proper subject - verb agreement

CO4 Compose logically organized descriptive paragraphs, formal letters, professional resumes and emails

CO5 Use synonyms and antonyms appropriately, allowing for more expressive, varied, and accurate communication

CO6 Speak English fluently with confidence in an expository as well as analytical style

TEXTBOOKS

- *SPARK IV: An Integrated Course Text for General English*, Department of English, St. Xavier's College (Autonomous), Palayamkottai.
- *Intermediate English Grammar* by Raymond Murphy. Cambridge University Press, 1999.

REFERENCE

- *Spoken English: A Foundation Course* by Kamalesh Sadanand and Susheela Punitha, Orient Longman Private Limited, 2008, ISBN 81-250-3467-6.
- *Spoken English for You* by G. Radhakrishna Pillai and K. Rajeevan, Emerald Publishers, 1987, ISBN 978-81-7966-023-2.
- *Better English Pronunciation* by Thakur KBP Sinha, Vijay Nicole Imprints, 2005, ISBN 81-8209-068-7.
- Bhatnagar, R. P. *English for Competitive Examinations*. India: Trinity Press, 2017.
- Sinha, R. P. *Current English Grammar and Usage with Composition*. India: Oxford University Press, 2018.

QUESTION PATTERN

SEMESTER EXAMINATION	Marks
PART A - MCQs (7 from each of the Units I, II, and 6 from Unit III)	20
PART B- Compulsory- Units I, II & III (5X3)	15
• Unit I - Short answers/ ERC • Unit II - Short answers/ ERC • Tenses • Concord • Spotting Errors (Tenses and Concord)	
PART C – Compulsory- Unit III (5x7)	35
• Tenses • Concord • Spotting Errors (Tenses and Concord)	

- Describing a thing / a place / an event
- Synonyms(4) and Antonyms(3)

PART D - (3x10) 30

- Essay (250 words) Unit I (Either/or)
- Essay (250 words) Unit II (Either/or)
- Compulsory- Letter Writing/Resumes/ Composing emails

TOTAL 100

INTERNAL EXAMINATIONS

Marks

PART A - MCQs 6X1(2 from each of the Units I, II & Unit III)

6

PART B- Compulsory one question from each of the Units I, II & III

1 Short answers/ 1 ERC/ Grammar (3X3)

9

PART C –Compulsory (Unit III) (3X5)

15

PART D- (2X10)

20

- Essay - Either /or Units – I & II 250 words
- Compulsory- Grammar/ Letter writing/ Composition

TOTAL 50

INTERNAL ASSESSMENTS Marks

Skill based activity – 2x15

30

(Seminar presentation/Spoken English/Critical Podcast/ Video Essay/ Creating a 5–8 slide on a topic/ Composing a poem/ Submitting a relevant photo with description, etc.)

TOTAL 30

Viva-Voce Components: 100 Marks

1. Reading Aloud (25)
2. Issue-based conversation (25)
3. Speaking about prescribed literature (25)
4. Speaking on a given topic (25)

COURSE V

Hours: 6

Course Code: 26UGEL25, 26UGEL35

Credits: 3

LEARNING OUTCOMES

LO1 To introduce learners to the intermediate level of English through prescribed literature

LO2 To make learners read, interpret, and write about prescribed pieces of literature

LO3 To make learners learn complex language structures, the appropriate use of conjunctions and voice forms

LO4 To help learners become familiar with the accurate use of language with an awareness of common errors in language use

LO5 To make learners understand the logical sequence of ideas within a paragraph

LO6 To make learners speak English fluently with confidence, argue both sides of a topic with confidence, and discuss difficult modern issues with logic and ease

UNIT – I POETRY (READING AND WRITING SKILLS)

1. William Wordsworth – “The Solitary Reaper”
2. H.W. Longfellow – “A Slave’s Dream”
3. Robert Frost – “The Road Not Taken”

UNIT – II PROSE/ DRAMA (READING AND WRITING SKILLS)

1. Oscar Wilde - “The Model Millionaire”
2. A. A. Milne – “The Boy Comes Home”
3. Francis Bacon – “Of Friendship”

UNIT – III GRAMMAR SKILLS

1. Synthesis and Transformation of Sentences (Simple, Compound & Complex)
2. Conjunctions
3. Active – Passive Voice
4. Spotting Errors (Simple, Compound & Complex sentences/ Conjunctions/ Active – Passive Voice)

UNIT – IV ADVANCED WRITING/ VOCABULARY AND ANALYTICAL SKILLS

1. Expansion of Ideas / Proverbs
2. Dialogue Writing
3. Words often confused (Bhatnagar)
4. Sentence Arrangement

UNIT – V LISTENING AND SPEAKING SKILLS

1. Listening Practice - Listen and Do exercises: Listening to news reading, directions, stories in American English, and watching movies
2. Pronouncing Words ending with common Inflections (like – ‘logy’ ‘- graphy’ ‘-ation’ etc.), Pronouncing ‘R’ in different positions

3. Reading and Interpreting
4. Turncoat
5. Expand a Proverb
6. Issue-Based Conversation

COURSE OUTCOMES

Learners will be able to

CO1 Read, interpret and analyse poetic English to understand open possibility of inferences

CO2 Write logically planned essays to address specific questions concerning prescribed literature

CO3 Understand the forms and structural differences in different types of sentences and their specific purposes

CO4 Use complex language structures with appropriate conjunctions and voice forms

CO5 Use vocabulary actively with an awareness of words often confused

CO6 Use Spoken English fluently with confidence and accuracy for specific purposes such as analytical, argumentative, and expository talks

TEXT BOOKS

- *SPARK V: An Integrated Course Text for General English*, Department of English, St. Xavier's College (Autonomous), Palayamkottai.
- *Intermediate English Grammar* by Raymond Murphy. Cambridge University Press, 1999.

REFERENCE

- *Spoken English: A Foundation Course* by Kamalesh Sadanand and Susheela Punitha, Orient Longman Private Limited, 2008, ISBN 81-250-3467-6.
- *Spoken English for You* by G. Radhakrishna Pillai and K. Rajeevan, Emerald Publishers, 1987, ISBN 978-81-7966-023-2.
- *Better English Pronunciation* by Thakur KBP Sinha, Vijay Nicole Imprints, 2005, ISBN 81-8209-068-7.
- Bhatnagar, R. P. *English for Competitive Examinations*. India: Trinity Press, 2017.
- Sinha, R. P. *Current English Grammar and Usage with Composition*. India: Oxford University Press, 2018.

QUESTION PATTERN

SEMESTER EXAMINATION

Marks

PART A - MCQs (8 from Unit I, 7 from Unit II, and 5 from Unit III)	20
PART B- Compulsory Units I & II – 3 Short answers/ 2 ERC (5X3)	15
PART C – Compulsory - Unit III & IV (5x7)	35

- Synthesis and Transformation of Sentences (Simple, Compound & Complex)
- Conjunctions
- Active – Passive Voice
- Expansion of Ideas / Proverbs

- Words often confused

PART D - (3x10)	30
• Essay (250 words) Unit I & II (Either/or) • a) Dialogue Writing (5) b) Sentence Arrangement (5) • Compulsory -Spotting Errors (Simple, Compound & Complex sentences/ Conjunctions/ Active – Passive Voice)	
TOTAL	100

INTERNAL EXAMINATIONS Marks

PART A - MCQs 6X1(1 from Units I & II , 5 from Units III & IV)	6
PART B- Units I & II – 2 Short answers/ 1 ERC (3X3)	9
PART C –Compulsory (Units III & IV) (3X5)	15
PART D- (2X10)	20
• Essay - Either /or Units – I & II 250 words • Compulsory -Grammar/ Letter writing/ Composition	
TOTAL	50

INTERNAL ASSESSMENTS Marks

Skill based activity – 2x15	30
(Seminar presentation/Spoken English/Critical Podcast/ Video Essay/ Creating a 5–8 slide on a topic/ Composing a poem/ Submitting a relevant photo with description, etc.)	
TOTAL	30

Viva-Voce Components: 100 Marks

1. Reading and Interpreting (25)
2. Turncoat (25)
3. Expand a Proverb (25)
4. Issue-Based Conversation (25)

COURSE VI

Hours: 6

Course Code: 26UGEL36, 26UGEL46

Credits: 3

LEARNING OUTCOMES

LO1 To introduce learners to the advanced level of poetic English through representative pieces, to make them understand the oblique use of language

LO2 To make them read and understand classical English novel

LO3 To familiarise them with advanced language structures and the use of idioms and phrasal verbs

LO4 To make them understand and use different degrees for comparison, and use language for reporting speech

LO5 To acquaint them with the skills of expanding or developing, condensing ideas and responding to advertisements

LO6 To make them organize their professional knowledge into clear speeches, and discuss important world issues with confidence and logic

UNIT –I POETRY (READING AND WRITING SKILLS)

1. John Keats – “La Belle Dame Sans Merci”
2. John Donne – “Death Be Not Proud”
3. Walt Whitman – “O Captain! My Captain!”

UNIT - II FICTION (READING AND WRITING SKILLS)

George Orwell –*Animal Farm*

UNIT – III GRAMMAR AND VOCABULARY SKILLS

1. Degrees of Comparison
2. Direct- Indirect Speech
3. Spotting Errors/Correcting Errors (Comprehensive)
4. Idioms and Phrasal Verbs (Bhatnagar)

UNIT – IV ADVANCED WRITING AND ANALYTICAL SKILLS

1. Précis Writing
2. Essay Writing
3. Responding to the given advertisement
4. Cloze Test

UNIT – V LISTENING AND SPEAKING SKILLS

1. Listening Practice - Listen and Do exercises: Listening to famous speeches, poetry renditions, sports commentary, and TED Talks
2. Pronunciation Practice: Words generally often mispronounced
3. Reading and Interpretation
4. Issue-Based Conversation
5. Public speaking on a subject topic
6. Extempore

COURSE OUTCOMES

Learners will be able to

CO1 Read and interpret the oblique language of poetry and write appreciative essays on the prescribed literature

CO2 Read, interpret, and write analytical essays about prescribed literature

CO3 Use advanced grammar structures to report speech and use the three degrees of comparison for intended emphasis

CO4 Use advanced nuances of language such as idioms and phrasal verbs

CO5 Write reflective, descriptive, expository and imaginative essays with appropriate content, and condense material to a précis

CO6 Use English fluently and accurately for public speaking, extempore and other specific purposes

TEXT BOOKS

- *SPARK VI: An Integrated Course Text for General English*, Department of English, St. Xavier's College (Autonomous), Palayamkottai.
- Orwell, George. *Animal Farm*. Maple Classics, 2013.
- *Intermediate English Grammar* by Raymond Murphy. Cambridge University Press, 1999.

REFERENCE

- *Spoken English: A Foundation Course* by Kamalesh Sadanand and Susheela Punitha, Orient Longman Private Limited, 2008, ISBN 81-250-3467-6.
- *Spoken English for You* by G. Radhakrishna Pillai and K. Rajeevan, Emerald Publishers, 1987, ISBN 978-81-7966-023-2.
- *Better English Pronunciation* by Thakur KBP Sinha, Vijay Nicole Imprints, 2005, ISBN 81-8209-068-7.
- Bhatnagar, R. P. *English for Competitive Examinations*. India: Trinity Press, 2017.
- Sinha, R. P. *Current English Grammar and Usage with Composition*. India: Oxford University Press, 2018.

QUESTION PATTERN

SEMESTER EXAMINATION

Marks

PART A - MCQs (7 from Unit I, 8 from Unit II, and 5 from Unit III)	20
PART B – Compulsory -2 ERC from Unit I / 3 Short answers from Units II	15
PART C – Compulsory- Unit III & IV (5x7)	35
• Degrees of Comparison • Direct- Indirect Speech • Précis Writing • Essay Writing • Responding to the given advertisement	
PART D - (3x10)	30
• Essay (250 words) Unit I & II (Either/or) • Compulsory- Spotting Errors (5) Correcting Errors(5) (Comprehensive) • Compulsory- a) Idioms and Phrasal verbs (5) b) Cloze Test (5)	

TOTAL **100**

INTERNAL EXAMINATIONS

Marks

PART A - MCQs 6X1(1 from Units – I & II , 5 from Units III)

6

PART B- Compulsory Units I & II

1 ERC from Unit I /2 Short answers from Units I & II (3X3)

9

PART C –Compulsory (Unit III & IV) (3X5)

15

PART D- (2X10)

20

- Essay - Either /or Units – I & II 250 words
- Compulsory- Grammar/ Composition

TOTAL **50**

INTERNAL ASSESSMENTS Marks

Skill based activity - 2x15 30

(Seminar presentation/Spoken English/Critical Podcast/ Video Essay/ Creating a 5–8 slide on a topic/
Composing a poem/ Submitting a relevant photo with description, etc.)

TOTAL 30

Viva-Voce Components: 100 Marks

1. Reading and Interpretation (25)
2. Issue Based Conversation (25)
3. Public speaking on subject related topic (25)
4. Extempore (25)

COURSE – VII

Hours: 6

Course Code: 26UGEL47

Credits: 3

LEARNING OBJECTIVES

LO1 To facilitate learners' reading advanced English through representative pieces of Literature

LO2 To help learners infer and interpret prescribed literature and write coherent, analytical essays

LO3 To help learners analyse a selected dramatic scene to identify how dialogue and stage directions reveal character motivation and advance the central conflict

LO4 To encourage learners in using English skillfully and creatively to discuss, brainstorm or debate a topic, through active practice

LO5 To equip learners with the soft skills necessary for employability

LO6 To help learners to produce structured reports, engaging blogs and original creative pieces by adapting their writing style to suit different purposes and audiences

UNIT –I DRAMA (READING AND WRITING SKILLS)

1. *Julius Caesar* – Act III, Scene I
2. *Othello* – Act V, Scene II
3. *Hamlet*- Act I, Scene III

UNIT –II FICTIONS (READING AND WRITING SKILLS)

H. G. Wells –*Time Machine*

UNIT –III SOFT SKILLS AND SPEAKING SKILLS (Theory and Practice)

1. Interview Skills*
2. Group Discussion*
3. Debate*
4. Interpersonal Skills*

(* Included for Spoken English Viva Voce and Internal Assessments)

UNIT –IV SOFT SKILLS

1. Time Management
2. Problem-Solving Techniques
3. Teamwork
4. Leadership

UNIT –V ADVANCED WRITING SKILLS

1. Report Writing
2. Blog writing
3. Creative Writing (poem/short story)

COURSE OUTCOMES

Learners will be able to

CO1 Read and understand advanced forms of English in Literature

CO2 Interpret and write analytical essays on topics concerning prescribed pieces of literature

CO3 Speak English fluently and accurately in professional contexts

CO4 Use English effectively and creatively for interviews, group discussions, etc.

CO5 Behave, react, and handle situations connected to employability, using the acquired knowledge of soft skills

CO6 Demonstrate versatility in written communication by producing structured technical reports, engaging digital content for blogs, and original creative works that employ evocative language and narrative techniques

TEXT BOOKS

- *SPARK VII: An Integrated Course Text for General English*, Department of English, St. Xavier's College (Autonomous), Palayamkottai.
- Wells, H. G. *Time Machine*. Oxford University Press, 2017 Ed.
- Alphonse S. J., Xavier. *We Shall Overcome: A Textbook on Life Coping Skills*. ICRDDCE Publication, 2004.

REFERENCE

- Sijwalii B.S. and Indu Sijwali, *General Interview Skills for Both Government and Private Sectors*. Arihant Publications, 2023.
- Soman, Ashok M, *Graduates and Postgraduates Entering the Corporate World*. Himalaya Publishing House, 2023.
- Patnaik, Priyadarshi, *Communication, Logical Thinking, and Public Speaking*. Cambridge University Press, India, 2016.

QUESTION PATTERN

SEMESTER EXAMINATION

Marks

PART A - MCQs (5 from each of the Units I, II, III & IV)

20

PART B- Compulsory - (5X3)

15

ERC from Unit I/ Short answers from Units II, III & IV

- Unit I
- Unit II
- Units III
- Units IV
- Units III/ IV

PART C –Compulsory- Units I, II, III, IV & V (5x7)

35

- Short Essay (200 words)/ Annotation Unit I
- Short Essay Unit II (200 words)
- Short Essay Unit III (200 words)
- Short Essay Unit IV (200 words)
- Creative Writing (poem/short story)

PART D - (3x10)

30

- Essay (250 words) Unit I & II (Either/or)
- Compulsory -Report writing (250 words)
- Compulsory - Blog writing (250 words)

TOTAL

100

INTERNAL EXAMINATIONS		Marks
PART A - MCQs 6X1 (1 from Units I & II , 5 from Units III & IV)		6
PART B- Units I & II – 2 Short answers from Units I & II/ 1 ERC from Unit I (3X3)		9
PART C –Compulsory (Unit III & IV) (3X5)		15
PART D- (2X10)		20
1. Essay - Either /or Units – I & II 250 words		
2. Compulsory - Report writing / Blog writing/ Creative Writing (Unit V)		
TOTAL		50

INTERNAL ASSESSMENTS Marks

Skill based activity – 2x15 30
 (Seminar presentation/ Video Essay/ Creating a 5–8 slide on a topic/ writing a poem, short story/Mock Interview /Group Discussion/Debate etc.)

TOTAL 30

Viva-Voce Components: 100 Marks

1. Interview Skills: Mock Interview (25)
2. Group Discussion (25)
3. Debate (25)
4. Interpersonal Skills: Conversation (25)

DEPARTMENT OF HUMAN EXCELLENCE
St. Xavier's College (Autonomous), Palayamkottai
Courses Offered

Semester	Category	Course Code	Course Title
I	FC	26UHER11/ 26UHEE11	Religion: Catholic Doctrine / Ethics
II	SEC3	26UHEI21	Integrated Personality Development
III	SEC4	26UHEL31	Life Coping and Entrepreneurial Skills Management
IV	EVS	26UEVS41	Environmental Studies
V	VE	26UVEH51	Human Rights and Social Analysis

NME

Semester	Category	Course Code	Course Title
I	Library	26ULBN11	Foundations of Library Science
I	XRF	26UXRN11	Traditional Knowledge of Indian Medicinal Systems
II	Library	26ULBN21	Information Resources
II	STAND	25USTN21	Rural Development Studies
II	XRF	26UXRN21	Indian Traditional Medicinal Foods
III	XRF	26UXRN31	Food Microbiology
IV	XRF	26UXRN41	Herbal Resources and Their Conservation
IV	MAX Forum	26UMXN41	Society, Economy and Politics in Contemporary India

Common Question Pattern

Internal Test

Part A	Answer ALL the questions in one or two lines	5 x 2 = 10
Part B	Answer ALL the questions, each in a paragraph	3 x 5 = 15
Part C	Write an essay on the following	1 x 10 = 10

Semester Exam

Part A	Answer ALL the questions in one or two lines	10 x 3 = 30
Part B	Answer ALL the questions, each in a paragraph	5 x 8 = 40
Part C	Write an essay on each the following	2 x 15 = 30

RELIGION: CATHOLIC DOCTRINE
(26UHER11)

SEMESTER:I	VE	HOURS:2	CREDITS: 2	TOTALHOURS:30
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Course Outcomes:

Upon completion of the course the students will be able to

- CO1:** Recite the Sacraments (K1)
- CO2:** Identify the challenges of the present day church (K1)
- CO3:** Associate Old and New testaments of the bible (K2)
- CO4:** Explain the Church history (K2)
- CO5:** Discuss the Marian worship (K2)
- CO6:** Summarize the catholic social teachings (K2)

Unit I: Introduction to Bible

(6 Hours)

Bible as a Word of God, its inspiration, the Canon - Old and New Testaments and their interconnectedness - Traditional and modern interpretations

Unit II: Jesus and His Teachings

(6 Hours)

Parables of Jesus – Important Teachings of Jesus: Kingdom of God – God’s Mercy – Trust in Providence – Two Commandments of love – Be committed – No condemnation of wealth – No condemnation of sinners – Love of enemies; Prayer: Jesus’ Prayer – Types of Prayer; Jesus the Healer – Types of Miracles of Jesus – Jesus the Liberator

Unit III: A Brief History of the Church & Changes and Challenges of the Modern World

(6 Hours)

The beginnings of the Church - Medieval period and its challenges - The importance of the Second Vatican Council and their decrees – Synodality; Casteism – Ecumenical unity and Inter Religious harmony – Digital world and Religious Faith - Catholic Social Teachings

Unit IV: Introduction to the Sacraments and Trinity

(6 Hours)

The origin of the seven sacraments - Their practices and meanings – Trinity: The Father – The Son and the Holy Spirit

Unit V: Introduction to Mariology

(6 Hours)

Mary, Mother of God and Jesus - Mary, our Mother and in the Gospels - Mariology in the history of the Church – Mary as a Prophet of revolution

REFERENCES:

- “Faith Matters” material prepared by the Department of Human Excellence.
- Second Vatican Council Documents.

ETHICS
(26UHEE11)

SEMESTER:I	VE	HOURS:2	CREDITS: 2	TOTALHOURS:30
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Course Outcomes

After completing this course, the learner will be able to know/understand: Cognitive Level (K-Level)

- CO-1** Describe the Ethical foundations and human values (K2)
- CO-2** Identify Ethics and its relationship with religions (K1)
- CO-3** Evaluate the personal ethical codes in day-to-day life (K5)
- CO-4** Associate ethics in family and society (K3)
- CO-5** Apply moral, professional, and personal ethics in academic, workplace, and daily life situations. (K3)
- CO-6** Analyse the modern ethical issue (K4)

Unit-I Introduction to Ethics and Human Interface

(6 Hours)

Meaning, Nature and Scope of Ethics-Challenges and Importance of ethics-Basic ethical foundations-Human values: Tolerance, Compassion, Rationality, Objectivity. Scientific Attitude, Integrity, Respecting Conscience and Empathy. Mahatma Gandhi and Ethical practices: Non violence, Truth, Non-hatred and love for all, concern for the poorest, objectivity nationalism and Education for man making relation between ends and means.

Unit-II Ethics and Major religions and civilizations (6 Hours)

Ethics and its relationship with Religions- Ten Commandments: Christianity and Judaism tradition-Hinduism- Dharma and Mokhya (out of 4 goals of life Dharma, Artha, Kama and Mokhya),concept of Purusartha, Nisakama Karma (work without attachment to results), Concept of Basudev Kutumba and Peace(Whole including all animals, plants, inanimate beings and human form one world)-Islamic Ethics: Justice, Goodness, Kindness, Forgiveness, Honesty, Purity and piety- Buddhism - Arya AstangikaMarg: Right view, Thought , Speed, Action, Livelihood, Efforts, Attention and Concentration.

Unit-III Personal and Professional ethics (6 Hours)

Moral percepts -Dynamics of personal morality-Moral Conscience-Ethical aspects of Thirukural-Evils of corruption- Professional ethics- Nature, Characteristics, scope, type. Professional Value: Trusteeship, Inclusiveness, Commitment, Sustainability, Accountability, Transparency, Impartiality.

Unit-IV Governance, Family and Social Ethics (6 Hours)

Concept of Good Governance-Principles: Transparency, Accountability, Rule of Law-Ethical Leadership and Public Responsibility-Corruption and Integrity in Public Life-Role of Family in ethical formulations-Respecting persons-Peace and Justice-Human Duties-Respecting Persons and Human Dignity-Equality, Justice and Fairness -Peace, Non-violence and Social Harmony-Tolerance, Pluralism and Social Inclusion.

Unit- V Judicious Use of Technology (6 Hours)

Judicious use of Mobile Phones, Electrical machines, Plastics, Television, Computers and their harmful effects. Ethics and Use of Digital Technology: Cyber ethics-, Ethics of social media: WhatsApp, Face book, Twitter and others.

Recommended Books/e-resources:

- R.R. Gaur, R Sangal, G.P. Bagaria (2009): A Foundation Course in Human Values and Professional Ethics, Excel Books.
- D.R. Kiran (2014) Professional Ethics and Human Values, McGraw Hill Education (India).
- Vivian L Vignoles (2017): Identity: Personal and Social, Chapter to appear in Oxford Handbook of Personality and Social Psychology (2nded.), edited by Kay Deaux and Mark Snyder.
- https://cdn.visionias.in/value_added_material/3b896-ethics.pdf

- Sargolzaei, E., & Nikbakht, M. (2017). The Ethical and Social Issues of Information Technology: A Case Study. *International Journal of Advanced Computer Science and Applications*, 8(10), 138–146. <https://doi.org/10.14569/ijacsa.2017.081019>
- Mirghaderi, L., Sziron, M., & Hildt, E. (2023). Ethics and Transparency Issues in Digital Platforms: An Overview. *AI (Switzerland)*, 4(4), 831–843. <https://doi.org/10.3390/ai4040042>
- Müller, V. C. (2022). The History of Digital Ethics. *Digital Dreams Have Become Nightmares: What We Must Do*. <https://doi.org/10.1145/3640479.3640499>
- Course Material Prepared by Department of Human Excellence.

INTEGRATED PERSONALITY DEVELOPMENT
(26UHEI21)

SEMESTER: II	SEC3	HOURS: 2	CREDITS: 2	TOTAL HOURS: 30
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Course Outcomes:

After completing this course, students will be able to:

CO1: Analyze individual personality traits, habits, and attitudes by utilizing self-awareness frameworks such as SWOC and the Johari Window. (K4)

CO2: Formulate actionable plans to build self-confidence, a positive mindset, and healthy self-esteem for continuous personal growth. (K6)

CO3: Implement self-management techniques, including mindfulness, yoga, and distraction control, to regulate stress and improve discipline. (K3)

CO4: Demonstrate effective interpersonal skills, including rapport building, assertiveness, and conflict management, within group discussions and team environments. (K3)

CO5: Design a systematic roadmap of realistic personal and academic goals using structured goal-setting methodologies. (K6)

CO6: Integrate ethical values, social responsibility, and gender sensitivity into professional conduct and real-life decision-making. (K4)

UNIT-I: Self-Knowledge

(6 Hours)

Exploring Habits, Attitudes, Self Awareness – Self introspection - SWOC analysis – Johari Window’s Self identity. Enhancing one’s Self image, Self -Esteem, Building self Confidence and Positive Mind Set.

UNIT-II: Self Management

(6 Hours)

Understanding of One’s Life Story- Focusing on Internal Narratives – Self-Talk, Self-Discipline- Managing Change, -Adaptation to change, Managing Distractions, Yoga and Mindfulness -Overcoming Inferiority Complex

UNIT-III: Personal Competence and Goal Setting

(6 Hours)

Developing Rapport - Giving and Receiving Constructive Feedback - Assertiveness and Conflict Management Skills - Group Discussion Skills –Goal Setting.

UNIT-IV: Personality Development

(6 Hours)

Recognizing the growth in different dimension of Holistic and Integrated Personality Development-Ethical Behavior-Gender Sensitivity and Respect- Civic Responsibility-Social Media Responsibility

UNIT-V: Emotional Well-Being

(6 Hours)

Meaning -Types of Emotions- Expressing Emotions- Managing Difficult Emotions -Self-Control-Healthy Relationships- Building Resilience & Coping Skills - -Mental Health Awareness.

Reference Books:

1. Dr.Xavier Alphonse S.J ,We Shall Overcome, ICRDEC Publications,Chennai,2004.
2. Harold R Wallace and L. Ann Masters, Personality Development South- Western Cengage Learning India PL,NewDelhi,2006.
3. Course Material Prepared by Department of Human Excellence.

**LIFE COPING AND ENTREPRENEURIAL SKILLS MANAGEMENT
(26UHEL31)**

SEMESTER:III	SEC 4	HOURS:2	CREDITS:2	TOTAL HOURS:30
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Course Outcomes:

After completion of the Course, the students will be able to

- CO1:** Explain holistic health including physical, mental, and social wellbeing. (K2)
- CO2:** Apply healthy lifestyle practices including nutrition, hygiene, and digital wellbeing. (K3)
- CO3:** Analyze social and professional situations using empathy and ethical reasoning. (K4)
- CO4:** Apply structured decision-making and problem-solving skills in real-life situations. (K3)
- CO5:** Demonstrate coping strategies for stress, crisis, and uncertainty. (K3)
- CO6:** Evaluate addiction risks and design strategies for a healthy lifestyle. (K5)

Unit I: Holistic Health & Lifestyle Management (6 Hours)

WHO's definition of Health – Dimensions of Health – Adolescent Health and Women's Health – Understanding Physical Self – Personal Hygiene and Grooming – Balanced Diet and Nutrition – Healthy Habits and Lifestyle – Lifestyle Diseases and Prevention – Digital Wellbeing (Screen Time, Sleep Cycle, Mental Balance) – Public Health Awareness.

Unit II: Social Intelligence & Relationship Management (6 Hours)

Family Relationship: Values in family relationship, nuclear family, Joint Family, Dependence, Overdependence, Happy family, Broken Family - Caring Elders - Rapport Building with Peers/Friends, Strangers, Transgenders - Professional Relationship: Officials, Mentors, Staff & Service Personnel- Other centeredness and others point of view and Empathy.

Unit III: Decision-Making & Problem-Solving Skills (6 Hours)

Types of Problems (Academic, Personal, Financial, Social) – Problem-Solving Strategies – Decision-Making Process – Rational and Intuitive Decision-Making – Ignatian Discernment Process – Lateral Thinking and Creativity – Basic Financial Literacy (Needs vs Wants, Saving, Budgeting).

Unit IV: Coping with Stress, Crisis & Change (6 Hours)

Meaning and Types of Stress – Causes of Stress (Academic, Social, Digital) – Stress Management Techniques – Emotional Regulation Strategies – Time Management and Productivity – Crisis Management (Failure, Uncertainty, Loss) – Building Resilience and Adaptability.

Unit V: Addiction Awareness & Personal Safety (6 Hours)

Meaning and Types of Addiction – Substance Addiction – Digital and Internet Addiction – Causes and Effects of Addiction – Prevention and Control Measures – Self-Regulation Techniques – Cyber Safety and Responsible Internet Usage – Seeking Help and Counselling Support.

Activity Collaborators: Anti-drug Club, Women's Forum.

Reference Books:

1. Dr. Xavier Alphonse S.J., We Shall Overcome, ICRDEC Publications, Chennai, 2004.
2. Covey Sean, Seven Habits of Highly Effective Teens, New York, Fireside Publishers, 1998.
3. Carnegie Dale, How to win Friends and Influence People, New York: Simon & Schuster, 1998.
4. Clear, James. 2018. Atomic Habits: An Easy & Proven Way to Build Good Habits & Break Bad Ones. New York: Avery
5. Atomic Habits – James Clear, Avery, 2018.
6. The 7 Habits of Highly Effective People – Stephen R. Covey, Free Press.
7. Emotional Intelligence – Daniel Goleman, Bantam Books.
8. Thinking, Fast and Slow – Daniel Kahneman, Penguin Books.
9. Course Material prepared by the Department of Human Excellence.

ENVIRONMENTAL STUDIES
(26UEVS41)

SEMESTER:IV	EVS	HOURS:2	CREDITS:2	TOTAL HOURS:30
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Course Outcomes:

The students will be able to:

CO1: Describe various natural resources and the fundamental principles of sustainable development to explain resource interdependence. (K1)

CO2: Explain the relationship between biodiversity and various conservation approaches to maintain ecological balance. (K2)

CO3: Apply prevention and mitigation strategies to address specific environmental issues and ecosystem degradation. (K3)

CO4: Illustrate the adverse health impacts of different types of pollution on human populations and ecosystems. (K3)

CO5: Evaluate environmental quality indicators and the effectiveness of climate change mitigation risks. (K5)

CO6: Summarize major international environmental treaties and national legislations aimed at environmental protection. (K2)

Unit I: Natural Resources (6 Hours)

Environment – Definition; Overview of natural resources: definition, types of natural resources. Biotic and abiotic, renewable and non-renewable resources. Water resources: types, over-exploitation, issues, challenges, water scarcity, conflicts. Soil and mineral resources: important minerals, problems, soil as a resource. Energy resources: sources, conventional and non-conventional, implications. (IKS- Traditional water conservation methods (e.g., temple tanks, ooranis, johads). Indigenous agricultural practices and soil conservation methods.)

Unit II: Environmental pollution and Health (6 Hours)

Natural and man-made disasters and their impacts of environment and management. Pollution: definitions, natural and man-made pollution. Different types of pollution- Air, Water, Soil, Noise, Radioactive and solid waste pollution: Sources of pollution, different types of pollutants, effects of pollution in environment and human health, prevention and control of pollution. (IKS- Traditional waste management practices. Herbal and indigenous methods to reduce pollution impacts.)

Unit III-Conservation of Biodiversity and Ecosystems (6 Hours)

Biodiversity and its distribution: Levels and types, India and world, hotspots, threat categories. Ecosystems and ecosystem services: major types in India, basic characteristics, significance. Threats to biodiversity and ecosystems: land use, commercial exploitation of species and invasive species. Types of Biodiversity conservation (*In-situ and Ex-situ*). (IKS- Sacred groves and community-based conservation practices, Role of indigenous communities in biodiversity protection)

Unit IV: Climate change: Impacts, Adaptation and Mitigation (6 Hours)

Climate change: structure and different layers of atmosphere, Impacts, vulnerability and adaptation to climate change. Mitigation of climate change: GHGs types, sources, impacts and control. Importance of 1.5 °C and 2.0 °C Global warming and Ozone depletion. Concept of carbon intensity, energy intensity and carbon neutrality; policy instruments, carbon capture and storage, climate justice. Anthropogenic factors - Human over population, over consumption, pollution, Mining, Transport, Environmental degradation and Impact of human activities. (IKS- Traditional climate-resilient farming practices. Indigenous housing designs for climate adaptation.)

Unit V: Environmental Treaties, Legislation and Sustainable Development (6 Hours)

Overview of instruments of international cooperation: bilateral, multilateral, conventions and protocols, COPs. Major International Environmental Agreements: CBD, CITES, UNCCD, UNFCCC. Major Indian Environmental Legislations: acts, rules, sites, areas, zones and judgments. Introduction to sustainable development: SDGs, targets and indicators, challenges and strategies.

Principle of sustainable development, international efforts of sustainable development and sustainable development in India: Perspective and strategies. (IKS- Community based natural resource management models.)

Skill-Based Activities:

Unit-I	➤ Field observation of local water bodies ➤ Preparation of a household resource audit report ➤ Case study analysis on sustainable practices
Unit-II	➤ Air and water quality observation survey ➤ Preparation of eco-friendly products (natural cleaners, composting) ➤ Awareness campaign design
Unit-III	➤ Biodiversity documentation of campus/local area ➤ Preparation of herbarium or digital biodiversity register
Unit-IV	➤ Carbon footprint calculation (individual/department level) ➤ Tree plantation and climate awareness drive
Unit-V	➤ Mock COP session ➤ Policy analysis and presentation ➤ Preparation of sustainability action plan for the campus

General Suggestions:

- Educational visit to Xavier Solai be organized as a common activity for all students.
- Include activity based and project based assignments.
- Conduct orientation programs for EVS faculty on IKS and skill based pedagogy.
- Students examine environmental problems in their local communities and develop solutions to address them.

Reference Books:

1. Singh, J.S., Singh, S.P., Gupta, S.R. (2006). Ecology, Environment and Resource Conservation. Anamaya Publications.
2. Harris, Frances (2012). Global Environmental Issues, 2nd Edition. Wiley- Blackwell.
3. Krishnamurthy, K.V. (2003). Textbook of Biodiversity, Science Publishers, Plymouth, UK.
4. Ahluwalia, V. K. (2015). Environmental Pollution, and Health. The Energy and Resources Institute (TERI).
5. Pittock, Barrie (2009). Climate Change: The Science, Impacts and Solutions. 2nd Edition. Routledge.
6. Ministry of Environment, Forest and Climate Change (2019). A Handbook on International Environment Conventions & Programmes.
7. KanchiKohli, Manju Menon (2021). Development of Environment Laws in India, Cambridge University Press.

HUMAN RIGHTS AND SOCIAL ANALYSIS
(26UVEH51)

SEMESTER:IV	VE	HOURS:2	CREDITS:2	TOTAL HOURS:30
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Course Outcomes:

Upon completion of the course, the students will be able to

CO1: Recall key concepts of rule of law, democracy, equality, human dignity, citizenship, social justice, secularism and human rights.(K1)

CO2: Explain the Preamble to the Constitution of India, Fundamental Rights, Directive Principles, civil and political rights, socio-economic and cultural rights and collective rights.(K2)

CO3: Apply constitutional principles and human rights concepts to contemporary social issues. (K3)

CO4: Analyze interrelationships among inequalities, social structures, social problems, and reform initiatives in India. (K4)

CO5: Evaluate the effectiveness of constitutional provisions in promoting equality and social justice.(K5)

CO6: Design strategies fostering equality, communal harmony, responsible democratic citizenship and civic participation. (K6)

Unit I: Understanding basic concepts (6 Hours)

Understanding of key concepts, their meaning and significance in today's context – Rule of law, democracy, equality, human dignity, citizenship, social justice, secularism, human rights, fundamental rights and constitutional values.

Unit II: Classification of Human Rights (6 Hours)

Civil and Political rights, socio-economic and cultural rights collective rights or group rights – Preamble to the Constitution of India, Fundamental Rights - Equality rights, personal freedom and right to life, rights against arbitrary arrest and illegal detention, Rights against exploitation, Religion Freedom, Minority rights and Fundamental Duties (Art. 51A)

Unit III: Indian Social System (6 Hours)

Social Analysis - Social system and its components, Inequalities, caste structures and manifestation, Patriarchy and violence against women, Gender and sexual Minorities– A land of cultural linguistic and religious diversity –secular ethos – religious -fundamentalism-Indian politics -Interdependence of human being and society

Unit IV: Social Problems (6 Hours)

Indian Economic inequality and Poverty - Caste Discrimination : Untouchability, honour killing - Reservation policy, and Dalit empowerment - illiteracy and its effects Child labour, child abuse, bonded labour and their effects

Unit V: Social Reformers (6 Hours)

Promoting social justice and equality, women's rights, and eradication of caste discrimination - Dr. B. R. Ambedkar, Mahatma Gandhi, Dr. Muthulakshmi Reddy, Savitribai Phule, Fathima Sheikh, Pandita Ramabai and E. V. Ramasamy - Focusing on service to the marginalized, healthcare, education, and human values

Reference Books:

1. P.N. Sharma, "Social problems and issues in India", Bharat Book Centre, 2014, New India
2. The Reality Reloaded, Gurjot S. Kaler, Chandigarh, India, 2018
3. Course Material Prepared by the Department of Human Excellence
4. Activity-based learning will be conducted in collaboration with the Democracy Forum and Electoral Literacy Club to promote democratic values, constitutional awareness, and responsible citizenship.

OBJECT ORIENTED PROGRAMMING USING C++

(Course Code: 26UCAC11)

SEMESTER – I	CORE – T1	HOURS – 5	CREDITS – 5	TOTAL HOURS: 75
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COURSE OUTCOMES:

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

CO1: Describe the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects. **(K1)**

CO2: Understand dynamic memory management techniques using pointers, constructors, destructors, etc. **(K2)**

CO3: Describe the concept of function overloading, operator overloading, virtual functions and polymorphism **(K3)**

CO4: Classify inheritance with the understanding of early and late binding, usage of exception handling, generic programming **(K4)**

CO5: To understand concept of Binary and ASCII Files **(K5)**

CO6: Demonstrate the use of various OOPs concepts with the help of programs **(K6)**

UNIT I INTRODUCTION (15 HOURS)

Introduction to C++ - key concepts of Object-Oriented Programming –Advantages – Object Oriented Languages – I/O in C++ - C++ Declarations. Control Structures: - Decision Making and Statements: If...Else, jump, goto, break, continue, Switch case statements – Loops in C++: for, while, do – functions in C++ - inline functions – Function Overloading.

UNIT II CLASSES AND OBJECTS (15 HOURS)

Classes and Objects: Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – Overloading member functions – Bit fields and classes – Constructor and destructor with static members.

UNIT III OPERATOR OVERLOADING (15 HOURS)

Operator Overloading: Overloading unary, binary operators – Overloading Friend functions – type conversion – **Inheritance:** Types of Inheritance – Single, Multilevel, Multiple, Hierarchical, Hybrid, Multi path inheritance – Virtual base Classes – Abstract Classes.

UNIT IV POINTERS AND ARRAYS (15 HOURS)

Pointers – Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes – **Arrays** – Characteristics – array of classes – Memory models – new and delete operators – dynamic object – Binding, Polymorphism and Virtual Functions.

UNIT V FILE OPERATIONS (15 HOURS)

Files – File stream classes – file modes – Sequential Read / Write operations – Binary and ASCII Files – Random Access Operation – Templates – Exception Handling – String – Declaring and Initializing string objects – String Attributes – Miscellaneous functions

TEXT BOOK

E. Balagurusamy, “Object-Oriented Programming with C++”, TMH 2021, 8th Edition.

REFERENCE BOOKS

1. Ashok N Kamthane, “Object-Oriented Programming with ANSI and Turbo C++”, Pearson Education 2006.
2. Maria Litvin & Gray Litvin, “C++ for you”, Vikas publication 2002.
3. Object-Oriented Programming Using C++ by Alok Kumar Jagadev , Amiya Kumar Rath , Satchidananda Dehuri , PHI Learning, 2017

WEB RESOURCES

1. <https://alison.com/course/introduction-to-c-plus-plus-programming>
2. <https://www.geeksforgeeks.org/object-oriented-programming-in-cpp/>
3. https://www.w3schools.com/cpp/cpp_oop.asp

PRACTICAL: C++ PROGRAMMING

(Course Code: 26UCAC12)

SEMESTER – I	CORE – P1	HOURS – 5	CREDITS – 4	TOTAL HOURS: 75
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LIST OF PROGRAMS

1. Write a C++ program to demonstrate function overloading, Default Arguments and Inline function.
2. Write a C++ program to demonstrate Class and Objects
3. Write a C++ program to demonstrate the Friend Functions.
4. Write a C++ program to demonstrate the concept of Passing Objects to Functions
5. Write a C++ program to demonstrate Constructor and Destructor
6. Write a C++ program to demonstrate Unary Operator Overloading
7. Write a C++ program to demonstrate Binary Operator Overloading
8. Write a C++ program to demonstrate Inheritance
10. Write a C++ program to demonstrate Virtual Functions.
11. Write a C++ program to manipulate a Text File.
12. Write a C++ program to find the Biggest Number using Command Line Arguments
13. Write a C++ program to demonstrate Class Template
14. Write a C++ program to demonstrate Function Template.
15. Write a C++ program to demonstrate Exception Handling.

DISCRETE MATHEMATICS

(Course Code: 26UCAE11)

SEMESTER – I	EC – T1	HOURS – 4	CREDITS – 4	TOTAL HOURS: 60
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COURSE OUTCOMES:

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

CO1: Describe the relations and functions and be able to determine their Properties. (K1)

CO2: Illustrate the basic principles of sets and operations in sets. (K2)

CO3: Solve basic set equalities. (K3)

CO4: Classify the counting principles to determine probabilities. (K4)

CO5: Determine if the argument is valid or not valid. (K5)

CO6: Formulate and solve real world problems using graphs and trees. (K6)

UNIT I SET THEORY AND RELATION (12 HOURS)

SET THEORY: Introduction – Sets and Elements – Universal Set and Empty Set – Subsets – Venn Diagrams – Set Operations – Algebra of Sets and Duality – Finite Sets, Counting Principle – Class of Sets, Power Sets and Partitions. **RELATIONS:** Introduction – Product Sets – Relations – Pictorial Representations Of Relations – Composition of Relations – Types of Relations – Closure Properties – Equivalence Relations – Partial Ordering Relations – n-ary Relations.

UNIT II FUNCTIONS (12 HOURS)

Introduction – Functions – One-to-One-Onto and Inevitable Functions – Mathematical Functions, Exponential and Logarithmic Functions – Sequences, Indexed Classes of sets – Recursively Defined Functions – Cardinality

UNIT III LOGIC AND PROPOSITIONAL CALCULUS (12 HOURS)

Introduction – Propositions and Compound Propositions – Basic Logical Operations – Propositions and Truth Tables – Tautologies and Contradictions – Logical Equivalences – Algebra of Propositions – Conditional and Bi-conditional Statements – Arguments – Logical Implication – Propositional Functions, Quantifiers – Negation.

UNIT IV COUNTING (12 HOURS)

Introduction, Basic Counting Principles – Factorial Notation – Binomial Coefficients – Permutations – Combinations – The Pigeonhole Principle – The Inclusion – Exclusion Principle

UNIT V GRAPH THEORY (12 HOURS)

Graphs – Complete, Regular and Bipartite Graphs – Labeled and Weighted Graphs – Subgraphs – Paths, Connectivity – The Bridges of Konigsberg, traversable Multigraphs – Tree Graphs – Planar Graphs – Spanning Tree – Minimal Spanning Tree – Euler's Formula

TEXT BOOK

Seymour Lipschutz, Marc Lipson, "Discrete Mathematics", Second Edition, Tata McGraw Hill, 2019. Chapters : 1, 2, 3, 4, 5, 8.1-8.10

REFERENCE BOOKS

1. B.S. Vatsa, "Discrete Mathematics", Third Edition, Wishwa Prakashan, 2018.
2. K.D. Joshi, "Foundation of Discrete Mathematics", Wiley Eastern Ltd., 2019.

WEB RESOURCES

1. <https://discrete.openmathbooks.org/dmoi3.html>
2. https://www.academia.edu/22551485/Seymour_Lipschutz_Marc_Lipson_Schaums_Outline_of_Discrete_Mathematics_McGraw_Hill_Osborne_Media_2007_

COMPUTER ORGANIZATION AND ARCHITECTURE

(Course Code: 26UCAE11)

SEMESTER – I	EC – T1	HOURS – 4	CREDITS – 4	TOTAL HOURS: 60
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COURSE OUTCOMES:

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

CO1: Describe the components of computer system and number system. **(K1)**

CO2: Discuss about the logic design and Arithmetic – Logic Unit. **(K2)**

CO3: Demonstrate the basic concepts of digital principles. **(K3)**

CO4: Classify the various memory elements. **(K4)**

CO5: Summarize the input-output devices and control unit. **(K5)**

CO6: Formulate the addressing techniques and RISC-CISC Architecture. **(K6)**

UNIT I NUMBER SYSTEM AND GATE NETWORKS (12 HOURS)

Computer Operation: Basic Components of Digital Computer – Programming Overview – Assembly Languages – High level Languages. **Number Systems:** Binary Addition and Subtraction – Binary Multiplication and Division – Converting Decimal Numbers to Binary – Negative Numbers – Use of Complements to represent Negative Numbers – BCD Number Representation – Octal and Hexadecimal Number System **Boolean Algebra and Gate Networks:** Fundamental concepts of Boolean Algebra – AND and OR Gates – Complementation and Inverters – Evaluation of Logical Expressions – Basic Laws of Boolean Algebra.

UNIT II LOGIC DESIGN AND ARITHMETIC – LOGIC UNIT (12 HOURS)

De Morgan's Theorem – Derivation of a Boolean Expression – Interconnecting Gates – Sum of Products and Product of Sums – Derivation of a Three – Input – Variable Expression – NAND and NOR Gates. **Logic Design:** Flip flops – Clocks – Flip flop Designs – Shift Register – Binary Counter – BCD Counters – Integrated Circuits – Medium, Large and Very Large – Scale Integration. **The Arithmetic – Logic Unit:** Construction of the ALU – Integer Representation – Binary Half Adder – Full Adder – A Parallel Binary Adder – Multiplexers.

UNIT III RAM, ROM, VIRTUAL AND CACHE MEMORY (12 HOURS)

The Memory Element: Random Access Memories – Static and Dynamic RAMs – ROMs – Magnetic Disk Memories – Flexible Disk Storage System – The Floppy Disk – Magnetic Tape – Optical Storage Devices – Computer Word Structures – Storage hierarchies – Virtual Memory – Cache memory.

UNIT IV INPUT – OUTPUT DEVICES AND CONTROL UNIT (12 HOURS)

Input Output devices: Terminals, Personal Computers and Workstations – Input Media – Character Recognition – Output Equipment – Error– Detecting and Error– Correcting codes – Buses for Personal Computers and Work stations. **Control Unit:** Construction of an Instruction

Word – Instruction and Execution cycle Organization of Control Registers – Branch, Skip or Jump Instructions – Shift Instructions – Register Transfer Language.

UNIT V RISC AND CISC ARCHITECTURE

(12 HOURS)

Computer Architecture: Instruction Word formats– Number of Addresses – Representation of Instructions and Data – Addressing techniques – Direct Addressing – Immediate Addressing – Relative Addressing – Indirect Addressing – Indexed Addressing – BRANCH and JUMP Instructions – Flags, Condition Codes and Status Registers – Subroutine calls – Interrupts – Pipelined computers – RISC and CISC architecture – Security and protection.

TEXT BOOK

Thomas C Bartee, “Computer Architecture & Logic Design”, Tata McGraw Hill, 2010.

Chapters:

UNIT I: 1.4 – 1.5 (Pg: 6-12), 1.7 – 1.8 (Pg: 16-19), 2.4 – 2.10 (Pg: 24-38), 3.1 – 3.5 (Pg: 55-65)

UNIT II: 3.6 –3.11 (Pg: 65-78), 4.1 – 4.8 (Pg: 132-162), 5.1– 5.5(Pg: 190-197), 5.13 (Pg: 227-229)

UNIT III: 6.1 (Pg: 245-247), 6.6 – 6.11 (Pg: 263-286), 6.14 – 6.18 (Pg: 288-309)

UNIT IV: 7.1 – 7.6 (Pg: 322-344), 9.1 – 9.2 (Pg: 417-424), 9.5 – 9.7 (Pg: 433-441)

UNIT V: 10.1 – 10.15 (Pg: 452-483)

REFERENCE BOOKS

1. William Stallings, “Computer Organization and Architecture: Designing for Performance”, Tenth Edition, Pearson Education, 2019.
2. M. Morris Mano, “Computer System Architecture”, Revised Third Edition, Pearson Education, 2017.
3. Smut Ranjan Sarangi, “Computer Organization and Architecture”, First Edition, McGraw Hill Education, 2017.

WEB RESOURCES

1. <https://www.geeksforgeeks.org/computer-organization-and-architecture-tutorials/>
2. <https://www.javatpoint.com/computer-organization-and-architecture-tutorial>

MS-WORD AND POWERPOINT

(Course Code: 26UCAN11)

SEMESTER – I	SEC – 1	HOURS – 2	CREDITS – 2	TOTAL HOURS: 30
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COURSE OUTCOMES:

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

CO1: Define basic functions and new formatting features in Word 2010. **(K1)**

CO2: Describe the Header and Footer content and update page numbers and dates. **(K2)**

CO3: Examine the various features of Word. **(K3)**

CO4: Analyze the presentation techniques. **(K4)**

CO5: Evaluate presentations with video, pictures, and animations. **(K5)**

CO6: Design various presentations. **(K6)**

UNIT I GETTING STARTED WITH WORD (6 HOURS)

Introducing the New Features in Word 2010 – Creating a New Blank Document – Saving in Different Formats – Beginning a New Word Project – Formatting Text in the Documents – Inserting the Symbols and Changing Date Styles – Adding Bullets and Numbered Lists – Searching and Replacing in the Document.

UNIT II PAGE NUMBERS, HEADER AND FOOTER (6 HOURS)

Adjusting the Structure of Document – Changing the Margins – Changing the Page Orientation – Inserting Page Numbers – Inserting Header and Footer – Adding Foot notes and End notes – Creating Columns in a Longer Document.

UNIT III WORKING IN TABLE (6 HOURS)

Creating Table – Adding and Deleting Rows/Columns – Merging Cells – Modifying Borders – Working with Graphics and Effects – Inserting a Picture – Adding a Clip Art Image – Cropping an Image – Applying Picture Style and Effects – Inserting a Smart Art Diagram – Using Screenshots or Screen Clippings.

UNIT IV GETTING STARTED WITH MS POWERPOINT (6 HOURS)

Getting started with PowerPoint 2010 – Adding and Editing Text – Adding Slides with Bullets – Moving Slides – Applying Theme from the Design Tab – Using Slide Masters.

UNIT V WORKING WITH TABLE, CHART, ANIMATION (6 HOURS)

Creating Table – Adding Chart – Inserting a Picture – Adding Slide Transitions – Adding Animations to Content – Using the Animation Painter Tool – Inserting and Trimming Video – Using Online Video.

TEXT BOOK

Tom Bunzel, “Easy Microsoft Office 2010”, Que Publishing, First Edition, 2010.

REFERENCE BOOKS

1. Gary B. Shelly, Misty E. Vermaat, “Microsoft Office 2010: Introductory”, Cengage Learning, First Edition 2012.
2. Katherine Murray, “Microsoft Office 2010 Plain & Simple”, Microsoft Press, First Edition, 2010.

WEB RESOURCES

1. https://freecomputerbooks.com/Microsoft_Office_Powerpoint.html
2. <https://freecomputerbooks.com/Microsoft-Office-Word-2007.html>

PRACTICAL LIST

1. Design a Bio-data in MS Word
2. Design an Invitation in MS Word
3. Newspaper formatting in MS Word
4. Bullets and Numbering in MS Word
5. Create a simple presentation using MS-Power Point
6. Presentation using Themes
7. Presentation using Animation

PROGRAMMING IN JAVA

(Course Code : 26UCAC21)

SEMESTER – II	CORE – T2	HOURS – 4	CREDITS – 5	TOTAL HOURS: 60
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COURSE OUTCOMES:

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

CO1: Describe how object-oriented concepts are incorporated into Java language. **(K1)**

CO2: Discuss the problem-solving and programming skills using OOP concepts. **(K2)**

CO3: Use the Control Structures, Arrays and Interfaces. **(K3)**

CO4: Illustrate the Multithreaded Programming & Exception Handling. **(K4)**

CO5: Create User Defined Packages. **(K6)**

CO6: Develop Java applets using applet programming. **(K6)**

UNIT I FUNDAMENTALS OF JAVA (12 HOURS)

FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING: Introduction – Object Oriented paradigm – Basic Concepts of OOP – Benefits of OOP – Applications of OOP – Java features: **OVERVIEW OF JAVA LANGUAGE:** Introduction – Simple Java program structure – Java tokens – Java Statements – Implementing a Java Program – Java Virtual Machine – Command line arguments. **CONSTANTS, VARIABLES AND DATA TYPES:** Introduction – Constants – Variables – Data Types – Declaration of Variables – Giving Value to Variables – Scope of variables – Symbolic Constants – Type casting – Getting Value of Variables – Standard Default values. **OPERATORS AND EXPRESSIONS.**

UNIT II TYPES OF STATEMENTS , CLASSES AND OBJECTS (12 HOURS)

DECISION MAKING AND BRANCHING: Introduction – Decision making with if statement – Simple if statement – if-else statement – Nesting of if-else statements – else-if ladder – switch statement – Conditional operator. **LOOPING:** Introduction – while statement – do-while statement –for statement – Jumps in loops.**CLASSES, OBJECTS AND METHODS:** Introduction – Defining a class – Adding variables – Adding methods – Creating objects – Accessing class members – Constructors – Method overloading – Static members – Nesting of methods.

UNIT III INHERITANCE, ARRAYS AND INTERFACES (12 HOURS)

INHERITANCE: Extending a class – Overloading methods – Final variables and methods – Final classes – Abstract methods and classes; **ARRAYS – STRINGS AND VECTORS:** Arrays – One-dimensional arrays – Creating an array – Two-dimensional arrays – Strings – Vectors – Wrapper classes; **INTERFACES:** Multiple Inheritance– Introduction – Defining interfaces – Extending interfaces – Implementing interfaces – Assessing interface variables.

UNIT IV MULTITHREADED PROGRAMMING AND EXCEPTIONS (12 HOURS)

MULTITHREADED PROGRAMMING: Introduction – Creating Threads – Extending the Threads – Stopping and Blocking a Thread – Lifecycle of a Thread – Using Thread Methods – ThreadExceptions – Thread Priority – Implementing the ‘Runnable’. Interface. **MANAGING ERRORS AND EXCEPTIONS:** Types of errors: Compile-time errors – Runtimeerrors – Exceptions – Exception handling – Multiple Catch Statements – Using finally statement.

UNIT V PACKAGES, APPLETS AND INPUT/OUTPUT FILES (12 HOURS)

PACKAGES: Introduction – Java API Packages – Using System Packages – Naming conventions – Creating Packages – Accessing a Package – using a Package. **APPLET PROGRAMMING:** local and remote applets – Applets and Applications – Building Applet code – Applet Life cycle: Initialization state – Running state – Idle or stopped state – Dead state – Display state. **MANAGING INPUT/OUTPUT FILES:** Introduction – Concept of Streams – Stream classes – Byte Stream Classes – Input Stream Classes – Output Stream Classes – Character Stream classes: Reader stream classes – Writer Stream classes – Using Streams – Reading and writing files.

TEXT BOOK

E.Balaguruswamy, “Programming with JAVA”, Sixth Edition, McGraw Hill Education, 2019.

REFERENCE BOOKS

1. Herbert Schildt, “JAVA A Beginner’s Guide”, Seventh Edition, McGraw-Hill Education, 2017.
2. Herbert Schildt, “Java: The Complete Reference”, Tenth Edition, McGraw-Hill Education, 2017.

WEB RESOURCES

1. <https://www.geeksforgeeks.org/java/>
2. <https://www.iitk.ac.in/esc101/share/downloads/javanotes5.pdf>
3. https://www.tutorialspoint.com/java/java_tutorial.pdf

PRACTICAL: PROGRAMMING IN JAVA

(Course Code: 26UCAC22)

SEMESTER – II	CORE – P2	HOURS – 4	CREDITS – 3
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LIST OF PROGRAMS

1. Program to demonstrate the use of control structures.
2. Program to arrange the given strings in Alphabetic Order.
3. Program to implements Addition and multiplication of two Matrices.
4. Program to demonstrate the use of Constructor.
5. Program to display a use of method overloading.
6. Program to demonstrate the use of overriding Method.
7. Program for implementing Inheritance.
8. Program for implementing Interface.
9. Program for to implement Thread, Thread Priority.
10. Program to demonstrate Exception handling.
11. Program to demonstrate the use of Packages.
12. Program using Applet.

OPERATIONS RESEARCH
(Course Code: 26UCAE21)

SEMESTER - II EC-T2 HOURS - 4 CREDITS -3 TOTAL HOURS: 60

COURSE OUTCOMES:

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

C01: Solve Integer Programming Problems. (K1)

CO2: Explain Multi-criteria decision techniques. (K2)

C03: Compute various Transportation and Assignment Problems. **(K3)**

C04: Classify the Methodology of Operations Research. (K4)

C05: Compare and solve the different Linear programming Problems. **(K5)**

C06: Design Network flow Diagram. (K6)

UNIT I INTRODUCTION (12 HOURS)

Introduction: The Nature and Meaning of OR – Management – Applications of OR – Modeling in OR – General methods for solving OR models – Scope of OR. **Linear programming problem:** Formulation of LP problems – Graphical solution of LP problems – General formulation of LPP – Slack and Surplus variables – Standard form of LPP – Some important form of LPP – Simplex Method.

UNIT II ARTIFICIAL VARIABLE TECHNIQUES (12 HOURS)

Artificial variable techniques: Two phase method: **Integer programming problem:** Importance – Definitions– Gromory's Pure Integer Programming Problem.

UNIT III ASSIGNMENT PROBLEM (12 HOURS)

Assignment problem: Mathematical formulation – Hungarian method – Unbalanced assignment problem – Various types. **Transportation model:** Mathematical formulation – Matrix form – Methods for finding Initial Basic Feasible Solution and optimal solution – Degeneracy in Transportation problems – Unbalanced Transportation problem.

UNIT IV SEQUENCING PROBLEM (12 HOURS)

Sequencing problem: Assumptions – Solutions to sequencing problems: Processing on jobs through 2 machines – Processing n jobs through 3 machines – Processing n jobs on m machines.

UNIT V PERT AND CPM TECHNIQUES (12 HOURS)

Pert and cpm techniques: Basic Steps – Network diagram representation – Rules for Drawing Network diagram – Labeling Fulkerson's I-J Rule – Time Estimates and Critical Path in Network analysis – Examples on optimum duration and minimum duration cost – PERT.

TEXT BOOK

S.D. Sharma, “Operations Research”, Kedamath Ramnath & Co. Meerut, 2018

REFERENCE BOOKS

1. HamdyTaha, “Operations Research”, Prentice Hall, 2010.
2. V.Sundaresan, K.S.Ganapathy Subramanian, K.Ganesan, “Resource Management Techniques”, A.R. Publications, 2016.

WEB RESOURCES

1. https://www.tutorialspoint.com/linear_programming/index.asp
2. <https://www.analyticsvidhya.com/blog/2017/02/introductory-guide-on-linear-programming>
3. <https://commerceiats.com/assignment>

MICROPROCESSOR AND MICROCONTROLLER

(Course Code: 26UCAE21)

SEMESTER - II	EC-T2	HOURS - 4	CREDITS - 3	TOTAL HOURS: 60
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COURSE OUTCOMES:

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

CO1: Remember the Basic binary codes and their conversions. **(K1)**

CO2: Understanding the 8085 instruction set and their classifications. **(K2)**

CO3: Applying different types of instructions to convert binary codes. **(K3)**

CO4: Analyze how peripheral devices are connected to 8085 using Interrupts and DMA controller. **(K4)**

CO5: Compare and understand the Microprocessor and Micro Controller. **(K5)**

CO6: Implement and execute Interrupts in 8051. **(K6)**

UNIT I INTRODUCTION TO DIGITAL COMPUTERS (12 HOURS)

Digital Computers - Micro computer Organization-Computer languages –Microprocessor Architecture and its operations – Microprocessor initiated operations and 8085 Bus organization – Internal Data operations and 8085 registers - Peripheral or External initiated operations.

UNIT II 8085 MICROPROCESSOR (12 HOURS)

8085 Microprocessor – Pinout and Signals – Functional block diagram 8085 Instruction Set and Classifications.

UNIT III BCD (12 HOURS)

BCD to Binary and Binary to BCD conversions - ASCII to BCD and BCD to ASCII conversions - Binary to ASCII and ASCII to Binary conversions. BCD Arithmetic-BCD addition and Subtraction – Multi byte Addition and Subtraction – Multiplication and Division.

UNIT IV RIM AND SIM (12 HOURS)

The 8085 Interrupts – RIM AND SIM instructions – 8259 Programmable Interrupt Controller-Direct Memory Access (DMA) and 8257 DMA controller.

UNIT V MICROCONTROLLER (12 HOURS)

Introduction to Microcontroller-Microcontroller Vs Microprocessor - 8051 Microcontroller architecture -8051 pin description. Timers and Counters–Operating Modes – Control Registers Interrupts – Interrupts in 8051 – Interrupts Control Register – Execution of interrupt.

TEXT BOOKS

1. R.S.Gaonkar-"Microprocessor Architecture-Programming and Applications with 8085" - 5th Edition – Penram International Publications, 2009.[For unit I to unit IV]
2. Soumitra Kumar Mandal – Microprocessors and Microcontrollers – Architectures, Programming and Interfacing using 8085, 8086, 8051, Tata McGraw Hill Education Private Limited.[for unit V].

REFERENCE BOOKS

1. Mathur -- Introduction to Microprocessor - 3rd Edition-Tata McGraw - Hill-1993.
2. RajKamal--Microcontrollers: Architecture, Programming, Interfacing and System Design II, Pearson Education, 2005.

WEB RESOURCES

Web resources from NDL Library, E-content from open source libraries

PRACTICAL : OPERATIONS RESEARCH USING C++

(Course Code: 26UCAE22)

SEMESTER - II	EC-P1	HOURS - 2	CREDITS-2	TOTAL HOURS: 30
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LIST OF PROGRAMS

1. Program for formulation of Linear Programming Problem.
2. Implementing North-West Corner Rule
3. Implementing Least Cost method
4. Program to implement Transportation Problem.
5. Program to implement Assignment Problem.
6. Program to implement PERT / CPM.

PRACTICAL : MICROPROCESSOR AND MICROCONTROLLER

(Course Code: 26UCAE22)

SEMESTER - II	EC-P1	HOURS - 2	CREDITS-2	TOTAL HOURS: 30
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I. Addition and Subtraction

1. 8-bit addition
2. 16-bit addition
3. 8-bit subtraction
4. BCD subtraction

II. Multiplication and Division

1. 8-bit multiplication
2. BCD multiplication
3. 8-bit division

III. Sorting and Searching

1. Searching for an element in an array.
2. Sorting in Ascending and Descending order.
3. Finding the largest and smallest elements in an array.
4. Reversing array elements.

IV. Code Conversion

1. BCD to Hex and Hex to BCD.
2. Binary to ASCII and ASCII to binary.
3. ASCII to BCD and BCD to ASCII.

MS-EXCEL FOR DATA MANAGEMENT

(Course Code: 26UCAN21)

SEMESTER - II	SEC2	HOURS - 2	CREDITS -2	TOTAL HOURS: 30
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COURSE OUTCOMES:

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

CO1: Understand the Excel basic. **(K2)**

CO2: Apply appropriate formatting. **(K3)**

CO3: Construct and use formulas to perform mathematical, statistical, logical calculations. **(K3)**

CO4: Organize data using sorting, filtering and tables. **(K3)**

CO5: Analyze and summarize data using PivotTables, and lookup functions for decision-making. **(K4)**

CO6: Utilize advanced Excel features for practical applications. **(K5)**

UNIT I – GETTING STARTED WITH EXCEL (6 HOURS)

The Excel Interface– Creating/Saving Workbooks – Cell and Range Selection – Filling Cells – Cell Backgrounds and Borders – Removing, Replacing and Reusing Formats – Setting Column Width and Row Height – Finding and Replacing Data – Fitting Text within a Cell

UNIT II – CHARTS AND FORMATTING (6 HOURS)

Formatting Worksheets – Cell Formatting –Conditional Formatting – Cell Styles – Number Formatting – Page Setup and Printing – Creating Charts – Chart Types – Modifying and Formatting Charts – Adding Titles, Legends and Data Labels – Using Sparklines – Themes and Templates.

UNIT III – FORMULAS AND FUNCTIONS (6 HOURS)

Understanding Formulas – Using Arithmetic Operators – Relative, Absolute and Mixed Cell References – Built-in Functions – Mathematical Functions – Statistical Functions – Logical Functions (IF, AND, OR) – Date and Time Functions – Text Functions – Error Handling in Formulas.

UNIT IV – DATA HANDLING AND ANALYSIS (6 HOURS)

Creating and Formatting Tables – Sorting Data –Filtering Data – Advanced Sorting – Removing Duplicates – Subtotals – Data Consolidation – What-If Analysis – PivotTables and PivotCharts – Lookup and Reference Functions (VLOOKUP, HLOOKUP, LOOKUP) – Using IF with VLOOKUP

UNIT V – ADVANCED FEATURES (6 HOURS)

Nested Functions – Data Validation with Drop-down Lists – Password Protecting Worksheets and Workbooks – Introduction to Macros – Recording and Running Simple Macros – Importing and Exporting Data

TEXT BOOKS

1. Joyce Cox, Joan Lambert, “Microsoft Excel 2016 Step by Step”, Microsoft Press, 2016.
2. Curtis Frye, “Microsoft Excel 2019 Illustrated”, Cengage Learning, 2019.

REFERENCE BOOKS

1. John Walkenbach, “Excel 2019 Bible”, Wiley Publishing Inc., 2019.
2. Paul McFedries, “Excel 2016 Formulas and Functions”, Pearson Education, 2016.
3. Ritu Arora, “Microsoft Excel 2016”, PHI Learning Pvt. Ltd., 2016.

WEB RESOURCES

1. <https://www.w3schools.com/EXCEL>
2. <https://www.javatpoint.com/excel-tutorial>
3. <https://www.javatpoint.com/microsoft-access>
4. https://www.tutorialspoint.com/ms_access

PRACTICAL LIST

1. Sorting and Filtering Data using MS Excel
2. Preparation of Mark Sheet using MS Excel
3. Creating and Formatting Charts in MS Excel
4. Applying Mathematical Functions in MS Excel
5. Creating PivotCharts for Data Summarization
6. Using VLOOKUP and HLOOKUP Functions for Data Search
7. Creating Drop-down Lists using Data Validation in MS Excel

SEMESTER – III	CORE – T3	HOURS – 4	CREDITS – 4	TOTAL HOURS: 60
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Upon completion of the course, the students will be able to

- CO1:** Describe the basic Programming Constructs of Python and Applications. **(K1)**
CO2: Describe a systematic approach to design, organize, write and debug programs. **(K2)**
CO3:Analyze the various data structures available in Python programming language. **(K3)**
CO4:Develop proficiency in creating applications using the Python Language. **(K4)**
CO5:Update knowledge to learn any future advanced version of language. **(K5)**

Introduction to Python: Features of Python – Execution of a Python program – Flavors of Python – Python Virtual machine (PVM) – Comparison of Python with Java - Output Statements –Input Statements - Comments – Indentation. **Datatypes in Python:** Built in Data types: None Type - Numeric types: int, float, complex - bool datatype. **Operators:** Arithmetic operators – Assignment operators – Unary minus operator – Relational operators – Logical operators – Boolean operators – Bitwise operators - Membership operators – Identity operators - Operator precedence.

Conditionals and Loops: if statement - if...else statement - if...elif statement - while loop - for loop - the else suite - break statement - continue statement - pass statement - return statement.

Arrays in Python: Creating array – Importing the array module – Indexing and slicing on arrays – Types of arrays – Working with arrays using numpy – Mathematical operations on arrays – Working with multidimensional array – Matrices in numpy.

Strings and characters: Slicing the strings – String functions and methods – working with characters. **Functions:** Defining a function – Calling a function – Pass by object reference – Recursive functions – lambda functions. **Lists:** list operations – aliasing and cloning list - Methods to process lists – Nested list – list comprehension. **Tuples:** Creating tuples - Basic operations on tuples – Functions to process tuples.

Dictionaries: Operations on dictionary – Dictionary methods – Using loops with dictionaries – Converting Lists, Strings into dictionary – Passing dictionary to functions – Ordered dictionaries.

Classes and objects: Creating a Class – Types of Variables – Types of Methods – Constructors in Inheritance – Types of Inheritance – Operator Overloading – Method Overloading - Method Overriding – Interfaces in Python.

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

TEXT BOOK

R. Nageswara Rao, “Core Python Programming”, Third Edition, Dreamtech Press, 2021.

REFERENCE BOOKS:

1. Reema Thareja, “Python Programming using problem solving approach”, First Edition, 2017, Oxford University Press.
2. Allen B.Downey, “ Think Python: How to Think Like a computer Scientist”, Second Edition, Updated for Python 3, Shroff Publishers & Distributors Pvt.Ltd, 2015.
3. Charles Dierbach, “Introduction to Computer Science using Python; A Computational Problem-Solving Focus”, Wiley India Edition, 2013.

WEB RESOURCES

1. <https://www.python.org/about/gettingstarted/>
2. https://www.w3schools.com/python/python_intro.asp

PRACTICAL: PYTHON PROGRAMMING

(Course Code: 26UCAC32)

SEMESTER -III	CORE – P3	HOURS - 3	CREDITS -3	TOTAL HOURS - 45
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LIST OF PROGRAMS

1. Program using Conditional Statements.
2. Program using Loops.
3. Program using Arrays.
4. Program using Strings.
5. Program using Lists.
6. Program using Tuples.
7. Program using Dictionaries.
8. Program using class and object.
9. Program using Inheritance.
10. Program using Interfaces.
11. Program using Functions.
12. Program for File Handling.

DATA STRUCTURES AND ALGORITHMS

(Course Code: 26UCAE31)

SEMESTER - III	EC – T3	HOURS – 4	CREDITS – 3	TOTAL HOURS: 60
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COURSE OUTCOMES:

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

CO1: Define the Data Structures. **(K1)**

CO2: Interpret Stack, Queue, List, Tree and Graph. **(K2)**

CO3: Examine the concepts of Divide and Conquer Techniques. **(K3)**

CO4: Analyze to select appropriate data structures for the problem definition. **(K4)**

CO5: Evaluate Kruskal's and Prim's Algorithms and Single-source Shortest Path Algorithm. **(K5)**

CO6: Build programs for all the operations on the data structures. **(K6)**

UNIT I ARRAYS AND STACK (12 HOURS)

Arrays: The Abstract Data Type – Arrays – **Polynomials:** Polynomial Representation – Polynomial Addition – Representation of Multidimensional Arrays – Stacks – Evaluation of Expressions – Evaluating Postfix Expressions – Infix to Postfix.

UNIT II QUEUES AND LINKED LISTS (12 HOURS)

Queues: Queues – Circular Queues. **Linked List:** Singly Linked Lists – Linked Stacks and Queues – List Operations.

UNIT III TREES (12 HOURS)

Trees: Terminology – Representation of Trees – **Binary Tree:** Properties of Binary Tree – Binary Tree Representation – Binary Tree Traversals – Binary Search Trees – Definition – Searching – Insertion – Deletion on Binary Search Tree.

UNIT IV GRAPHS (12 HOURS)

Graphs: Introduction – Definition – Graph Representations – Depth First Search – Breadth First Search – **Minimum Cost Spanning Trees:** Kruskal's Algorithm – Prim's Algorithm – Shortest Path Single Source/ All Destination: Nonnegative Edge Costs.

UNIT V DIVIDE AND CONQUER (12 HOURS)

Divide and Conquer: The General method – Binary Search – Finding Maximum and Minimum – Merge Sort – Quick sort – Selection Sort.

TEXT BOOKS

1. Ellis Horowitz, Sartaj Sahani, Susan Anderson-Freed, "Fundamentals of Data Structures in C", Universities Press (India) private limited, Hyderabad.
(Units : I, II, III & IV)
2. Ellis Horowitz and Sartaj Sahani, "Fundamentals of Computer Algorithms", Computer Science Press Inc, Galgotia Book Sources Publications, New Delhi, 2014. **(Unit : V)**

REFERENCE BOOKS

1. A.Chitra, P.T.Rajan, “Data Structures”, Second Edition, Vijay Nicole Imprints Private Limited, 2016.
2. D. Samanta “Classic Data Structures”, Second Edition, PHI Learning, New Delhi, 2019.

WEB RESOURCES

1. <https://www.geeksforgeeks.org/data-structures>
2. <https://www.studytonight.com/data-structures>

VISUAL BASIC
(Course Code: 26UCAE31)

SEMESTER - III	EC – T3	HOURS - 4	CREDITS – 3	TOTAL HOURS: 60
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COURSE OUTCOMES

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

CO1: Describe the Visual Basic Components and Controls. **(K1)**

CO2: Interpret the Visual Basic's Integrated Development Environment. **(K2)**

CO3: Illustrate the Procedure and Function in Visual Basic programs. **(K3)**

CO4: Test the Connection between Visual Basic and Database. **(K5)**

CO5: Create Custom Menu in Visual Basic. **(K6)**

CO6: Design, Create and Build Visual Basic applications. **(K6)**

UNIT I VISUAL BASIC COMPONENTS AND CONTROLS (12 HOURS)

Working with Visual Basic Window Components: Menu Bar– Tool Bar – Project Explorer Window – Form Layout Window – properties Window – Toolbox – Code Editor Window
Working with Forms: Properties – Events –Methods.**Working with Basic Controls:**Label – CommandButton –TextBox –OptionButton – Frame –CheckBox –ListBox –ComboBox – Image – Scroll – Picture – Timer –DriveListBox –DirListBox –FileListBox and Shape Controls.

UNIT II PROGRAMMING FUNDAMENTALS (12 HOURS)

Basic Programming Fundamentals: Variables – Data types – Constant – Conversion Function.
Scope of Variable: Public – Private Static. Operators: Logical – Arithmetic – Concatenation – Comparison. **Decision Structure:**If.. Then –If..Then..Else – Select Case.. End Case. **Loop Structure:**Do..While – While.. Wend –For.. Next –With..EndWith.DoEvents().

UNIT III ARRAYS – PROCEDURE AND FUNCTION (12 HOURS)

Arrays: Dynamic Array – Preserve and Control arrays. **Procedure:** General procedure – General Methods for Passing Arguments to a Procedure –**Functions:** User-Interaction – String – Math – Date – And Conversion Functions. Modules: Form – Standard.

UNIT IV MENUS AND DATABASE HANDLING (12 HOURS)

Menus: Creating – Adding Menu Items – Creating Shortcut – Adding Separators Bars – Submenus – Code for Menus. Creating Popup Menu: System – Custom. **Database Handling:** Database Concepts – Creating and Accessing Database – Using Data Control. Using DAO object library.

UNIT V ADO DATA CONTROLS (12 HOURS)

Using ADO Data Control – Data Link – ODBC Data Source name – Using Connection String – Creating Navigating buttons. Working with Advanced **Data Controls:**DataListControl – DataCombo Control –DataGrid Control and Msflexgrid Control. Handling Errors : Run Time – Trapping and Handling Error – ERR Object. Data Environment and Data Reports.

TEXT BOOK

SomaDasgupta, “Visual Basic to Advance”, BPB Publications, 2008.

REFERENCE BOOKS

1. Steven Holzner, “Visual Basic 6 Programming Black”, Dreamtech Press, First Edition, 2000.
2. Mohammed Azam, “Programming with Visual Basic 6.0”, Vikas Publication House Pvt. Ltd., First Edition, 2001.

WEB RESOURCES

1. <https://takelessons.com/en-in>
2. https://en.wikipedia.org/wiki/Visual_Basic

PRACTICAL: DATA STRUCTURES USING C++
(Course Code: 26UCAE32)

SEMESTER - III	EC – P2	HOURS - 3	CREDITS – 3	TOTAL HOURS: 45
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LIST OF PROGRAMS

1. Program to implement Stack Operations.
2. Program to implement Queue Operations.
3. Program to implement Tree traversals.
4. Program to implement Singly Linked List.
5. Program to implement Merge sort.
6. Program to implement Binary search.

PRACTICAL: VISUAL BASIC

(Course Code: 26UCAE32)

SEMESTER - III	EC – P2	HOURS - 3	CREDITS – 2	TOTAL HOURS: 45
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LIST OF PROGRAMS

1. Program using conditional control structures.
2. Program using loop control structures.
3. Program to work with controls.
4. Program to Design a Calculator.
5. Program using Scroll bar control.
6. Program using File Controls.
7. Program to create a menu.
8. Database connectivity using DAO.

PRACTICAL: PHOTOSHOP

(Course Code: 26UCAS31)

SEMESTER - III	SEC - 5	HOURS - 2	CREDITS - 2	TOTAL HOURS - 30
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1. Combine three different images into a single cohesive scene using layer masks and adjustment layers.
2. Extract subjects with tricky edges such as hair or fur from cluttered backgrounds
3. Create a reusable mockup template using Smart Objects.
4. Restore a heavily damaged, scanned historical photograph using the Clone Stamp, Healing Brush, and Content-Aware Fill.
5. Apply specific cinematic look to a standard RAW photograph and using Curves, Color Balance, and the Camera Raw Filter.
6. Transform a photograph taken at midday into a realistic night scene by manipulating exposure, adjusting color temperatures, and painting in artificial light sources.
7. Apply layer masks, clipping masks, and typographic styling to accurately match the provided reference poster.
8. Utilize basic retouching tools to erase an existing, flat logo from a photograph, and design a new, non-destructive text watermark using typography and layer opacity.
9. Design a professional tri-fold catalog for an international conference, tailoring the visuals and typography to an academic field of choice.
10. Generate a complete set of ten personalized corporate ID badges, utilizing Photoshop Variables to automate the integration of student data from a provided CSV file.

RELATIONAL DATABASE CONCEPTS

(Course Code: 26UCAC41)

SEMESTER - IV	CORE-T4	HOURS - 4	CREDITS – 4	TOTAL HOURS: 60
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COURSE OUTCOMES:

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

CO1: Define the fundamentals of RDBMS. **(K1)**

CO2: Design database using ER diagram and normal forms. **(K2)**

CO3: Use Oracle for Creating and manipulating relational database. **(K3)**

CO4: Analyze Set Operators and making other transactions. **(K4)**

CO5: Apply SQL queries in procedural language, PL/SQL. **(K5)**

CO6: Develop Procedures and Exception Handling in PL/SQL. **(K6)**

UNIT I PURPOSE OF DATABASE SYSTEMS (12 HOURS)

View of Data – Database Languages –Relational Database – Database Architecture– Database Users and Administrators. Structure of Relational Database– Database Schema–Keys –Schema Diagrams – Relational Query languages – Relational Operations.

UNIT II OVERVIEW OF DESIGN PROCESS (12 HOURS)

ER Model – E – R Diagrams– Extended E – R Features – Features of Good Relational Design – Atomic Domains and First Normal Form – 2NF – 3NF – BCNF – Decomposition Using Functional Dependencies.

UNIT III NAMING RULES AND CONVENTIONS (12 HOURS)

Data Types – Constraints – Creating Table – Displaying Information – Altering Existing Table – Dropping, Renaming and Truncating a Table. Adding New Records – Updating and Deleting Records – Retrieving Data from Table – Arithmetic Operations – Where Clause – Sorting – CASE.

UNIT IV BUILT – IN FUNCTIONS (12 HOURS)

Grouping Data – Join – Set Operators – Subquery – Top – N Analysis – Correlated Subquery – Views – Sequences – Synonyms – Index – Transactions – Locking Rows for Update – Controlling Access.

UNIT V FUNDAMENTALS OF PL/SQL (12 HOURS)

PL/SQL Block Structure – Comments– Data Types– Variable Declaration – Bind Variable – Control Structures – SQL in PL/SQL – Data Manipulation in PL/SQL – Cursors – Exception Handling – Procedure – Function – Packages.

TEXT BOOKS

1. Abraham Silberschatz, Henry F. Korth and S. Sudarshan, "Database System Concepts", McGraw Hill, Seventh edition, 2019. **(Units I & II)**
2. Nilesh Shah, "Database Systems using Oracle A simplified guide to SQL and PL/SQL", Prentice Hall of India, 2009. **(Units III, IV & V)**

REFERENCE BOOKS

1. Ivan Bayross, "SQL, PL/SQL, The Programming Language of Oracle", BPB Publications, 2020.
2. Alexis Leon and Mathews Leon, "Fundamentals of Database Management Systems", Vijay Nicole Imprints, 2010.
3. Scott Urman, "Oracle 9i PL/SQL Programming", Tata McGraw Hill, 2006.

WEB RESOURCES

1. <https://www.tutorialspoint.com/plsql/index.htm>
2. <https://www.javatpoint.com/oracle-tutorial>
3. https://www.w3schools.com/mysql/mysql_rdbms.asp

PRACTICAL: ORACLE
(Course Code: 26UCAC42)

SEMESTER - IV	CORE – P4	HOURS -3	CREDITS -3	TOTAL HOURS: 45
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LIST OF PROGRAMS

1. Creating, modifying and dropping Tables.
2. Creating tables with Referential and Check Constraints.
3. Inserting, Modifying, Deleting Rows.
4. Retrieving rows with Operators in where Clause.
5. Retrieving rows with Character, Number and Date functions.
6. Retrieving rows with Group functions and Having.
7. Joining Tables. (Inner and Outer).
8. Retrieving rows with Sub Queries.
9. PL/SQL programs with Control Structures.
10. PL/SQL programs with Cursors.
11. PL/SQL programs with Exception Handling.
12. Creating and Calling Procedures and Functions.

WEB DESIGNING WITH MARKUP LANGUAGES

(Course Code:26UCAE41)

SEMESTER -IV	EC-T4	HOURS-3	CREDITS- 3	TOTALHOURS:45
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COURSE OUTCOMES:

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

CO1: Describe the basics of HTML, CSS, and XML. (K1)

CO2: Explain web page designs using links and tables. (K2)

CO3: Use images and forms to design web pages. (K3)

CO4: Analyze the usage of CSS in web page design. (K4)

CO5: Evaluate XML and its components. (K5)

CO6: Design web pages using web design languages. (K6)

UNIT I INTRODUCTION TO HTML (9 HOURS)

Fundamentals of HTML: Understanding Elements – <html>, <head>, <title>, <meta> tags– Headings tags–Understanding Lists– Line Breaks – Understanding Paragraph – Formatting Text with HTML Elements –Comments –Special characters & symbols — <, >, &, ©

UNIT II WORKING WITH LINKS, TABLES AND FRAMES (9 HOURS)

Exploring the Hyperlinks –Understanding Tables – Describing the TABLE Elements –Inserting Images in a Webpage–**IFrames:** Purpose of <iframe> – Attributes - src, width, height, title, frameborder, allow Fullscreen, loading

UNIT III WORKING WITH FORMS (9 HOURS)

Exploring the FORM Element – Exploring Types of the INPUT Element – Exploring the BUTTON Element – Exploring the Multiple–Choice Elements– Submitting a Form: Form attributes —validation attributes — required, pattern, min, max, placeholder

UNIT IV OVERVIEW OF CSS (9 HOURS)

Understanding the Syntax of CSS–Element selector, class selector, ID selector–Properties: Box Model Properties– Positioning–Display & Layout–Font Properties–CSS PseudoClasses – Internal Style Sheet – External Style Sheet –Inline Style Sheet.

UNIT V XML WITH DTD (9 HOURS)

XML Basics: Creating Well – Formed XML – XML elements – XML Attributes – XML tree – XML comments -Working with DTD: Validating your XML Documents–Defining DTD Entities–Working with Attributes

TEXT BOOK

1. Kogent Learning Solutions Inc., “HTML5 Black Book”, Second Edition, Dreamtech Press, 2016.
2. Sikos, Leslie F. “Web Standards: Mastering HTML5, CSS3, and XML ”,Apress, 2014.

REFERENCE BOOKS

1. Heather Williamson, “The Complete Reference – XML”, Tata McGraw Hill Edition, 2011.
2. Mike McGrath, “HTML5 in Easy Steps”, BPB Publications, Second Edition, 2017.
3. Thomas A. Powell, “The Complete Reference – HTML& CSS”, McGraw Hill Education, Fifth Edition, 2017.
4. Ed Tittel, Lucinda Dykes, Frank Boumphrey,” XML for Dummies”, John Wiley & Sons, 3rd Edition, 2002

WEB RESOURCES

1. <https://www.w3schools.com/html/>
2. <https://www.w3schools.com/css/>
3. <https://www.w3schools.com/xml/>

COMPUTER GRAPHICS

(Course Code: 26UCAE41)

SEMESTER-IV	EC – T4	HOURS - 3	CREDITS- 3	TOTAL HOURS: 45
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COURSE OUTCOMES

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

CO1: Describe the line drawing algorithms.(K1)

CO2: Interpret the attributes of various output primitives.(K2)

CO3: Examine the various 2D basic transformations.(K3)

CO4: Analyze the different line clipping and polygon clipping algorithms.(K4)

CO5: Compare the visible surface detection methods. (K5)

CO6: Design illumination models. (K6)

UNIT I OUTPUT PRIMITIVES (9 HOURS)

Output Primitives: Points and Lines – Line Drawing algorithms – Loading frame Buffer – Circle Generating algorithms.

UNIT II 2D TRANSFORMATIONS (9 HOURS)

Attributes of Output Primitives: Line Attributes – Curve attributes – Color and Grayscale Levels – Areafill attributes – Character Attributes. **2D Geometric Transformations:** Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations.

UNIT III CLIPPING AND 3D CONCEPTS (9 HOURS)

2D Viewing: The Viewing Pipeline – Window-to-Viewport Co-ordinate Transformation. **Clipping Operations:** Point clipping – Line clipping – Polygon and Text clipping – **3D Geometric Modeling and Transformations:** Translation – Rotation – Scaling – Other Transformations.

UNIT IV VISIBLE SURFACE DETECTION METHODS (9 HOURS)

Visible-Surface Detection Methods: Classification of Visible-Surface algorithms – BackFace Detection – Depth-Buffer Method – A-Buffer method– Scan- Line Method – DepthSorting Method – BSP-Tree Method – Area-Subdivision Method – Octree Methods – Raycasting Methods.

UNIT V ILLUMINATION MODELS (9 HOURS)

Illumination Models: Properties of Light – Standard Primaries and the Chromaticity Diagram – Intuitive color Concepts – RGB Color Model –CMY Color Model – HSV Color Model – Conversion between HSV and RGB models – Color selection and Applications.

TEXT BOOK

Donald Hearn, M. Pauline Baker, “Computer Graphics”, Fourth Edition, PHI, 2012.

REFERENCE BOOKS

1. Roy A. Plastock, Zhigang Xiang, “Schaum’s Outlines Computer Graphics”, McGraw Hill Education, 2006.
2. Rajesh K. Maurya, “Computer Graphics with Virtual Reality System”, Third Edition, Wiley Publications, 2018.

WEB RESOURCES

1. <https://www.tutorialspoint.com/computer-graphics/index.asp>
2. <https://www.edx.org/learn/computer-graphics>

PRACTICAL: WEB DESIGNING WITH MARKUP LANGUAGES

(Course Code:26UCAE42)

SEMESTER -IV	EC-P3	HOURS-2	CREDITS- 2	TOTAL HOURS:30
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LIST OF PROGRAMS:

1. Design a webpage with images tables and Embed audio and video
2. Design a student registration form with validation
3. Create a webpage with using CSS header, nav, section, article, aside, footer
4. Design a structured webpage using CSS box model, positioning, and layout techniques
5. Style a webpage using CSS: selectors, colors, fonts, backgrounds, borders, and box model
6. Create a well-formed XML document with elements, attributes, and hierarchy
7. Define and apply a DTD to validate the XML document

PRACTICAL: COMPUTER GRAPHICS

(Course Code : 26UCAE42)

SEMESTER – IV	EC – P3	HOURS - 2	CREDITS – 2	TOTAL HOURS: 30
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LIST OF PROGRAMS

1. Program to implement DDA line drawing algorithm.
2. Program to implement Bresenham's line drawing algorithm.
3. Program to implement circle drawing algorithm.
4. Program to demonstrate line, curve and area fill attributes.
5. Program to implement basic 2D transformations.
6. Program to implement reflection, scaling and shearing transformation using 2D object.

SOFTWARE ENGINEERING

(Course Code: 26UCAE43)

SEMESTER – IV	EC-T5	HOURS - 4	CREDITS – 4	TOTAL HOURS : 60
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COURSE OUTCOMES:

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

CO1: Describe the Professional Software Development & Software Process Models. **(K1)**

CO2: Summarize the Software Requirement Analysis and Specifications. **(K2)**

CO3: Illustrate Different Software Testing Methodologies. **(K3)**

CO4: Analyze the Function Oriented & Object Oriented Software Design. **(K4)**

CO5: Decide the Benefits and Problems of reusing software when developing systems. **(K5)**

CO6: Design the Basic Project Management Practices in real life projects. **(K6)**

UNIT I INTRODUCTION (12 HOURS)

Evolution – Software Development Projects – Exploratory Style of Software Development – Emergence of Software Engineering – **SOFTWARE LIFE CYCLE MODELS** – Waterfall Model and its Extensions – Rapid Application Development (RAD) – Agile Development Models – Spiral Model.

UNIT II REQUIREMENT ANALYSIS AND SPECIFICATION (12 HOURS)

Requirement Gathering and Analysis – Software Requirement Specification – Formal System Specification **SOFTWARE DESIGN** – Overview of the Design Process – Cohesion and Coupling – Layered Arrangement of Modules – Approaches to Software Design.

UNIT III FUNCTION ORIENTED AND OBJECT ORIENTED SOFTWARE DESIGN (12 HOURS)

Overview of SA/SD Methodology – Structured Analysis – Developing the DFD Model of a System – Structures Design – **OBJECT ORIENTED SOFTWARE DEVELOPMENT** – Introduction to Patterns – Common Design Patterns **USER INTERFACE DESIGN** – Characteristics of Good Interface – Basic Concepts – Types of User Interface – Fundamentals of Component based GUI – A User Interface Design Methodology.

UNIT IV CODING AND TESTING (12 HOURS)

Coding – Code Review – Software Documentation – Testing – Unit Testing – Black-Box Testing – White-Box Testing – Debugging – Program Analysis Tools – Integration Testing – System Testing – General Issues Associated with Testing.

UNIT V SOFTWARE PROJECT MANAGEMENT (12 HOURS)

Software Project Management Complexities – Responsibilities of a Software Project Manager – Project Planning – Metrics for Project Size Estimation – Project Estimation

Techniques – Empirical Estimation Techniques – COCOMO – Heuristic Estimation Technique – Risk Management – Software Configuration Management -**SOFTWARE MAINTENANCE** – Characteristics of Software Maintenance – Software Reverse Engineering – Software Maintenance Process Models – **SOFTWARE RESUSE** – A Reuse Approach – Reuse at Organization Level.

TEXT BOOK

Rajib Mall, “Fundamentals of Software Engineering”, Fifth Edition, PHI Learning Private Ltd, 2018.

REFERENCE BOOKS

1. Roger Pressman S., “Software Engineering: A Practitioner's Approach”, Eighth Edition, McGraw Hill, 2019.
2. Ian Sommerville, “Software Engineering”, Tenth Edition, Pearson Publication, 2016.

WEB RESOURCES

1. Software Engineering: What It is, Definition, Tutorial - javatpoint
2. <https://www.geeksforgeeks.org/software-engineering/>

E-COMMERCE
(Course Code: 26UCAE43)

SEMESTER - IV	EC-T5	HOURS - 4	CREDITS - 4	TOTAL HOURS: 60
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COURSE OUTCOMES:

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

- CO1:** Outline the scope of E-Commerce. **(K4)**
CO2: Develop the concept of electronic market and market place. **(K6)**
CO3: Describe the business models. **(K1)**
CO4: Discuss about the business standards. **(K2)**
CO5: Illustrate the legal and security issues. **(K3)**
CO6: Influence the different technologies in Online shopping. **(K5)**

UNIT I INTRODUCTION (12 HOURS)

Main Activities of E-Commerce – Broad Goals of E-Commerce– E-Commerce technical Components – Functions of E-Commerce – Prospectus of E-Commerce – Lessons from E-Commerce Evolution– Scope of E-Commerce.

UNIT II E-COMMERCE ARCHITECTURE (12 HOURS)

E-Commerce Technical Architecture– E-Commerce Strategies– E-Commerce Essentials– E-Commerce applications– Foundation of E-Commerce – Growth of E-Commerce – Advantages of E-Commerce – Disadvantages of E-Commerce – Progress of E-Commerce in India.

UNIT III MATRIX OF E-COMMERCE (12 HOURS)

Driving the E-Commerce Revolution – E-Commerce Activities– Matrix of E-Commerce models– B2C – B2B – B2B Boom– E-Commerce opportunity Framework– Developing an E-Commerce Strategy– International E-Commerce – International Strategy Development– Dotcom Companies.

UNIT IV ELECTRONIC MARKET (12 HOURS)

Electronic Market:Online Shopping– Online Purchasing– Electronic Market– Three models of Electronic Market– Markets category– International Marketing – One-to-one Marketing– Permission Marketing– Pull and Push technologies– B2B Hubs– B2B market places– B2B exchange.

UNIT V E-BUSINESS (12 HOURS)

Electronic Business applications Emerging applications– Electronic Business Architecture– AMR Model for Electronic Business– Evolution of Electronic Business Application– Dotcom companies – The Indian scenario for E-Business–Electronic business implementations– B2B E-Commerce – B2C E-Commerce – B2B Market Place.

TEXT BOOK

C.S.V Murthy, “E-Commerce Concepts. Models, Strategies”, Second Edition, Himalaya Publishing House, 2019.

REFERENCE BOOKS

1. David Whiteley, “E-Commerce: Strategy, Technologies and Applications”, McGraw Hill Education, 2018.
2. Chaffey, “E-Business and E-Commerce Management: Strategy, Implementation and Practice”, Sixth Edition, Pearson Education India, 2018.

WEB RESOURCES

1. https://www.tutorialspoint.com/e_commerce/
2. <https://www.geeksforgeeks.org/e-commerce/>

.NET PROGRAMMING USING C#

(Course Code: 26UCAC51)

SEMESTER – V	CORE – T5	HOURS – 5	CREDITS – 5	TOTAL HOURS: 75
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COURSE OUTCOMES

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

CO1: Describe Decision making and Looping statements.(K1)

CO2: Interpret the concepts of classes and objects and Inheritance. (K2)

CO3: Apply the process of defining and invoking methods.(K3)

CO4: Analyze about interfaces and operator overloading.(K4)

CO5: Evaluate the various String Methods. (K5)

CO6: Create Windows Applications and Web-based Applications.(K6)

UNIT I INTRODUCTION (15 HOURS)

Introduction: Evolution of C# – Simple C# Program – Literals, Variables and Data Types – Decision Making and Branching Statements – Looping Statements – Methods in C# – Declaring Methods – Invoking Methods – Nesting of Methods –Method Overloading – One-Dimensional Arrays –Two-Dimensional Arrays

UNIT II STRINGS AND CLASSES (15 HOURS)

Manipulating Strings – Creating Strings – String Methods – Inserting strings – Comparing Strings – Finding Substrings – Array of Strings – Classes and Objects – Defining a Class – Adding variables and methods – Creating objects – Constructors – Member Initialization – this Reference –Classical Inheritance – Defining a subclass – Defining Subclass Constructors – Multilevel Inheritance – Hierarchical Inheritance– Overriding Methods

UNIT III INTERFACES, OPERATOR OVERLOADING AND EXCEPTIONS (15 HOURS)

Defining an interface – Implementing interfaces – Explicit interface implementation –Need for Operator overloading – Defining Operator Overloading – Overloading Binary Operators – Overloading Comparison Operators – Exceptions – Types of errors – Multiple Catch Statements – Exception Hierarchy – General Catch Handler

UNIT IV WINDOWS FORMS (15 HOURS)

Introduction - Windows Forms – Control Properties and Layout – Event Handling - Mouse-Event Handling – Keyboard Event Handling – Labels, TextBoxes and Buttons – GroupBoxes and Panels – CheckBoxes and RadioButtons – ListBox Control- ComboBox Control- Tab Control – Menus- Multiple Document Interface (MDI) Windows – Input validation and Error handling.

UNIT V ADO.NET (15 HOURS)

Understanding Databases - Creating Connection Strings – Creating a Connection to a Database – SQL Server Database – OLEDB Database – ODBC Data Source –Creating a Command Object – Working with DataAdapters – Creating Dataset from DataAdapter –Updating with DataAdapters –Using DataReader to Work with Databases – Databinding in GridView control

TEXT BOOK

1. E. Balagurusamy, “Programming in C#”, Fourth Edition, Tata McGraw Hill Education, 2017.
2. Deitel, Paul, and Harvey M. Deitel. C# 2012 for Programmers. 5th ed., Pearson Education (Prentice Hall), 2013. Deitel® Developer Series.
3. Holzner, Steven. C# 2012 Programming Black Book: Covers .NET 4.5. Dreamtech Press, 2012.

REFERENCE BOOKS

1. Herbert Schildt, “C# - The Complete Reference”, First Edition, McGraw Hill Education, 2017.
2. Whitaker, R. B., “The C# Player’s Guide”. 4th ed., Starbound Software, 2018.
3. Albahari, Joseph, and Ben Albahari., “ C# 7.0 in a Nutshell: The Definitive Reference”. O’Reilly Media, 2017.
4. Cleary, Stephen. “Concurrency in C# Cookbook”. O’Reilly Media, 2014.

WEB RESOURCES

1. <https://www.w3schools.com/cs/index.php>
2. <https://www.tutorialspoint.com/csharp/index.htm>
3. <https://www.javatpoint.com/c-sharp-tutorial>

(Course. Code: 26UCAC52)

SEMESTER – V CORE - T6 HOURS - 5 CREDITS – 5 TOTAL HOURS -75

COURSE OUTCOMES:

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

C01: Describe the basics of Programming Fundamentals. (K1)

CO2: Explain the Control Structures, arrays and Functions. (K2)

C03: Discuss the Object Oriented Programming Concepts. (K2)

C04: Determine the Various Categories of Functions. (K3)

CO5: Illustrate Web Form Handling, Cookies and Sessions. (K4)

CO6: Evaluate the SQL statements and Executing the queries. (K5)

C07: Develop Web Applications in PHP. (K6)

UNIT I INTRODUCTION TO PHP (15 HOURS)

PHP History – Unique feature – Writing and running the script – Mixing PHP with HTML – Variables and Operators – Assigning Values to Variable – Destroying and inspecting Variable Content – PHP Data Types – Manipulating Variable with Operators. **Learning php language:** Basic Building Blocks: Variable – Data Type – Operators & Expression – Constant. Control Structures: if – if else, if else if..else – for, foreach – do- while – while – break – continue – switch.

UNIT II ARRAY, FUNCTIONS, DATE- TIME (15 HOURS)

Arrays: Anatomy of an Array: indexed and Associative Array – Creating Arrays – Accessing Array Elements – Looping through Array – Multidimensional Array – and Manipulating Array using array functions. **Functions:** What and why function – User- Defined Function – Function Arguments– Returning values – Calling Function – Variable Function, and Recursive Function – String – Creating & Accessing String – String Manipulation using string functions. **DATE–TIME:** Understanding Timestamp – Getting current date & time – Extracting date time values – format character for date – Formatting Date String.

UNIT III JAVA SCRIPT (15 HOURS)

Introduction to JavaScript – Syntax – Statements – Syntax – Comments – Variables – Operators – Data Types – Functions- Events – Strings – Numbers – Dates – Control statements - Reserved Words

UNIT IV WEB FORM HANDLING , COOKIES & SESSION (15 HOURS)

Capturing form Data with PHP – Dealing with Multi-value Fields – Validating Form Input – Generating Web Forms – Storing Variable in Forms – Working with Multipage Forms – Creating File – Upload Forms – Redirecting form submission.**PRESERVING STATE IN PHP:** Understanding cookies – Session & Query String – Saving State with Query String – Working with cookies – PHP Session to store data.

(15 HOURS)

TEXT BOOK

REFERENCE BOOKS

- ## WEB RESOURCES

- BCA 2026 – 2029**

PRACTICAL: .NET PROGRAMMING USING C#
(Course Code: 26UCAC53)

SEMESTER – V	CORE – P5	HOURS – 5	CREDITS – 3	TOTAL HOURS: 75
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LIST OF PROGRAMS

1. Program using Method Overloading.
2. Program using Classes and Objects.
3. Program using Inheritance.
4. Program using Interface.
5. Program using Binary Operator Overloading.
6. Program using exception handling with multiple catch statements.
7. Program to Create a Multiple Document Interface (MDI) Application – parent form with child forms.
8. Program to Use Modal and Modeless Dialog Boxes: demonstrate ShowDialog() and Show().
9. Program to Create a Calculator using Windows Application.
10. Program to Create an ADO.NET Application Demonstrating DataGridView Control.
11. Program to Create a Windows Application for Registration Form with MessageBox Display.
12. Program to Create an ADO.NET Application to Create a Table and Insert Values.
13. Program to Retrieve Values from Database using DataReader
14. Designing a Windows Application with Input Validation using ErrorProvider
15. Program to Use TabControl with Multiple Pages – each page having different controls.

PRACTICAL: PHP PROGRAMMING

(Course Code : 26UCAC54)

SEMESTER - V	CORE - P6	HOURS - 5	CREDITS – 3	TOTAL HOURS -75
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LIST OF PROGRAMS

1. Program to display the sum of the given number using function.
2. Program for demonstration of string functions.
3. Program that will use the concept form.
4. Program to read the employee details using form component.
5. Program for demonstrating an Array.
6. Program to prepare student Mark sheet using switch statement.
7. Program for create and write the contents into the file.
8. Program for uploading the file.
9. Program to Make a Simple Calculator using JavaScript.
10. Program to Sort Words in Alphabetical Order using JavaScript
11. Program to count the number of visitors using session.
12. Program using database.

OPERATING SYSTEMS AND LINUX

(Course Code: 26UCAE51)

SEMESTER – V	EC – T6	HOURS – 4	CREDITS – 3	TOTAL HOURS: 60
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COURSE OUTCOMES:

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

CO1: Define the basic concepts of the operating system. **(K1)**

CO2: Describe about the process concepts and scheduling. **(K2)**

CO3: Describe the LINUX Concepts and Applications. **(K2)**

CO4: Demonstrate the LINUX Shell Programming Scripts. **(K3)**

CO5: Categorize the methods of handling deadlocks in operating system. **(K4)**

CO6: Evaluate about the LINUX file systems. **(K5)**

UNIT I OPERATING SYSTEM INTRODUCTION (12 HOURS)

Introduction: Operating System – Computer System Organization – Operating System Structure – Operations – Process Management – Memory Management – Storage Management – Protection and Security **System structures:** Operating System Services – User Operating System Interface – System Calls – Types of System Calls – System Programs – Operating System Structure.

UNIT II PROCESS MANAGEMENT (12 HOURS)

Process Concept: Process Scheduling – Operations on Processes – Inter Process Communication
Process Scheduling: Basic concepts – Scheduling Criteria – Scheduling Algorithms
Synchronization: Background – Critical Section Problem – Mutex locks – Semaphores – Classic problems of synchronization.

UNIT III DEAD LOCKS (12 HOURS)

Deadlocks: System Model – Deadlock Characterization – Methods of Handling Deadlocks – Deadlock prevention – Deadlock Avoidance **Memory Management Strategies:** Background – Swapping – Contiguous Memory allocation – Segmentation – Paging Virtual Memory Management: Background – Demand Paging – Page replacement.

UNIT IV LEARNING THE SHELL (12 HOURS)

What is the Shell – Navigation – Understanding the File System Tree – Exploring the System – Manipulating Files and Directories – Working with Commands – Redirection – Redirecting Standard Output - Redirecting Standard Input – Pipelines – Filters - Permissions – Processes – **Configuration and the environment** – A Gentle Introduction to Vi – Customizing the Prompt – Regular Expressions.

UNIT V SHELL SCRIPTING (12 HOURS)

Writing Shell Scripts – Script File Format – Executable Permissions – Variables and Constants – Shell Functions – Local Variables – FLOW CONTROL – Branching with IF – Looping with

While/Until – Branching with CASE – Looping with FOR.

TEXT BOOKS

1. Abraham Silber Schatz, Peter Baer Galvin, Greg Gagne, “Operating System Concepts”, Ninth Edition, Wiley India, 2018.
2. William Shotts, “The Linux Command Line”, Second Edition, William Pollock Publisher, 2019.

REFERENCE BOOKS

1. Gary J.Nutt, “Operating Systems”, Second Edition, Pearson Education Asia, 2013.
2. H.M.Deital, “Operating Systems”, Second Edition, Addison-Wesley Publishing Company, 2011.
3. Richard Blum, Christine Bresnahan, “Linux Command Line and Shell Scripting Bible”, Third Edition, Wiley, 2015.

WEB RESOURCES

1. <https://www.studytonight.com/operating-system/>
2. <https://www.javatpoint.com/operating-system>
3. <https://www.geeksforgeeks.org/linux-tutorial/>

DATA ANALYTICS USING R PROGRAMMING

(COURSE CODE: 26UCAE51)

SEMESTER – V	EC – T6	HOURS – 4	CREDITS – 3	TOTAL HOURS: 60
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COURSE OUTCOMES

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

CO1: Work with big data tools and its analysis techniques.(K1)

CO2: Analyze data by utilizing clustering and classification algorithms.(K2)

CO3: Learn and apply different mining algorithms and recommendation systems for large volumes of data.(K3)

CO4: Perform analytics on data streams. (K4)

CO5: Learn No SQL databases and management. (K5)

CO6: Implementing Genric Functions Using S Class. (K6)

UNIT I INTRODUCTION (12 HOURS)

Evolution of Big Data - Best Practices for Big Data Analytics - Big Data Characteristics - Validating - The Promotion of the Value of Big Data - Big Data Use Cases - Characteristics of Big Data Applications - Perception and Quantification of Value - Understanding Big Data Storage - A General Overview of High-Performance Architecture - HDFS - MapReduce and YARN - MapReduce Programming Model.

UNIT II CONTROL STRUCTURES AND VECTORS (12 HOURS)

Control structures, functions, scoping rules, dates and times, Introduction to Functions, preview of Some Important R Data Structures, Vectors, Character Strings, Matrices, Lists, DataFrames, Classes Vectors: Generating sequences, Vectors and subscripts, Extracting elements of a vector using subscripts, Working with logical subscripts, Scalars, Vectors, Arrays, and Matrices, Adding and Deleting Vector Elements, Obtaining the Length of a Vector, Matrices and Arrays as Vectors Vector Arithmetic and Logical Operations, Vector Indexing, Common Vector Operations

UNIT III LISTS (12 HOURS)

Lists: Creating Lists, General List Operations, List Indexing Adding and Deleting List Elements, Getting the Size of a List, **Extended Example:** Text Concordance Accessing List Components and Values Applying Functions to Lists, DataFrames, Creating Data Frames, Accessing Data Frames, Other Matrix-Like Operations

UNIT IV FACTORS AND TABLES (12 HOURS)

Factors and Levels, Common Functions Used with Factors, Working with Tables, Matrix/Array-Like Operations on Tables, Extracting a Sub table, Finding the Largest Cells in a Table, Math Functions, Calculating a Probability, Cumulative Sums and Products, Minima and Maxima, Calculus, Functions for Statistical Distributions R PROGRAMMING.

UNIT V OBJECT-ORIENTED PROGRAMMING

(12 HOURS)

S Classes, Generic Functions, Writing S Classes, Using Inheritance, S Classes, Writing S Classes, Implementing a Generic Function on an S Class, visualization, Simulation, code profiling, Statistical Analysis with R, data manipulation

TEXT BOOKS

1. Roger D. Peng, "R Programming for Data Science", 2012
2. Norman Matloff, "The Art of R Programming - A Tour of Statistical Software Design", 2011

REFERENCE BOOKS

1. Garrett Golemund, Hadley Wickham, "Hands-On Programming with R: Write Your Own Functions and Simulations", 1st Edition, 2014
2. Venables, W.N., and Ripley, "S Programming", Springer, 2000.

WEB RESOURCES

1. <https://www.simplilearn.com>
2. <https://www.tutorialspoint.com/data-analytics-using-r-programming/index.asp>
3. <https://www.javatpoint.com/r-tutorial>

PRACTICAL: LINUX
(Course Code: 26UCAE52)

SEMESTER - V	EC – P4	HOURS – 4	CREDITS -3	TOTAL HOURS: 60
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LIST OF PROGRAMS

1. Execution of various file handling commands.
2. Execution of various directory handling commands.
3. Shell script using Else-if statement.
4. Shell script using while/Until Loop.
5. Shell script using For Loop.
6. Shell script using CASE.
7. Simple shell script for basic arithmetic and logical calculations.
8. Shell scripts to check various attributes of files and directories.
9. Shell script to File Permissions
10. Write a shell script to display Command Line Arguments.
11. Write a shell script to find Sum of Numbers passed as Command Line Arguments.
12. Write a Menu-Driven shell script for:
 - i. Display date
 - ii. List files
 - iii. Show current directory
 - iv. Exit

PRACTICAL: R PROGRAMMING

(Course Code: 26UCAE52)

SEMESTER - V	EC – P4	HOURS – 4	CREDITS -3	TOTAL HOURS: 60
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LIST OF PROGRAMS

1. Program to convert the given temperature from Fahrenheit to Celsius and vice versa depending on user's choice.
2. Program, to find the area of rectangle, square, circle, and triangle by accepting suitable input parameters from the user.
3. Write a program to find a list of even numbers from 1 to n using R-Loops.
4. Create a function to print squares of numbers in sequence.
5. Write a program to join columns and rows in a data frame using cbind() and rbind() in R.
6. Implement different String Manipulation functions in R.
7. Implement different data structures in R (Vectors, Lists, DataFrames).
8. Write a program to read a csv file and analyze the data in the file in R.
9. Create pie chart and bar chart using R.
10. Create a data set and do statistical analysis on the data using R.
11. Program to find factorial of the given number using recursive function.
12. Write an R program to count the number of even and odd numbers from an array of N numbers.

ANDROID PROGRAMMING

(Course Code: 26UCAC61)

SEMESTER – VI	CORE – T7	HOURS – 4	CREDITS – 4	TOTAL HOURS: 60
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COURSE OUTCOMES:

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

C01: Recite the Basics of Android. (K1)

C02: Differentiate Various Resources. (K2)

C03: Examine Various features in Android Application Development. (K3)

CO4: Infer SQLite Database. (K4)

CO5: Evaluate and debug the Android Applications. (K5)

CO6: Build new Innovative Android Applications. (K6)

UNIT 1 INTRODUCTION TO ANDROID (12 HOURS)

Introduction to Android -The Android Debug Bridge- Android Project Files- Using the EditText Control - Attributes Used to Configure the EditText Control - Adding an Event Listener to the EditText Control- Choosing Options with CheckBox- Choosing Mutually Exclusive Items Using RadioButtons – Buttons - Event Handling: Creating an Anonymous Inner Class- Activity Implementing the OnClickListener Interface.

UNIT II DEBUGGING AND VIEWS (12 HOURS)

Using the Debugging Tool - Debugging Applications using break points - Creating Android Virtual Devices - Launching Android Applications on a Handset - Role of the Android Manifest File- Understanding Activities -Understanding the Android Activity Life Cycle - Creating and Starting an Activity -Displaying Messages Through Toast.

UNIT III LAYOUTS AND RESOURCES (12 HOURS)

Introduction to Layouts: LinearLayout - RelativeLayout - FrameLayout - TableLayout - GridLayout - Adapting to Screen Orientation: Anchoring Controls - Resources: Types of Resources - Creating Values Resources - Color Resources -Styles and Themes - Applying Themes – Arrays- Using Drawable Resources.

UNIT IV MENU AND OTHER CONTROLS (12 HOURS)

Menus and Their Types- Creating Menus Through XML - Creating an Options Menu - Adding Submenus - Creating Menu through Coding - Using ListView- Using the Spinner Control - Populating a Spinner Through ArrayAdapter - AlertDialog - Methods of the AlertDialog.Builder Subclass

UNIT V WEB PAGES AND DATABASE (12 HOURS)

Displaying Web Pages - Adding Permission for Internet Access - Using the WebViewClient Class - Switching States with Toggle Buttons - Using Databases: Using the SQLiteOpenHelper Class - Fetching the Desired Rows from Tables -Using Cursors- Displaying Table Rows Via ListView

TEXTBOOK

1. B.M.Harwani, “Android Programming Unleashed”, Pearson Education, Inc., First edition 2013

REFERENCE BOOKS

1. J.F. DiMarzio, “Beginning Android Programming with Android Studio”, Fourth Edition, John Wiley & Sons Inc., 2017.
2. Dawn Griffiths and David Griffiths, “Head First Android Development”, Second Edition, Shroff/O’Reilly, 2018.
3. John Horton, “Android Programming for Beginners”, Second Edition, Packt Publishing Limited, 2018.
4. M. M. Sharma, Rashmi Aggarwal, “Android Programming for Beginners”, First Edition, BPB Publications, 2018.
5. Ian F. Darwin, Android Cookbook: Problems and Solutions for Android Developers, Second Edition, O’Reilly Media, Inc., 2017.

WEB RESOURCES

1. <https://www.javatpoint.com/android-tutorial>
2. <https://www.tutorialspoint.com/android/index.htm>
3. <https://www.geeksforgeeks.org/android-tutorial/>
4. <https://www.tutlane.com/tutorial/android>

J2EE

(COURSE CODE: 26UCAC62)

SEMESTER – VI	CORE – T8	HOURS – 4	CREDITS – 4	TOTAL HOURS: 60
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COURSE OUTCOMES:

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

CO1: Describe J2EE Multi-Tier Architecture. (K1)

CO2: Gain theoretical and practical knowledge about servlets and JSP (K1).

CO3: Demonstrate and improve knowledge about distributed systems and web services (K1).

CO4: Develop the ability to create applications based on servlets and JSP (K2, K3).

CO5: Create servlet programs using HTTPRequest and HTTPResponse objects. (K6)

CO6: Cultivate the skill to solve real-world problems using concepts like JDBC (K3).

UNIT I J2EE MULTI-TIER ARCHITECTURE (12 HOURS)

J2EE Multi-Tier Architecture – Client Tier Implementation – Web Tier Implementation – Enterprise JavaBeans Tier Implementation – Enterprise Information Systems Tier Implementation.

UNIT II SERVLETS (12 HOURS)

Java Servlets: Benefits of using a Servlet – A simple Java Servlet. Reading Data from a Client – Sending data to a Client – Working with Cookies – Tracking Sessions.

UNIT III JSP (12 HOURS)

JSP Basics – JSP scripting elements and Directives –Declarations – Expressions – Directives – Scriptlets – Comments – Actions – Implicit JSP Objects – error Pages using JavaBean in JSP – Creating a Login using JavaBean - embedded control flow statements .

UNIT IV RMI (12 HOURS)

RMI: Remote Method Invocation Concept – Remote Interface – Passing Objects – The RMI Process – Server Side – Client Side.

UNIT V JAVA DATABASE CONNECTIVITY (12 HOURS)

JDBC: Types of Drivers – Steps to establish connectivity – Example of connectivity- JDBC Driver types – creating first JDBC program – retrieving data – database error processing – processing result sets –preparedstatement class – callablestatement class

TEXT BOOKS

1. Jim Keogh, “The Complete Reference J2EE”, Tata McGraw Hill Edition, 2017.
2. Damon, Hougland, Aaron Tavistock, “Core JSP”, Prentice Hall, 2001.
3. Dr. K. Somasundaram, “Programming in Java 2”, Jaico Publishing House, 2005. (Unit-V)

REFERENCE BOOKS

1. Santosh Kumar. K, “JDBC, Servlet 3.1 and JSP 2.3 Black Book”, Second Edition, Dreamtech Press, 2016.
2. Recommended by CDAC, ”Core and Advanced Java Black Book”, First Edition, Dreamtech Press, 2018.

WEB RESOURCES

1. <https://mindmajix.com/j2ee-tutorial>
2. <https://www.javatpoint.com/java-ee>
3. <https://www.java4coding.com/contents/servlet/jee-tutorial>

PRACTICAL: ANDROID PROGRAMMING

(Course Code: 26UCAC63)

SEMESTER – VI	CORE – P7	HOURS – 5	CREDITS – 2	TOTAL HOURS: 75
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LIST OF PROGRAMS

1. Program to display a message using Toast
2. Program to check Login credentials
3. Application using different Layouts
4. Program to implement Activity Life Cycle
5. Program using Themes and Styles
6. Program using Check Boxes and Radio Buttons
7. Program using Spinner
8. Program for Menu Creation
9. Program to display an image in ImageView
10. Program to load a Web Page in a WebView
11. Program using Android Resources.
12. Program to draw a circle using Canvas and Paint classes

PRACTICAL: J2EE
(Course Code: 26UCAC64)

SEMESTER - VI	CORE – P8	HOURS – 5	CREDITS - 2	TOTALHOURS: 75
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LIST OF PROGRAMS

1. Simple Servlet Program.
2. Program for Login Page using HttpServlet
3. Program to implement Session tracking in Servlet
4. Program to implement Cookies in Servlet
5. Program for JDBC to insert, update delete and display records to and from database using Servlet
6. Program for voting eligibility using JSP
7. Program using Scriptlets of JSP
8. Program using embedded control flow statement
9. Program to implement implicit objects of JSP.
10. Program for JDBC to insert, update, delete, display records to and from database using JSP.

COMPUTER NETWORKS

(Course Code : 26UCAE61)

SEMESTER : VI	EC – T7	HOURS: 4	CREDITS : 3	TOTAL HOURS: 60
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COURSE OUTCOMES:

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

CO1: List down the Network models and protocol suite. **(K1)**

CO2: Explain various transmission media. **(K2)**

CO3: Illustrate digital and analog signals. **(K3)**

CO4: Analyze the flow of transmission and recovery methods. **(K4)**

CO5: Evaluate various multiple access methods. **(K5)**

CO6: Generate solutions for congestion issues and formulate the ideas about DNS. **(K6)**

UNIT I NETWORK MODELS, TRANSMISSION MEDIA (12 HOURS)

Introduction: Data Communications – Networks-Internet Protocols and standards. **Network**

Models: Layered Tasks - The OSI Model - Layers in the OSI Model - TCP/IP Protocol Suite - Addressing. **Transmission media:** Guided Media - Unguided media.

UNIT II DIGITAL AND ANALOG TRANSMISSION (12 HOURS)

Digital Transmission: Analog-To-Digital conversion - Transmission modes. **Analog**

Transmission: Digital-To-Analog conversion. **Bandwidth Utilization:** Multiplexing – spread spectrum.

UNIT III SWITCHING, DATA LINK CONTROL (12 HOURS)

Switching: Circuit Switched Networks - Datagram Networks - Virtual-circuit Networks. **Error**

Detection and Correction: Introduction - Block Coding – Linear Block Codes. **Data Link control:** Framing - Flow and Error Control - Noiseless Channel - Noisy Channel.

UNIT IV MULTIPLE ACCESS, WIRELESS LAN (12 HOURS)

Multiple Access: Random Access - ALOHA – CSMA – CSMA/CD – CSMA/CA - Controlled Access – Reservation - Polling - Token Passing – Channelization – FDMA - TDMA - CDMA.

Wireless LAN: Bluetooth - Architecture - Bluetooth Layers - Radio Layer - Baseband Layer - L2CAP - Other Upper Layers.

UNIT V NETWORK LAYER, CONGESTION CONTROL AND DNS (12 HOURS)

Network Layer: Delivery – Forwarding - Unicast Routing and Multicast routing. **Congestion**

Control: Open Loop congestion control and Closed Loop congestion control. **Domain Name System:** Namespace - Domain Name space.

TEXT BOOK

Behrouz A Forouzan, “Data Communications and Networking”, Fifth Edition, McGrawHill Higher Education, 2013.

REFERENCE BOOKS

1. Andrew S Tanenbaum, “Computer Networks”, Pearson Publications, Fifth Edition, 2011.
2. Achyut and Godbole, “Data Communications and Computer Networks”, Tata McGraw Hill Edition, 2006.

WEB RESOURCES

1. <https://www.javatpoint.com/computer-network-tutorial>
2. https://www.tutorialspoint.com/data_communication_computer_network/index.htm

INTRODUCTION TO BLOCK CHAIN TECHNOLOGY

(Course Code: 26UCAE61)

SEMESTER : VI	EC – T7	HOURS: 4	CREDITS : 3	TOTAL HOURS: 60
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COURSE OUTCOMES:

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

CO1: Understand how blockchain systems work. **(K1)**

CO2: Able to understand types of block chain **(K3)**

CO3: Record distributed applications of blockchain **(K4)**

CO4: Diagram public key cryptography. **(K5)**

CO5: Differentiate blockchain technology applications. **(K6)**

UNIT I (12 HOURS)

Blockchain : The growth of blockchain technology- Distributed system Electronic cash – Blockchain defined peer to peer – distributed ledger – Cryptographically secure, append only, updateable via consensus – Benefits & limitations of blockchain – features of Blockchain.

UNIT II (12 HOURS)

Types of Blockchain: Distributed ledgers – Public Blockchain – Private Blockchain – Tokenized Blockchain – Tokenless Blockchain – CAP Theorem & Blockchain

UNIT III (12 HOURS)

Decentralization: Decentralization using Blockchain – methods of decentralization – Routes to decentralization – Platforms for decentralization

UNIT IV (12 HOURS)

Public key cryptography: Public keys – Private key , digital signatures and hash function – Introducing Bitcoin – Bitcoin network & payments

UNIT V (12 HOURS)

Applications of Blockchain technology: Introduction to Ethereum – Solidity programming language- Applications of Blockchain technology.

TEXT BOOK

Mastering Block Chain - Imran Bashir, second edition, packt publishing, 2018

REFERENCE BOOK

Block chain Ebook – cybrosys publishers, www.cybrosys.com

WEB RESOURCES

1. [https://www.tutorialspoint.com/blockchain /](https://www.tutorialspoint.com/blockchain/)
2. <https://www.javatpoint.com/blockchain>
3. [https://www.coursera.org/learn/ introduction to blockchain](https://www.coursera.org/learn/introduction-to-blockchain)
4. [https://www.geeksforgeeks.org/ blockchain /](https://www.geeksforgeeks.org/blockchain/)

PROFESSIONAL COMPETENCY SKILL

(Course Code: 26UCAS61)

SEMESTER - VI	SEC - 6	HOURS - 2	CREDITS – 2	TOTAL HOURS: 30
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COURSE OUTCOMES:

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

CO1: Define their own ability to improve their own competence in using the language **(K1)**

CO2: Explain the importance of reading for life. **(K2)**

CO3: Use language for speaking with confidence in an intelligible and acceptable manner. **(K3)**

CO4: Illustrate unfamiliar texts with comprehension. **(K4)**

CO5: Evaluate the importance of writing in academic life. **(K5)**

CO6: Create simple sentences without committing error of spelling or grammar. **(K6)**

UNIT I COMMUNICATION

(6 HOURS)

Listening: Listening to audio text and answering questions – Speaking: Pair work and small group work – Reading: Comprehension passages – Writing: Developing a story with pictures.

UNIT II DESCRIPTION

(6 HOURS)

Listening: Listening to process description – Drawing a flow chart – Speaking: Role play (formal context) – Reading: Skimming/Scanning – Reading passages on products and gadgets – Writing: Process Description – Sentence Definition and Extended Definition – Free writing.

UNIT III NEGOTIATION STRATEGIES

(6 HOURS)

Listening: Listening to interviews of inventors in fields (Subject specific) – Speaking: Brain Storming (Mind mapping) – Reading: Longer Reading text – Writing: Essay writing (250 words).

UNIT IV PRESENTATION SKILLS

(6 HOURS)

Listening: Listening to lectures – Speaking: Short talk – Reading: Comprehension passages – Writing: Writing Recommendations – Interpreting Visual inputs.

UNIT V CRITICAL THINKING SKILLS

(6 HOURS)

Listening: Listening for information – Speaking: Making presentations with Powerpoint – Reading: Comprehension passages – Note making Motivational article on Professional Competence, Professional Ethics and Life Skills – Writing: Creative writing – Summary writing.

TEXT BOOK

Contents from Study Material provided by Tamil Nadu State Council for Higher Education (TANSCH) – Professional English for B.Sc. Physical Sciences.

ADD ON COURSES

MICROSOFT OFFICE

(Course Code: 26UCAA01)

SEMESTER - I	CREDITS – 2	TOTAL HOURS - 30
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COURSE OUTCOMES:

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

CO1: Define basic functions and new formatting features in Word 2010.(K1)

CO2: Describe the Header and Footer content and update page numbers and dates.(K2)

CO3: Examine the various features of Word. (K3)

CO4: Analyze the formatting techniques.(K4)

CO5: Evaluate the process of adding pictures, wordart and animations.(K5)

CO6: Design various tables and lists. (K6)

UNIT I INTRODUCTION (6 HOURS)

Create and Manage Documents - Open a PDF in Word for editing - Insert text from a file or external source - Navigate Through a Document - Insert hyperlinks - Search for text - Create bookmarks - Move to a specific location or object in a document - Format a Document – Spell check.

UNIT II PAGE SETUP (6 HOURS)

Modify page setup - Apply document themes - Apply document style sets - Insert headers and footers - Insert page numbers - Format page background elements - Customize Options and Views for Documents - Change document views – Bullets & Numbering.

UNIT III FORMATTING TEXT (6 HOURS)

Format Text, Paragraphs, and Sections - Insert Text and Paragraphs - Find and replace text - Cut, copy and paste text - Replace text by using AutoCorrect - Insert special characters - Format Text and Paragraphs - Apply font formatting - Apply formatting by using Format Painter - Set line and paragraph spacing and indentation - Clear formatting – Headers & Footers - Apply built-in styles to text.

UNIT IV FORMATTING PAGE (6 HOURS)

Change text to WordArt - Order and Group Text and Paragraphs - Format text in multiple columns - Insert page, section, or column breaks - Change page setup options for a section - Create Tables and Lists - Create a Table - Convert text to tables - Convert tables to text - Create a table by specifying rows and columns - Apply table styles - Modify a Table - Sort table data - Configure cell margins and spacing - Merge and split cells - Resize tables, rows, and columns - Split tables

UNIT V FORMAT GRAPHIC ELEMENTS (6 HOURS)

Insert Images and table captions – Charts & Cliparts- Create and Manage Simple References Insert shapes - Insert pictures - Insert a screen shot or screen clipping - Insert text boxes Format Graphic Elements - Apply artistic effects - Apply picture effects - Remove picture backgrounds - Format objects - Apply a picture style - Wrap text

TEXT BOOK

Tom Bunzel, “[Easy Microsoft Office 2010](#)”, Que Publishing, First Edition, 2010.

REFERENCE BOOKS

Gary B. Shelly, Misty E. Vermaat, “Microsoft Office 2010: Introductory”, Cengage Learning, First Edition 2012.

WEB RESOURCES

1. <https://www.javatpoint.com/ms-word-tutorial>
2. <https://www.tutorialspoint.com/word/index.html>

C PROGRAMMING

(Course Code: 26UCAAO2)

SEMESTER - II	CREDITS - 2	HOURS - 30
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COURSE OUTCOMES:

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

CO1: Describe types of operators and decision making statements. **(K1)**

CO2: Interpret conditional statements. **(K2)**

CO3: Discuss the problem-solving and programming skills. **(K3)**

CO4: Analyze branching and looping. **(K4)**

CO5: Evaluate arrays and strings. **(K5)**

CO6: Examine the various categories of functions. **(K6)**

UNIT I INTRODUCTION AND OPERATORS (6 HOURS)

Introduction: History of C - Importance of C – Character set – C Tokens - Keywords and Identifiers – Constants – Variables – Data types – Declaration of variables – Assigning values to variables – Defining symbolic constants – declaring variable as constant. **Operators:** Arithmetic operators – Relational operators – Logical operators – Assignment operators – Increment and Decrement operators – Conditional operator.

UNIT II EXPRESSIONS, INPUT AND OUTPUT (6 HOURS)

Expressions: Arithmetic expressions – Evaluation of expressions – precedence of arithmetic operators – type conversions in expressions – operator precedence and associativity. Managing Input and Output Operations: Introduction – Reading a character – Writing a character – Formatted Input – Formatted Output.

UNIT III BRANCHING AND LOOPING (6 HOURS)

Branching Statements: Introduction – Simple IF statement – IF Else statement – Nesting of IF Else statement – Else If ladder – Switch statement - ?: operator – GOTO statement. **Looping Statements:** while Loop – do .. while Loop – for Loop – Jumps in Loops.

UNIT IV ARRAYS AND STRINGS (6 HOURS)

One Dimensional Array: Declaration of One Dimensional Array - Initialization of One Dimensional Array. **Two Dimensional Array:** Initialization of two Dimensional Array - Multidimensional Arrays. **Strings:** Reading and Writing Strings – String Handling Functions.

UNIT V FUNCTIONS (6 HOURS)

User-Defined Functions: Need for User-Defined Functions – Elements of Functions – Definition of Function – Return values and its types – Function calls - Function Declaration – Category of Functions: No argument and No return value - Argument and No return value - Argument with return value - No argument but return value.

TEXT BOOK

1. E. Balagurusamy, “Programming in ANSI C”, Eighth Edition, McGrawHill Education (India) Private Limited, 2019.

REFERENCE BOOKS

1. Dr. Ashish Sasankar, Prof. Prachi A. Sasankar, “Programming in C - A Practical Approach”, First Edition, Global Education, 2020.
2. Byron S. Gottfried, “Programming with C - Schaum’s Outlines”, Fourth Edition, McGrawHill Education, 2018.
3. Herbert Schildt, “C: The Complete Reference”, Fourth Edition, McGrawHill Education, 2017.

WEB RESOURCES

1. https://www.w3schools.com/c/c_intro.php
2. <https://www.programiz.com/c-programmin>

PRACTICAL LIST

1. Write a program to design the Calculator Functions such as addition, subtraction and multiplication.
2. Write a Program to Swap Two Numbers.
3. Write a program to check whether a given number is odd or even.
4. Write a program to find the biggest among three numbers.
5. Write a program to check whether a given number is Armstrong or not.
6. Write a program to generate the Fibonacci Series
7. Write a program to find the Factorial of a number
8. Write a program to check whether a given string is palindrome or not.

VALUE ADDED COURSES

INTRODUCTION TO ARTIFICIAL INTELLIGENCE

(Course Code :26UCAVA1)

SEMESTER : III	CREDITS : 2	HOURS - 30
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COURSE OUTCOMES:

After successful completion of this course, the students will be able to:

CO1: Understand AI foundations, history, agents, rationality, environments, and agent structure. **(K1)**

CO2: Master problem-solving, search strategies, and heuristic functions in AI. **(K2)**

CO3: Grasp logical agents, propositional logic, and the improving techniques. **(K3)**

CO4: Learn supervised learning, decision trees, and hypothesis valuation in AI. **(K4)**

CO5: Comprehend reinforcement learning, passive/active learning, and generalization techniques. **(K5)**

CO6: Demonstrate proficiency in applying AI techniques to solve real-world problems. **(K5)**

UNIT I INTRODUCTION

(6 HOURS)

Introduction: What Is AI? - The Foundations of Artificial Intelligence - The History of Artificial Intelligence - The State of the Art - **Intelligent Agents:** Agents and Environments - Good Behavior: The Concept of Rationality - The Nature of Environments - The Structure of Agents

UNIT II SEARCHING

(6 HOURS)

Solving Problems by Searching: Problem-Solving - Searching for Solutions - Uninformed Search Strategies - Informed (Heuristic) Search Strategies - Heuristic Functions

UNIT III LOGICAL AGENTS

(6 HOURS)

Logical Agents: Knowledge-Based Agents - The Wumpus World - Logic - Propositional Logic: A Very Simple Logic - Propositional Theorem Proving

UNIT IV LEARNING

(6 HOURS)

Learning: Learning from Examples - Forms of Learning - Supervised Learning - Learning Decision Trees - Evaluating and Choosing the Best Hypothesis

UNIT V REINFORCEMENT LEARNING

(6 HOURS)

Reinforcement Learning: Introduction - Passive Reinforcement Learning - Active Reinforcement Learning - Generalization in Reinforcement Learning

TEXT BOOK

Stuart Russell and Peter Norvig, "Artificial Intelligence: A Modern Approach", 3rd Edition, Prentice Hall.

REFERENCE BOOKS

1. Trivedi, M.C., "A Classical Approach to Artificial Intelligence", Khanna Publishing House, Delhi.
2. Saroj Kaushik, "Artificial Intelligence", Cengage Learning India, 2011.
3. David Poole and Alan Mackworth, "Artificial Intelligence: Foundations for Computational Agents", Cambridge University Press, 2010.
4. Elaine Rich and Kevin Knight, "Artificial Intelligence", Tata McGraw Hill.

WEB RESOURCES

1. <https://www.geeksforgeeks.org/artificial-intelligence/artificial-intelligence/>
2. <https://www.sanfoundry.com/artificial-intelligence-tutorial/>

UI/UX DESIGN USING FIGMA
(Course Code: 26UCAVA2)

SEMESTER: IV

CREDITS: 2

HOURS: 30

COURSE OUTCOMES:

After successful completion of this course, the students will be able to:

CO1: Explain the fundamentals of Figma. (K1)

CO2: Describe the Figma design environment. (K2)

CO3: Apply grids, layout grids, color systems, typography, and auto layout UI designs. (K3)

CO4: Analyze and organize UI components and design elements. (K4)

CO5: Evaluate and build interactive prototypes using transitions and triggers. (K5)

CO6: Create complete UI/UX design solutions. (K6)

UNIT – I EXPLORING FIGMA

(6 HOURS)

Introduction: What is Figma -Creating an account -Exploring the welcome screen -**Exploring ideas and collaborating in FigJam:** Exploring FigJam-Select and Hand Tool-Marker-Shapes and Connectors-Text-Sections-Tables

UNIT – II DESIGN ENVIRONMENT

(6 HOURS)

Starting a new design project: Design files-Frames and Groups-Interface overview -**Getting used to the toolbar:** Main tools- Menu-Move-Scale-Frame-Selection/Slice-Shapes-Place image/video-Pen-Pencil-Text-Resources-Hand-Comment -**Settings and more:** File title-Active users-Share-Dev mode-Present-Zoom/view -Quick Shortcuts-**Exploring left panel:** Layers and Pages-Assets -**Exploring right panel:** Design-Prototype: Inactive state-Active state-Help Center

UNIT – III GRIDS, COLORS, TYPHOGRAPHY AND COMPONENTS

(6 HOURS)

Design Palette: Color modes -Blend Modes-Color Palette-Eyedropper tool- Color models -Color styles -Creating effects - Grids and Layout Grids - **Layout:** What is auto layout- Direction-Gap-Padding-Alignment-Adding, removing and rearranging elements -Resizing Elements -**Creating and organizing components:** top navigation menu-main carousel-content cards-repeated rows

UNIT – IV PROTOTYPING AND SHARING

(6 HOURS)

Moving between frames and transitions: Exploring triggers: On click/On tap-On drag-While hovering-While Pressing-Key/Gamepad-Mouse enter/Mouse leave-Mouse down/Mouse up-After delay - **Viewing your interactive prototype:** Running prototype on desktop/web-Using the inline preview-Running the prototype on a smartphone/tablet -Animating with smart animate - Structuring interactive components -Creating interactive overflows and overlays

UNIT – V RESOURCES, PLUGINS AND WIDGETS

(6 HOURS)

Exploring the Figma community: Accessing and publishing to the Figma Community-Starting off with FigJam and templates -**Finding Resources:** UI kits and design systems -**Extending Figma with plugins:** Iconify-LottieFiles-Speeding up your flow with AI - FigGPT - Figma

TEXT BOOK

1. Fabio Staiano, “Designing and Prototyping Interfaces with Figma: Elevate your design craft with UX/UI principles and create interactive prototypes”, Second Edition, Packt Publishing Ltd. 2023

REFERENCE BOOKS

1. Aditi Sharma, “Ultimate Figma for UI/UX Design”, Orange Education Pvt Ltd, 2025
2. Tom Green & Kevin Brandon, “UX Design with Figma: User-Centered Interface Design and Prototyping with Figma”, Apress, 2024

WEB RESOURCES

1. <https://www.geeksforgeeks.org/websites-apps/figma-tutorial>
2. <https://www.guideflow.com/tool/figma>

PRACTICAL LIST

1. Create a social media post.
2. Design a responsive card with auto layout.
3. Design an interactive button.
4. Create a loading animation.
5. Build a tooltip component set.
6. Create a photo gallery prototype.
7. Create illustrations using vector tools.

EXTRA CREDIT COURSES

FUNDAMENTALS OF COMPUTERS

(Course Code : 26UCAEC1)

SEMESTER - I	ECC	CREDITS – 2
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COURSE OUTCOMES:

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

CO1: Identify and analyze computer hardware, software, and network components. **(K1)**

CO2: Explain the needs of hardware and software required for a computation task. **(K2)**

CO3: Demonstrate the building up of Sequential and combinational logic from basic gates. **(K3)**

CO4: Analyze compression techniques and file formats to determine effective ways of securing, managing, and transferring data. **(K4)**

CO5: Make intelligent computer purchase decisions. **(K5)**

CO6: Integrating hardware and software. **(K6)**

UNIT I EVOLUTION OF COMPUTERS

Evolution of Computers: Generations – Types of computers – Computer system characteristics – Basic components of a Digital Computer – Control unit – ALU – Input/Output functions and memory – Memory addressing capability of a CPU – Word length of a computer – Processing speed of a computer – Computer Classification.

UNIT II INPUT AND OUTPUT UNITS

Input/Output Units: Keyboard – Mouse – Trackball – Joystick – Digitizing tablet – Scanners – Digital Camera – MICR – OCR – OMR – Bar-code Reader – Voice Recognition – Light pen – Touch Screen – Monitors and types of monitor – Digital – Analog – Size – Resolution – Refresh Rate – Dot Pitch – Video Standard – VGA – SVGA – XGA etc. – Printers & types – Daisy wheel – Dot Matrix – Inkjet – Laser – Line Printer – Plotter – Sound Card and Speakers.

UNIT III MEMORY

Memory: RAM – ROM – EPROM – PROM and other types of memory – Storage fundamentals – Primary vs. Secondary Data Storage – Various Storage Devices – Magnetic Tape – Magnetic Disks – Cartridge Tape – Hard Disk Drives – Floppy Disks (Winchester Disk) – Optical Disks – CD – VCD – CD-R – CD-RW – Zip Drive – Flash drives Video Disk – Blue Ray Disc – SD/MMC Memory cards – Physical structure of floppy & hard disk – Drive Naming Conventions in PC – DVD – DVD-RW – USB Pen drive.

UNIT IV SOFTWARE AND ITS TYPES

Software and its Need: Types of Software – System software – Application software – System Software – Operating System – Utility Program – Algorithms – Flow Charts – Symbols – Rules for making Flow chart – Programming languages – Assemblers – Compilers and Interpreter – Computer Applications in various fields.

UNIT V INTERNET CONCEPTS

Internet Concepts: Introduction to Internet – Connecting to the Internet Hardware –Software & ISPs – Search Engines – Web Portals–Online Shopping – Email – Types of Email – Compose and send a message – Reply to a message – Working with emails – Surfing in the Internet.

TEXT BOOKS

P.K. Sinha, “Computer Fundamentals”, New Age International Publishers, 2014.
<https://www.edutechlearners.com/computer-fundamentals-p-k-sinha-free-pdf>

REFERENCE BOOKS

1. S.K.Basandra, “Computers Today”, Galgotia Publications.
2. Shree SaiPrakashan, “PC Software”, Meerut.

WEB RESOURCES

1. <https://www.geeksforgeeks.org/computer-fundamentals-tutorial/>
2. <https://www.freecodecamp.org/news/computer-basics-for-absolute-beginners/>

CLOUD COMPUTING

(Course Code :26UCAEC2)

SEMESTER : II	ECC	CREDITS : 2
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COURSE OUTCOMES

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

CO1:Describe fundamental concepts and Technologies of Cloud Computing. **(K1)**

CO2:Demonstrate various cloud service types and their uses and pitfalls. **(K2)**

CO3:Describe about Cloud Architecture and Application design. **(K3)**

CO4:Examine To know the various aspects of application design, benchmarking and security on the Cloud. **(K4)**

CO5:Implement various Case Studies in Cloud Computing. **(K5)**

UNIT I INTRODUCTION TO CLOUD COMPUTING

Introduction to Cloud Computing: Definition of Cloud Computing – Characteristics of Cloud Computing – Cloud Models – Cloud Service Examples – Cloud-based Services and Applications. Cloud Concepts and Technologies: Virtualization – Load balancing – Scalability and Elasticity – Deployment – Replication – Monitoring – Software Defined Networking – Network Function Virtualization – MapReduce – Identity and Access Management – Service Level Agreements – Billing.

UNIT II CLOUD SERVICES

Compute Services: Amazon Elastic Computer Cloud - Google Compute Engine - Windows Azure Virtual Machines Storage Services: Amazon Simple Storage Service - Google Cloud Storage - Windows Azure Storage. Database Services: Amazon Relational Data Store - Amazon Dynamo DB - Google Cloud SQL - Google Cloud Data Store - Windows Azure SQL Database - Windows Azure Table Service Application Services: Application Runtimes and Frameworks - Queuing Services - Email Services - Notification Services - Media Services.

UNIT II CLOUD APPLICATION DESIGN

Introduction – Design Consideration for Cloud Applications – Scalability – Reliability and Availability – Security – Maintenance and Upgradation – Performance – Reference Architectures for Cloud Applications – Cloud Application Design Methodologies: Service Oriented Architecture (SOA), Cloud Component Model, IaaS, PaaS and SaaS Services for Cloud Applications, Model View Controller (MVC), RESTful Web Services – Data Storage Approaches: Relational Approach (SQL), Non-Relational Approach (NoSQL).

UNIT IV CLOUD APPLICATION BENCHMARKING AND TUNING

Introduction to Benchmarking – Steps in Benchmarking – Workload Characteristics – Application Performance Metrics – Design Consideration for Benchmarking Methodology – Benchmarking Tools and Types of Tests – Deployment Prototyping. **Cloud Security:** Introduction – CSA Cloud

Security Architecture – Authentication (SSO) – Authorization – Identity and Access Management
– Data Security : Securing data at rest, securing data in motion – Key Management – Auditing.

UNIT IV CASE STUDIES

Cloud Computing for Healthcare – Cloud Computing for Energy Systems - Cloud Computing for Transportation Systems - Cloud Computing for Manufacturing Industry - Cloud Computing for Education.

TEXT BOOK

1. ArshdeepBahga, Vijay Madiseti, *Cloud Computing – A Hands On Approach*, Universities Press (India) Pvt. Ltd., 2018.

2.

REFERENCE BOOKS

1. David Crookes, *Cloud Computing in Easy Steps*, Tata McGraw Hill, 2012
2. Anthony T Velte, Toby J Velte, Robert Elsenpeter, *Cloud Computing: A Practical Approach*, Tata McGraw-Hill, 2013.

WEB RESOURCES

1. <https://www.javatpoint.com/cloud-computing>
2. <https://www.geeksforgeeks.org/cloud-computing-tutorial>

DATA MINING
(Course Code: 26UCAEC3)

SEMESTER - III	ECC	CREDITS - 2
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COURSE OUTCOMES:

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

CO1: Define the Data mining Techniques and preprocessing methods for any given raw data. **(K1)**

CO2: Interpret the Data warehouse Design and Implementation. **(K2)**

CO3: Examine the useful patterns and associations in huge amount of data. **(K3)**

CO4: Categorize the interesting patterns from large amounts of data to analyze and extract patterns to solve problems, make predictions of outcomes. **(K4)**

CO5: Evaluate and implement a wide range of emerging and newly – adopted methodologies and technologies to facilitate the knowledge discovery. **(K5)**

CO6: Generate frequent set of items using Association Rule Mining. **(K6)**

UNIT I DATA MINING AND DATA PREPROCESSING

Introduction to Data Mining – Fundamentals of Data Mining – Data Mining Functionalities – Data and Attribute types – Statistical Description of Data – Data Preprocessing: Data Cleaning – Data Integration – Data Reduction – Data Transformation and Data Discretization.

UNIT II DATA WAREHOUSING

Data Warehousing: Basic Concepts – Data Ware House Modelling Data Cube and OLAP – Data Warehouse Design and Implementation.

UNIT III MINING FREQUENT PATTERN AND ASSOCIATIONS

Mining Frequent Patterns and Associations: Basic Methods – Frequent Item Set Mining Methods Any Two Algorithms – Pattern Evaluation Methods.

UNIT IV CLASSIFICATION

Classification: Basic Concepts – Decision Tree Induction – Bayes Classification – Any Two Advanced Methods – Model Evaluation.

UNIT V CLUSTER ANALYSIS

Cluster Analysis: Basic Concepts – Clustering Structures – Major Clustering Approaches – Partitioning Methods – Hierarchical Method – Density Based Methods – The Expectation Maximization Method – Cluster Based Outlier Detection Essential Reading.

TEXTBOOK

Jiawei Han, Micheline Kamber and Jian Pei, “Data Mining: Concepts and Techniques”, Third Edition, Morgan Kaufmann, 2012.

REFERENCE BOOKS

1. G.K. Gupta, “Introduction to Data mining with case studies”, Third Edition, PHI Learning Private limited, New Delhi, 2014.
2. Charu C. Aggarwal, “Data Mining”, Springer, 2015.

WEB RESOURCES

1. <https://www.javatpoint.com/data-mining>
2. <https://www.geeksforgeeks.org/data-mining>

WIRELESS TECHNOLOGY

(Course Code: 26UCAEC4)

SEMESTER - IV	ECC	CREDITS - 2
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COURSE OUTCOMES:

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

CO1: Describe the basics of Wireless Transmission. **(K1)**

CO2: Differentiate the frequencies of Spread Spectrum and Modulation. **(K2)**

CO3: Demonstrate GSM. **(K3)**

CO4: Illustrate GPRS. **(K4)**

CO5: Evaluate MAC techniques. **(K5)**

CO6: Summarize Satellite Communication. **(K6)**

UNIT I

Wireless Transmission-I : Frequencies for communication– Frequencies for mobile communication – Frequencies and regulations – Signals (physical representation of data, function of time and location) – Fourier representation of periodic signals – Different representations of signals (w.r.t.freq and amp) – Antennas (isotropic radiator, simple dipoles, directed and sectorized) – MIMO – Signal propagation ranges – Signal propagation – shadowing, reflection, refraction, scattering, diffraction) – Multipath propagation – Effects of mobility.

UNIT II

Wireless Transmission-II: Modulation– Digital – Analog – Spread spectrum technology – DSS – FHSS – Cell structure – Frequency planning– Cell breathing.

UNIT III

Wireless Telecommunication Systems: GSM: Overview –Performance characteristics of GSM (wrt. analog sys.) –**GSM:** Mobile Services– Architecture of the GSM system– System Architecture – GSM – TDMA/FDMA – GSM hierarchy of frames – GSM protocol layers for signaling – Mobile Originated Call – Mobile Originated Call – 4 types of handover – Handover decision – Handover procedure – Data services in GSM – GPRS quality of service – GPRS architecture and interfaces – GPRS protocol architecture.

UNIT IV

3G-The Universal Mobile Telecommunication System (UMTS):UMTS Network Architecture –Release 99, UMTS Interfaces, UMTS Network Evolution –UMTS Release 5 – UMTS FDD and TDD – UMTS Channels –Logical Channels – UMTS downlink transport and physical channels – UMTS uplink transport and physical channels – UMTS Time Slots – UMTS Network Protocol – Architecture – Mobility Management for UMTS Network.

UNIT V

Medium Access Control: Motivation for a specialized MAC – SDMA – FDMA – TDMA – CDMA – Wireless LANs – Characteristics of wireless LANs – Comparison: Infrared vs. radio transmission – Comparison – Infrastructure vs. ad-hoc networks – 802.11 – Architecture of an infrastructure network – 802.11 – Architecture of an ad-hoc network – Basics of Satellite communication.

TEXT BOOKS

1. William Stallings, “Wireless Communications and Networks”, Pearson/Prentice Hall of India, 2019.
2. Maral. G and Bosquet. M, “Satellite Communications Systems Techniques and Technologies”, John Wiley & Sons, Fifth Edition, 2011.

REFERENCE BOOKS

1. Dharma Prakash, Agrawal and Qing-An Zeng, “Introduction to Wireless Mobile Systems” Thomson India, 2015.
2. Vijay K Garg, “Wireless Communication and Networking”, Morgan Kaufmann Publishers, 2010.
3. Siva Ram Murthy C and Manoj B S, “Ad Hoc Wireless Networks: Architectures and Protocols”, Prentice Hall, 2004.

WEB RESOURCES

1. https://www.tutorialspoint.com/wireless_communication/index.htm
2. <https://www.javatpoint.com/applications-of-wireless-communication>

INTERNET OF THINGS

(Course Code :26UCAEC5)

SEMESTER - V	ECC	CREDITS - 2
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COURSE OUTCOMES:

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

CO1: Describe the characteristics, physical and logical design of IoT. **(K1)**

CO2: Classify the various domain specific IoTs **(K4)**

CO3: Differentiate IoT and M2M. **(K2)**

CO4: Illustrate the IoT design methodology. **(K3)**

CO5: Examine the various case studies illustrating IoTs. **(K5)**

CO6: Summarize the role of Cloud in IoT. **(K5)**

UNIT I INTRODUCTION AND DOMAIN SPECIFIC IoTs

Introduction – Definition and Characteristics of IoT – Physical design of IoT – Logical Design of IoT – IoT enabling technologies – IoT levels and Deployment templates – Domain Specific IoTs: Home Automation – Cities – Environment – Energy – Retail – Logistics – Agriculture – Industry – Health and Lifestyle.

UNIT II IoT SYSTEM MANAGEMENT AND DESIGN METHODOLOGY

IoT and M2M: Introduction – M2M – Difference between IoT and M2M – SDN and NFV for IoT – Software Defined Networking – Network Function Virtualization – Need for IoT System Management SNMP – Network operator requirements – NETCONF – YANG – IoT System Management with NETCONF-YANG – IoT Design methodology.

UNIT III IoT SYSTEMS LOGICAL DESIGN AND PHYSICAL DEVICES

IoT Systems – Python packages for IoT – IoT Physical devices and endpoints: Basic building blocks of IoT devices – Exemplary device: Raspberry Pi – Linux on Raspberry Pi – Raspberry Pi Interfaces – Programming Raspberry Pi with Python.

UNIT IV IoT PHYSICAL SERVERS, CLOUD OFFERINGS AND CASE STUDIES

Introduction to Cloud storage models and Communication APIs – Xively Cloud for IoT – Python Web Application Framework - DJANGO – Designing a RESTful Web API – Amazon Web Services for IoT – Amazon EC2 – Amazon Autoscaling – Amazon S3 – AmazonRDS – Case studies illustrating IoT – Smart Lighting – Home Intrusion System – IoT printer.

UNIT V DATA ANALYTICS AND TOOLS FOR IoT

Introduction – Apache Hadoop – Mapreduce Programming Model – Hadoop Mapreduce Job Execution – Mapreduce Job Execution Workflow – Hadoop Cluster Setup – Tools for IoT – Chef – Setting up Chef – Chef Case studies.

TEXT BOOK

Arshdeep Bahga, Vijay Madiseti, “Internet of Things: A Hands-on Approach” , Second Edition, Universities Press, 2019.

REFERENCE BOOKS

1. Ammar Rayes, Samere Salam, “Internet of Things – From Hype to Reality”, Second Edition, Springer Publishers, 2019.
2. S. Misra, A. Mukherjee, and A. Roy, “Introduction to IoT”, First Edition, Cambridge University Press, 2022.

WEB RESOURCES

1. https://link.springer.com/chapter/10.1007/978-3-030-41110-7_1
2. <https://www.techtarget.com/iotagenda/definition/Internet-of-Things-IoT>

SOCIAL NETWORKS
(Course Code :26UCAEC6)

SEMESTER - VI	ECC	CREDITS - 2
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COURSE OUTCOMES:

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

- CO1:** Describe the basic concepts of Graph Theory. **(K1)**
- CO2:** Interpret the Power Law and Emergent Properties. **(K2)**
- CO3:** Analyze the Online Social Network Datasets. **(K3)**
- CO4:** Examine Homophily and Structural balance. **(K4)**
- CO5:** Evaluate Link Analysis and Link Prediction. **(K5)**
- CO6:** Assess the diffusion behavior in Networks. **(K5)**

UNIT I INTRODUCTION

Introduction to Graph Theory and Python – Analyzing Online Social Network Datasets.

UNIT II POWER LAW

Power Law and Emergent Properties – Strength of Weak Ties.

UNIT III HOMOPHILY

Homophily and Social Influence – Structural Balance.

UNIT IV LINK ANALYSIS AND PREDICTION

The Structure of the web – Link analysis and Web Search – Link Prediction.

UNIT V DIFFUSION BEHAVIOR IN NETWORKS

Information Cascades – Diffusion Behavior in Networks – The Small World Phenomenon.

TEXT BOOK

David Easley and Jon Kleinberg, “Networks, Crowds and Markets”, Cambridge University Press, 2010. (available for free download).

REFERENCE BOOKS

1. Matthew O. Jackson, “Social and Economic Networks”, Princeton University Press, 2010.
2. D. Rajagopal, “Social Networks”, First Edition, Notion Press, 2019.

WEB RESOURCES

1. https://onlinecourses.nptel.ac.in/noc24_cs56/preview
(SWAYAM/NPTEL Online Course videos by Dr. S. R. SudharshanIyengar and Dr. Yayati Gupta, IIT, Ropar).
2. <https://www.techtarget.com/whatis/definition/social-networking>.