FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with "A++" Grade by NAAC (4thCycle)

Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT: INFORMATION TECHNOLOGY

NAME OF THE PROGRAMME : B. Sc.

PROGRAMME CODE : USIT

ACADEMIC YEAR : 2022-23

VISION OF THE DEPARTMENT

The vision is to be the center of excellence in training the students in Information Technology to excel both as a professional and as a human in the society.

MISSION OF THE DEPARTMENT

- Empower women by teaching them technology and life lessons.
- Encourage students to be the change in the society.
- Educate students and prepare them in various aspects of IT industry.
- Provide leadership quality for effective strategic and tactical planning in use of technology.
- Instill the power of faith and hope so they could be the blessing to their next generation.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

A graduate of B.Sc.ITprogramme after five years will be

PEO 1	Our graduates will be academic, digital and information literates, creative, inquisitive, innovative and desirous for the “more” in all aspects
PEO 2	They will be efficient individual and team performers, exhibiting progress, flexibility, transparency and accountability in their professional work
PEO 3	The graduates will be effective managers of all sorts of real – life and professional circumstances, making ethical decisions, pursuing excellence within the time framework and demonstrating apt leadership skills
PEO 4	They will engage locally and globally evincing social and environmental stewardship demonstrating civic

	responsibilities and employing right skills at the right moment.

GRADUATE ATTRIBUTES (GA)

Fatima College empowers her women graduates holistically. A Fatimite achieves all-round empowerment by acquiring Social, Professional and Ethical competencies. A graduate would sustain and nurture the following attributes:

I. SOCIAL COMPETENCE	
GA 1	Deep disciplinary expertise with a wide range of academic and digital literacy
GA 2	Hone creativity, passion for innovation and aspire excellence
GA 3	Enthusiasm towards emancipation and empowerment of humanity
GA 4	Potentials of being independent
GA 5	Intellectual competence and inquisitiveness with problem solving abilities befitting the field of research
GA 6	Effectiveness in different forms of communications to be employed in personal and professional environments through varied platforms
GA 7	Communicative competence with civic, professional and cyber dignity and decorum
GA 8	Integrity respecting the diversity and pluralism in societies, cultures and religions
GA 9	All – inclusive skill sets to interpret, analyse and solve social and environmental issues in diverse environments

GA 10	Self awareness that would enable them to recognise their uniqueness through continuous self-assessment in order to face and make changes building on their strengths and improving their weaknesses
GA 11	Finesse to co-operate exhibiting team-spirit while working in groups to achieve goals
GA 12	Dexterity in self-management to control their selves in attaining the kind of life that they dream for
GA 13	Resilience to rise up instantly from their intimidating setbacks
GA 14	Virtuosity to use their personal and intellectual autonomy in being life-long learners
GA 15	Digital learning and research attributes
GA 16	Cyber security competence reflecting compassion, care and concern towards the marginalised
GA 17	Rectitude to use digital technology reflecting civic and social responsibilities in local, national and global scenario
II. PROFESSIONAL COMPETENCE	
GA 18	Optimism, flexibility and diligence that would make them professionally competent
GA 19	Prowess to be successful entrepreuners and become employees of trans-national societies
GA 20	Excellence in Local and Global Job Markets
GA 21	Effectiveness in Time Management
GA 22	Efficiency in taking up Initiatives
GA 23	Eagerness to deliver excellent service
GA 24	Managerial Skills to Identify, Commend and tap

	Potentials
III. ETHICAL COMPETENCE	
GA 25	Integrity and be disciplined in bringing stability leading a systematic life promoting good human behaviour to build better society
GA 26	Honesty in words and deeds
GA 27	Transparency revealing one's own character as well as self-esteem to lead a genuine and authentic life
GA 28	Social and Environmental Stewardship
GA 29	Readiness to make ethical decisions consistently from the galore of conflicting choices paying heed to their conscience
GA 30	Right life skills at the right moment

PROGRAMME OUTCOMES (PO)

The learners will be able to

PO 1	Apply acquired scientific knowledge to solve complex issues.
PO 2	Attain Analytical skills to solve complex cultural, societal and environmental issues.
PO 3	Employ latest and updated tools and technologies to analyse complex issues.
PO 4	Demonstrate Professional Ethics that foster Community, Nation and EnvironmentBuilding Initiatives.

PROGRAMME SPECIFIC OUTCOMES (PSO)

On completion of B.Sc. Information TechnologyProgramme, the graduates would be able to

PSO 1	Apply computational techniques and software principles for designing of software systems.
PSO 2	Develop efficient and effective software systems using modern computer techniques.
PSO 3	Acquire fundamental concepts, methods and practices of Information Technology to develop theoretical and practical skill sets.
PSO 4	Justify the optimum technique to allocate memory resources, processors, I/O peripherals to provide optimal programmatic solution to a real world problem.
PSO 5	Support to gain skills on basic as well as trendy software languages and packages to design web sites, web apps, mobile apps and real time software projects.
PSO 6	Promote the students to generalize and distinguish the characters of different systems for different environment.
PSO 7	Trigger the students to enroll in to the research areas of IT industry like cloud computing and data analytics.
PSO 8	Able to become entrepreneur and to pursue career in IT industries.

FATIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF INFORMATION TECHNOLOGY

PROGRAMME CODE : USIT

PART – I – TAMIL / FRENCH / HINDI– 12 CREDITS

PART – I – TAMIL

Offered by The Research Centre of Tamil

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19TL1C1	Language-Modern Literature பொதுத்தமிழ் - இக்கால இலக்கியம்	5	3	40	60	100
2.	II	19TL2C2	Language - Bakthi Literature பொதுத்தமிழ் - பக்தி இலக்கியம்	5	3	40	60	100
3.	III	19TL3C3	Language- Epic Literature பொதுத்தமிழ் - காப்பிய இலக்கியம்	5	3	40	60	100
4.	IV	19TL4C4	Language-Sangam Literature பொதுத்தமிழ் - சங்க இலக்கியம்	5	3	40	60	100
			Total	20	12			

PART – I –FRENCH

Offered by The Department of French

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19RL1C1	PART 1 LANGUAGE FRENCH - LE NIVEAU INTRODUCTIF	5	3	40	60	100
2.	II	19RL2C2	PART 1 LANGUAGE FRENCH - LE NIVEAU DÉCOUVERTE	5	3	40	60	100
3.	III	19RL3C3	PART 1 LANGUAGE FRENCH - NIVEAU INTERMEDIAIRE	5	3	40	60	100
4.	IV	19RL4C4	PART 1 LANGUAGE FRENCH - NIVEAU DE SUIVRE	5	3	40	60	100
			Total	20	12			

PART – I – HINDI

Offered by The Department of Hindi

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19DL1C1	PART 1 LANGUAGE HINDI - VYAKARAN AUR KARYALAYEEN HINDI	5	3	40	60	100
2.	II	19DL2C2	PART 1 LANGUAGE HINDI -SRIJANATMAK HINDI AUR GADHYA	5	3	40	60	100
3.	III	19DL3C3	PART 1 LANGUAGE HINDI - HINDI SAHITHYA KA AADHIKAAL AUR BHAKTHIKAAL	5	3	40	60	100
4.	IV	19DL4C4	PART 1 LANGUAGE HINDI - REETIKALEEN HINDI SAHITHYA AUR AADHUNIK KAAL	5	3	40	60	100
			Total	20	12			

PART – II -ENGLISH – 12 CREDITS

Offered by The Research Centre of English

S. NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19EL1WB	BASIC COMMUNICATIVE ENGLISH	5	3	40	60	100
2.		19EL1WI	INTERMEDIATE COMMUNICATIVE ENGLISH	5	3	40	60	100
3.		19EL1WA	ADVANCED COMMUNICATIVE ENGLISH	5	3	40	60	100
4.	II	19EL2WB	ENGLISH FOR EFFECTIVE COMMUNICATION (BASIC)	5	3	40	60	100
5.		19EL2WI	ENGLISH FOR EMPOWERMENT (INTERMEDIATE)	5	3	40	60	100
6.		19EL2WA	ENGLISH FOR CREATIVE WRITING (ADVANCED)	5	3	40	60	100
7.	III	19EL3WN	ENGLISH FOR DIGITAL ERA	5	3	40	60	100
8.	IV	19EL4WN	ENGLISH FOR INTEGRATED DEVELOPMENT	5	3	40	60	100
			Total	**20**	**12**			

PART – III -MAJOR, ALLIED & ELECTIVES – 95 CREDITS

MAJOR CORE COURSES INCLUDING PRACTICALS : 60 CREDITS

S.NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	I	21I1CC1	PROGRAMMING IN C	6	4	40	60	100
2.		21I1CC2	LAB I : PROGRAMMING IN C	6	3	40	60	100
3.	II	21I2CC3	DATA STRUCTURES USING C++	6	4	40	60	100
4.		21I2CC4	LAB II: DATA STRUCTURES USING C++	6	3	40	60	100
5.	III	19I3CC5	DATABASE MANAGEMENT SYSTEMS	6	4	40	60	100
6.		19I3CC6	LAB III: RDBMS	6	3	40	60	100
7.	IV	22I4CC7	PROGRAMMING IN JAVA	6	4	40	60	100
8.		22I4CC8	LAB IV:JAVA PROGRAMMING	6	3	40	60	100
9.	V	22I5CC9	.NET PROGRAMMING	5	5	40	60	100
10.		22I5CC10	LAB V: .NET PROGRAMMING	6	3	40	60	100
11.		19I5CC11	SOFTWARE ENGINEERING	5	3	40	60	100
12.		19I5CC12	OPERATING SYSTEMS	5	5	40	60	100

S.NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
13.	VI	22I6CC13	PYTHON PROGRAMMING	5	5	40	60	100
14.		22I6CC14	LAB VI: PYTHON PROGRAMMING	6	3	40	60	100
15.		19I6CC15	DATA COMMUNICATION AND NETWORKING	5	5	40	60	100
16.		19I6CC16	PROJECT	-	3	40	60	100

ALLIEDCOURSES- 20 CREDITS

S.NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19G1ACI1	DISCRETE MATHEMATICS	5	5	40	60	100
2.	II	19G2ACI2	OPERATIONS RESEARCH	5	5	40	60	100
3.	III	19P3ACI3	DIGITAL PRINCIPLES AND COMPUTER ARCHITECTURE	5	5	40	60	100
4.	IV	21AC4ACI4	ACCOUNTING IN DECISION MAKING	5	5	40	60	100

ELECTIVES-15 CREDITS

S.No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	V	19I5ME1/19I5ME2	DATA MINING/NETWORK SECURITY	5	5	40	60	100

S.No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
2.	VI	21I6ME3/ 21I6ME4	CLOUD TECHNOLOGY/ MOBILE COMMUNICATION	5	5	40	60	100
3.		19I6ME5/ 19I6ME6	INFORMATION STORAGE AND MANAGEMENT /COMPUTER GRAPHICS	5	5	40	60	100

PART – IV – 20 CREDITS

- **VALUE EDUCATION**
- **ENVIRONMENTAL AWARENESS**
- **NON MAJOR ELECTIVE**
- **SKILL BASED COURSES**

S. No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	I	19G1VE	Value Education (Including Meditation in Action Movement)	1	1	40	60	100
2.		22I1NME	Non Major Elective– Image Editing Tool (Offered to other major Students)	2	2	40	60	100
3.	II	19G2VE	Value Education	1	1	40	60	100
4.		22I2NME	Non Major Elective - Image Editing Tool (Offered to other major Students)	2	2	40	60	100
5.	III	19I3EN1	Environmental Education	1	1	40	60	100

S. No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
6.		22I3SB1	Skill based–Automation Skills	2	2	40	60	100
7.	IV	19I4EN1	Environmental Education	1	1	40	60	100
8.		19I4SB2	Skill based - Analytical Skills	2	2	40	60	100
9.	V	21I5SB3	Skill based –Excel using VBA	2	2	40	60	100
10.		22I5SB4	Skill based – Image Manipulation tools	2	2	40	60	100
11.	VI	21I6SB5	Skill based –Web Programming using PHP	2	2	40	60	100
12.		21I6SB6	Skill based – Fundamentals of Android Programming	2	2	40	60	100

PART – V – 1 CREDIT

OFF-CLASS PROGRAMMES - ALL PART-V

SHIFT - II

S. No	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	TOT. Mks
1.	I - IV	21S4PED	Physical Education	30/ SEM	1	100
2.		21S4YRC	Youth Red Cross			
3.		21S4NSS	NSS			
4.		21S4RTC	Rotaract			
5.		21S4WEC	Women Empowerment Cell			
6.		21S4ACUF	AICUF			

OFF-CLASS PROGRAMME

ADD-ON COURSES

COURSE CODE	Courses	Hrs.	Credits	Semester in which the course is offered	CIA Mks	ESE Mks	Total Marks
21UAD2CA	**COMPUTER APPLICATIONS**	40	2	I&II	40	60	100
	ONLINE SELF LEARNING COURSE- Foundation Course for Arts	40	3	I	50	-	50
	ONLINE SELF LEARNING COURSE- Foundation Course for Science	40	3	II	50	-	50
	ETHICAL STUDIES-Value Education	15	2	III-VI	50 each Semester	-	100
	HUMAN RIGHTS	15	2	V	-	-	100
	OUTREACH PROGRAMME- Reach Out to Society through Action **ROSA**	100	3	V & VI	-	-	100

COURSE CODE	Courses	Hrs.	Credits	Semester in which the course is offered	CIA Mks	ESE Mks	Total Marks
	PROJECT	30	4	VI	40	60	100
	READING CULTURE	10/Semester	1	II-VI	-	-	-
	MOOC COURSES(Department Specific Courses/any other courses) * Students can opt other than the listed course from UGC-SWAYAM UGC / CEC	-	Minimum 2 Credits	-	-	-	
	TOTAL		22 +				

EXTRA CREDIT COURSES

COURSE CODE	COURSE	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA MKS	ESE MKS	TOTAL MARKS
21I1SLK1	**SELF LEARNING COURSES for ADVANCED LEARNERS: TRENDS IN INFORMATION TECHNOLOGY**	-	2	I	40	60	100
21I3SL1	**SELF LEARNING**	-	2	III	40	60	100

	COURSES for ADVANCED LEARNERS: GREEN COMPUTING						
21J5SLI1	**SELF LEARNING COURSES for ADVANCEDLEARNERS: DATA SCIENCE & TOOLS**	-	2	V	40	60	100
	MOOC COURSES / International Certified online Courses (Department Specific Courses/any other courses) * Students can opt other than the listed course from UGC-SWAYAM UGC / CEC	-	Minimum 2 Credits	I – VI	-	-	

OFF CLASS PROGRAMMES:

19UGVAI1 - Crash Course: Animation Software
21UGVAI2 – Web Designing using HTML5

Skill Development 100%

I B.Sc. Information Technology

SEMESTER –I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	21I1CC1	Programming In C	Lecture	6	4

COURSE DESCRIPTION

This course content plays a vital role in building the fundamental knowledge in programming.

COURSE OBJECTIVES

To impart knowledge on basic concepts in Computer and to demonstrate the fundamental programming techniques in C.

UNITS

UNIT –I INTRODUCTION TO C: (17HRS.)

Overview of C: Introduction – Importance of C – Sample C Program – Basic Structure of C Program – Programming Style – Executing a C Program. Keywords and Identifiers – Constants –Variables - Data types – Declaration of Variables- Assigning values to variables – Defining symbolic constants - Operators and Expressions.

UNIT –II DECISION-MAKING STATEMENTS (17 HRS.)

Decision Making and Branching: Introduction – Decision making with IF statement- Simple IF statement- the IF-Else statement- Nesting of If-Else statement- The Else-if ladder- The switch statement- The ?: operator- **The Go to statement(Self Study).**

Decision Making and Looping: Introduction – The While statement- The Do statement – The For statement – Jumps in loops.

UNIT –III: ARRAYS, STRUCTURES& UNIONS (17 HRS.)

Arrays : Introduction – One Dimensional arrays – Two Dimensional Arrays- Initializing Two dimension Arrays – Multi Dimensional arrays

Structures &Unions : Introduction – Defining Structures- Declaring Structure Variables – Accessing Structure Members - Structure Initialization- **Unions (Self Study).**

UNIT –IV FUNCTIONS

(17HRS.)FUNCTIONS User Defined Functions: Definitions of Functions – Return Values and their types – Function Calls –Function Declarations – Category of Functions - Nesting of Functions – Recursion- Passing Arrays to Functions –**Passing Strings to Functions (Self Study).**

Pointers : Introduction – Accessing the Address of a Variable – Declaring pointer variable – Pointers and Arrays- Array of Pointers – Pointers as Function Arguments – Functions Returning Pointers – Pointers to Functions – **Pointers and Structures(Self Study).**

UNIT –V FILE MANAGEMENT & GRAPHICS (17 HRS.)

File Management in C: Introduction – Defining and Opening a file – Closing file- Input Output operations on files – Error Handling during I/O operations – Random Access to files.

C Graphics: Introduction to graphics- colours in c graphics-graphics functions.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5HRS.)

Real- time Applications using C

TEXT BOOKS:

1. Balagurusamy, E. Programming in ANSI C , 7e. Tata McGraw-Hill Education, 2018. (Chapters: 1, 2, 3, 5, 6, 7, 9, 10, 12)

REFERENCES:

1. Byron Gottfried, "Programming with C", 2nd edition, (Indian Adapted Edition), TMH Publication.
2. YashavantKanetkar, "Let us C", 16th Edition, BPB publication, 2017

OPEN EDUCATIONAL RESOURCES:

1. C Tutorial - Learn C Programming - W3schools.in
   https://www.w3schools.in/c-tutorial.
2. C Tutorial
   https://www.tutorialspoint.com/cprogramming/index.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION TO COMPUTER SYSTEM				
1.1	Characteristics of Computers, History of Computers, Computer System	1	Discussion	Black Board
1.2	Hardware & Software, Components of Hardware, Software	2	Chalk & Talk	Black Board
1.3	Features of Software, Difference between Hardware & Software, Types of software and open source software	1	Lecture	LCD
1.4	Components of Computer and their Functions, Input Unit, Output Unit (Self Study)	1	Discussion	Google classroom
1.5	Storage Unit & CPU: Primary, Secondary and CPU, Blu-Ray Technology, Digital rights management (DRM)	1	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1.6	Overview of C: Introduction	2	Discussion	Google classroom
1.7	Importance of C , Basic Structure of C Program	2	Lecture	PPT & White board
1.8	Programming Style, Executing a C Program	2	Chalk & Talk	Black Board
1.9	Keywords and Identifiers, Constants. Variables, Data types	2	Chalk & Talk	Black Board
1.10	Declaration of Variables, Assigning values to variables, Defining symbolic constants	2	Chalk & Talk	Black Board
1.11	Operators and Expressions	1	Chalk & Talk	Black Board
UNIT -2 DECISION-MAKING STATEMENTS				
2.1	Decision Making and Branching Introduction	1	Lecture	PPT & White board
2.2	Decision making with IF statement, Simple IF statement	2	Chalk & Talk	Green Board
2.3	The IF-Else statement, Nesting of If-Else statement	2	Chalk & Talk	Black Board
2.4	The Else-if ladder, The switch statement	2	Chalk & Talk	Black Board
2.5	The ?: operator	2	Chalk & Talk	Black Board
2.6	The Go to statement (Self Study).	2	Discussion	Google classroom
2.7	Decision Making and Looping Introduction	2	Lecture	Google classroom
2.8	The While statement	2	Chalk & Talk	Black Board
2.9	The Do statement	1	Chalk & Talk	Black Board
2.10	The For statement, Jumps in loops	1	Chalk & Talk	Black Board
UNIT – 3 ARRAYS ,STRUCTURES & UNIONS				
3.1	Arrays Introduction	1	Discussion	PPT & White board
3.2	One Dimensional arrays	2	Chalk &	Green

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
			Talk	Board
3.3	Two Dimensional Arrays	1	Chalk & Talk	Black Board
3.4	Initializing Two dimension Arrays	2	Chalk & Talk	Black Board
3.5	Multi-Dimensional arrays	2	Discussion	Black Board
3.6	Structures & Unions Introduction	1	Lecture	PPT & White board
3.7	Defining Structures	1	Lecture	Black Board
3.8	Declaring Structure Variables	1	Chalk & Talk	Black Board
3.9	Accessing Structure Members	2	Chalk & Talk	Black Board
3.10	Structure Initialization	2	Chalk & Talk	Black Board
3.11	Unions (Self Study)	2	Discussion	Google classroom
UNIT – 4 FUNCTIONS				
4.1	User Defined Functions	1	Discussion	PPT & White board
4.2	Definitions of Functions	2	Chalk & Talk	Green Board
4.3	Return Values and their types	2	Chalk & Talk	Black Board
4.4	Function Calls	2	Chalk & Talk	Black Board
4.5	Function Declarations	2	Discussion	Black Board
4.6	Category of Functions	2	Lecture	Green Board
4.7	Nesting of Functions	2	Discussion	Black Board
4.8	Recursion	2	Chalk & Talk	Black Board
4.9	Passing Arrays to Functions	1	Chalk & Talk	Black Board
4.10	Passing Strings to Functions (Self Study)	1	Discussion	Google classroom
UNIT – 5 POINTERS AND FILE MANAGEMENT				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.1	Pointers Introduction, Accessing the Address of a Variable	2	Lecture	PPT & White board
5.2	Declaring pointer variable, Pointers and Arrays	1	Chalk & Talk	Black Board
5.3	Array of Pointers	2	Lecture	Black Board
5.4	Pointers as Function Arguments	2	Chalk & Talk	Black Board
5.5	Functions Returning Pointers	2	Chalk & Talk	Black Board
5.6	Pointers to Functions	2	Chalk & Talk	Black Board
5.7	Pointers and Structures (Self Study)	1	Discussion	Google classroom
5.8	File Management in C Introduction	1	Chalk & Talk	Black Board
5.9	Defining and Opening a file, Closing file, Input Output operations on files	2	Chalk & Talk	Black Board
5.10	Error Handling during I/O operations, Random Access to files	2	Lecture	Black Board
UNIT –6 DYNAMISM				
6.1	Real- time Applications using C	2	Discussion	Black Board
6.2	Real- time Applications using C	3	Discussion	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	

	.								
K1	**2**	**2**	**-**	**-**	**-**	**4**	-	**4**	10 %
K2	**2**	**2**	**5**	**-**	**-**	**9**	-	**9**	22.5 %
K3	**3**	**3**	**-**	**-**	**5**	**11**	-	**11**	27.5 %
K4	**3**	**3**	**-**	**5**	**-**	**11**	-	**11**	27.5 %
Non Scholastic	**-**	**-**	**-**	**-**	-		**5**	**5**	12.5 %
Total	**10**	**10**	**5**	**5**	**5**	**35**	**5**	**40**	**100 %**

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	**5**	**5**	**-**	**4**	**-**	-	**14**	23.33 %
K2	**-**	**-**	**8**	**4**	**-**	-	**12**	20 %
K3	**-**	**-**	**-**	**-**	**20**	-	**20**	33.33 %
K4	**-**	**-**	**-**	**4**	**-**	10	**14**	23.34 %
Total	**5**	**5**	**8**	**12**	**20**	**10**	**60**	**100 %**

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC	NON - SCHOLASTI	MARKS

					C			
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**CIA**	**ESE**	**Total**
10	**10**	**5**	**5**	**5**	**5**	**40**	**60**	**100**

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the basic concepts in Computer & C Programming.	K1	PSO1& PSO2
CO 2	Identify and Apply different construct available for iteration such as 'for', 'while' and 'do-while'.	K1, K2	PSO2
CO 3	Understand various storage concepts.	K1 & K3	PSO4
CO 4	Develop C programs using	K1, K2 &K3	PSO3

	functions.		
CO 5	Summarize the concepts of Pointers and Files.	K2 & K4	PSO6

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	2	3	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: Mrs. T. Leena Prema Kumari**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Employability 100%

I B.Sc. Information Technology

SEMESTER –I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	21I1CC2	LAB IN C PROGRAMMING	Practical	6	3

COURSE DESCRIPTION

This course content plays a vital role in building the basic programming skill in C language.

COURSE OBJECTIVES

To develop problem solving skill by using various concepts in C language.

PROGRAM LIST

1. Program using input and output statements.
2. Program using Operators.
3. Program using Conditional Statements.
4. Program using Switch Case Statements.
5. Program using Looping Statements.
6. Programs for Array Manipulations.
7. Program using String Functions
8. Program using Functions.
9. Program using Recursion.
10. Program using Structures
11. Program using Unions.
12. String Manipulation Programs
13. Program using Pointers
14. File Manipulation Programs
15. Command line arguments

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1	Program using input and output statements.	6	Demonstration	Desktop PC
2	Program using Operators.	6	Demonstration	Desktop PC
3	Program using Conditional Statements.	6	Demonstration	Desktop PC
4	Program using Switch Case Statements.	6	Demonstration	Desktop PC
5	Program using Looping Statements.	6	Demonstration	Desktop PC
6	Programs for Array Manipulations.	6	Demonstration	Desktop PC

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
7	Program using String Functions	6	Demonstration	Desktop PC
8	Program using Functions.	6	Demonstration	Desktop PC
9	Program using Recursion.	6	Demonstration	Desktop PC
10	Program using Structures	6	Demonstration	Desktop PC
11	Program using Unions.	6	Demonstration	Desktop PC
12	String Manipulation Programs	6	Demonstration	Desktop PC
13	Program using Pointers	6	Demonstration	Desktop PC
14	File Manipulation Programs	6	Demonstration	Desktop PC
15	Command line arguments	6	Demonstration	Desktop PC

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Know the concept of Problem solving.	K2, K3	PSO1& PSO2
CO 2	Implement various concepts in C.	K2, K3	PSO2
CO 3	Apply the concepts of Functions, Structures and Unions in C program	K2, K3	PSO3
CO 4	Make use of pointers using C	K2, K3	PSO3

	programs.		
CO 5	Apply and Use the file concepts in C programs.	K3, K4	PSO6

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**CIA**	**ESE**	**Total**
20	**15**	**5**	**40**	**60**	**100**

C1 – Average of Two Model Test Marks

C2 - Average of Program Completion and Record Work

C3 - Non-Scholastic

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	3	2	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1

CO3	**1**	**2**	**1**	**3**
CO4	**1**	**1**	**1**	**1**
CO5	**1**	**1**	**1**	**1**

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: Mrs.T.Leena Prema Kumari**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

I B.Sc. Information Technology

SEMESTER –I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19G1ACI1	DISCRETE MATHEMATICS	Lecture	5	5

COURSE DESCRIPTION

This course content is enables students to strengthen and increase the understanding of Discrete Mathematics with special emphasis on Computer science applications.

COURSE OBJECTIVES

To impart the mathematical skill to develop logical thinking.

UNITS

UNIT –I SETS, RELATIONS (14HRS.)

Sets – Definition- Venn Diagram- Operations on sets Properties of Relations- Inverserelation- Equivalence classes- Partition of a set- Fundamental theorem on equivalencerelations- Graphs of relations and Hasse Diagram.

UNIT –II LOGIC (14 HRS.)

Connectives- Equivalence Formulas- Tautological Implication- Normal Forms- InferenceTheory- Predicate Calculus-Inference theory for Predicate Calculus.

UNIT –III THEORY OF MATRICES (14 HRS.)

Matrix Inversion- System of equations- Consistency of systems of linear equations- EigenValues- Eigen Vectors- Digitalization Process- Induction Principle- Peano's Postulates.

UNIT –IV RECURRENCE RELATIONS AND GENERATING FUNCTIONS (14 HRS.)

Polynomial expression- Sequences- Recurrence relations- Generating Functions- Propertiesof Generating Functions- Solution of Recurrence Relations using Generating Functions.

UNIT –V BOOLEAN ALGEBRA (14 HRS.)

Boolean Algebra- Simplification of Boolean Functions by the map method - Introduction tothe Applications of Boolean Algebra to Switching Theory-Turing Machine Problem.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Recent advancement in discrete mathematics.

TEXT BOOK:

1. V Sundaresan, K S Ganapathy Subramanian, K Ganesan, Discrete mathematics, A.R. Publications, 2002.Chapters: 1(excluding Functions), 2, 3, 6(excluding 6.1, 6.2).

REFERENCES:

1. Doerr, Alan, and Kenneth Levasseur.Applied discrete structures for computer science.Galgotia Publications, New Delhi.
2. J P Tremblay and R Manohar, Discrete Mathematical Structures with Applications to Computer Science, Tata McGraw-Hill Publishing Company Limited.

OPEN EDUCATIONAL RESOURCES:

1. Discrete Mathematics Tutorial

https://www.tutorialspoint.com/discrete_mathematics/index.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 SETS, RELATIONS				
1.1	Sets – Definition- Venn Diagram	4	Discussion	Black Board
1.2	Operations on sets Properties of Relations- Inverserelation- Equivalence classes- Partition of a set	4	Chalk & Talk	Black Board
1.3	Fundamental theorem on equivalence relations	4	Lecture	LCD
1.4	Graphs of relations and Hasse Diagram.	2	Discussion	Google classroom
UNIT -2 LOGIC				
2.1	Connectives- Equivalence Formulas	4	Lecture	PPT & White board
2.2	Tautological Implication- Normal Forms- Inference Theory	4	Chalk & Talk	Green Board
2.3	Predicate Calculus	4	Chalk & Talk	Black Board
2.4	Inference theory for Predicate Calculus.	2	Chalk & Talk	Black Board
UNIT – 3 MATRICES				
3.1	Matrix Inversion- System of equations	4	Discussion	PPT & White board
3.2	Consistency of systems of linear equations- Eigen Values	4	Chalk & Talk	Green Board
3.3	Eigen Vectors- Digitalization Process	4	Chalk & Talk	Black Board
3.4	Induction Principle- Peano's Postulates	2	Chalk & Talk	Black Board
UNIT – 4 RECURRENCE RELATIONS AND GENERATING FUNCTIONS				
4.1	Polynomial expression- Sequences	4	Discussion	PPT & White board
4.2	Recurrence relations- Generating Functions	4	Chalk & Talk	Green Board
4.3	Properties of Generating Functions	4	Chalk & Talk	Black Board
4.4	Solution of Recurrence Relations using Generating	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Functions.			
UNIT – 5 BOOLEAN ALGEBRA				
5.1	Boolean Algebra-Simplification of Boolean Functions by the map method	4	Lecture	PPT & White board
5.2	Introduction to the Applications of Boolean Algebra to Switching Theory	4	Chalk & Talk	Black Board
5.3	Turing Machine Problem	4	Lecture	Black Board
5.4	Turing Machine Problem	2	Chalk & Talk	Black Board
UNIT –6 DYNAMISM				
6.1	Recent advancement in discrete mathematics	2	Discussion	Black Board
6.2	Recent advancement in discrete mathematics	3	Discussion	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	**2**	**2**	**-**	**-**	**-**	**4**	-	**4**	10 %
K2	**2**	**2**	**5**	**-**	**-**	**9**	-	**9**	22.5 %
K3	**3**	**3**	**-**	**-**	**5**	**11**	-	**11**	27.5 %
K4	**3**	**3**	**-**	**5**	**-**	**11**	-	**11**	27.5 %
Non Scholastic	**-**	**-**	**-**	**-**	-		**5**	**5**	12.5 %
Total	**10**	**10**	**5**	**5**	**5**	**35**	**5**	**40**	**100 %**

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks

C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the basic principles of sets and operations in sets.	K1	PSO1& PSO2
CO 2	Write arguments using logical notation.	K1, K2	PSO2& PSO3
CO 3	Implement various concepts in theory of Matrices	K1, K3	PSO6
CO 4	Demonstrate an understanding of relations and functions and be able to determine their properties.	K1, K2& K3	PSO2 & PSO3
CO 5	Write the diversified solutions for various recurrence relations and Boolean algebra.	K2, K4	PSO6

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	**3**	**3**	**2**	**2**	**2**	**1**	**1**	**1**
CO2	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**1**
CO3	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**2**
CO4	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2**
CO5	**2**	**2**	**2**	**2**	**2**	**3**	**1**	**1**

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. R. RAJESWARI**

Forwarded By

V. Mageshwari

HOD'S Signature
& Name

Entrepreneurship 100%

I B.Sc. Information Technology

SEMESTER –I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	22I1NME 22I2NME	IMAGE EDITING TOOL	Practical	2	2

COURSE DESCRIPTION

This course content is enables other disciplined students to strengthen and increase the understanding of basis Multimedia application software like Photoshop and Corel Draw.

COURSE OBJECTIVES

To impart, practical knowledge on various editing techniques in Photoshop and Corel draw.

UNITS

UNIT –I BASICS OF CORELDRAW (6HRS.)

Introduction-Getting Started-Creating A New File - Title Bar-Menu Bar- Tool Bar – Work Area-Views. TEXT Introduction-Text Tool-Converting Text-Formatting Text- Webdings Changing the Alignment-Applying Effects

UNIT –II IMAGE& LAYOUT (6 HRS.)

Bitmap Images-Vector Image-Resizing-Rotating-Skewing-Moving-Cropping-Importing Images-Adding Special Effects-Converting to Bitmap-Exporting Images.PAGE LAYOUT: Changing the Page Size-Changing the Layout-Changing the Background.

UNIT –III PHOTOSHOP : SELECTION AND PAINTING TOOLS (6 HRS.)

Marquee Tool-Crop Tool-Lasso Tool-Move Tool, Rubber/clone Stamp tool-Eraser Tool-Paint Brush Tool-Art History/History Brush Tool-Text Tool.

UNIT –IV TRANSFORMATIONS (6 HRS.)

Resizing: Resizing an image- Resizing a canvas- Resizing a selection Rotating: Rotate 180 degrees and 90 degrees clockwise or counter clockwise- Rotate by degrees- Rotate a selection.

UNIT –V FILTERS (6 HRS.)

Sharpen Filters: Sharpen, Sharpen more, Blur Filters: Blur, Blur-more,Distort Filters: Pinch(Squeezing, bulging), Pixellate Filters: crystallize, Extracting an part of image from background image.

LAB EXERCISE

1. Drawing Basic Shapes
2. Text Effect
3. Effects
4. Image Editing
5. Layout and Page Size Change
6. Tools
7. Resizing Image
8. Rotating Image
9. Filters

REFERENCES:

1. Kumar Bittu, “Adobe Photoshop”, ISBN: 978-9350570166, V&S Publishers.
2. Photoshop 7 Complete reference , ISBN 978-0072223118 - Greenberg – McGraw Hill Publications.

OPEN EDUCATIONAL RESOURCES:

1. Photoshop Online Training https://www.tutorialspoint.com/photoshop_online_training/index.asp
2. https://www.entheosweb.com/tutorials/coreldraw/liquid_lext/default.asp

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 BASICS OF CORELDRAW				
1.1	Creating A New File, Title Bar, Menu Bar, Tool Bar	2	Demonstration	Desktop PC
1.2	Work Area Views, Text Introduction, Text Tool Converting Text & Formatting Text	1	Demonstration	Desktop PC
1.3	Changing the Font Size Decorating the Text	2	Demonstration	Desktop PC
1.4	Changing the Alignment-Applying Effects	1	Demonstration	Desktop PC
UNIT -2 IMAGE & LAYOUT				
2.1	Bitmap Images, Vector Image, Resizing, Rotating, Skewing Moving, Cropping	2	Demonstration	Desktop PC
2.2	Importing Images, Adding Special Effects, Converting to Bitmap, Exporting Images.	1	Demonstration	Desktop PC
2.3	Page Layout, Changing the Page Size, Changing the Layout, Applying Styles	2	Demonstration	Desktop PC
2.4	Applying Bitmaps to the Background, Changing the Background,	1	Demonstration	Desktop PC
UNIT -3 PHOTOSHOP : SELECTION AND PAINTING TOOLS				
3.1	Marquee Tool, Crop Tool, Lasso Tool, Move Tool	2	Demonstration	Desktop PC
3.2	Rubber/clone Stamp tool, Eraser Tool, Paint Brush Tool	2	Demonstration	Desktop PC
3.3	Art History Tool, History Brush Tool, Text Tool.	2	Demonstration	Desktop PC
UNIT -4 TRANSFORMATIONS				
4.1	Resizing an image, Resizing a Canvas	2	Demonstration	Desktop PC
4.2	Resizing a selection Rotating, Rotate 180 degrees and 90 Degrees	2	Demonstration	Desktop PC
4.3	Clockwise or counter clockwise, Rotate by degrees-Rotate a selection.	2	Demonstration	Desktop PC
UNIT -5 FILTERS				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.1	Sharpen Filters, Blur Filters Distort Filters	2	Demonstration	Desktop PC
5.2	Pinch(Squeezing, bulging), Pixelate Filters	2	Demonstration	Desktop PC
5.3	Extracting a part of image from background image.	2	Demonstration	Desktop PC

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Construct simple vector graphics using basic drawing elements and shape commands.	K2, K3	PSO1& PSO2
CO 2	Apply basic shape commands and image effects in processing raster format pictures	K2, K3	PSO1, PSO2 & PSO3
CO 3	Understand the basic tools for editing images.	K2, K3	PSO1& PSO2
CO 4	Develop effective graphics for both web and print media.	K2, K3	PSO1, PSO2 & PSO3
CO 5	Apply layer features and layer management techniques for creating Web pages and Invitations.	K2, K3	PSO1, PSO2 & PSO3

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**CIA**	**ESE**	**Total**
20	**15**	**5**	**40**	**60**	**100**

C1 – Average of Two Model Test Marks

C2 - Average of Program Completion and Record Work

C3 - Non-Scholastic

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	3	3	3	2	2	2	2	1
CO3	3	3	1	2	2	3	2	2
CO4	3	3	3	1	2	2	2	2
CO5	3	3	3	1	1	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

I B.Sc. Information Technology

SEMESTER –II

For those who joined in 2021onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	21I2CC3	DATA STRUCTURES USING C++	Lecture	6	4

COURSE DESCRIPTION

This course introduces the basic concepts of C++. It also aims at facilitate the students to know the Data Structure concepts.

COURSE OBJECTIVES

To impart Technical and Practical knowledge in Object oriented Programming with C++ & Data Structures.

UNITS

UNIT –I OBJECT ORIENTED CONCEPTS (17 HRS.)

Classes and Objects: Specifying a class Defining Member functions- A C++ Program with Class-Making an Outside function Inline – Nesting of Member Function - Memory allocation for objects- Static Data Members & Member Functions - Array of Objects - Friendly functions – Functions: Function Prototyping – Call by reference – Recursion – Function Overloading.Constructors and Destructors: Constructors- Parameterized Constructors- Multiple Constructors in Class- **copy constructors- Dynamic Constructors(Self Study)**- Destructors.

UNIT –II OPERATOR OVERLOADING & INHERITANCE (17 HRS.)

Defining operator overloading - Overloading unary operators-Overloading binary operators-using friend function -manipulation of strings using

operators-rules for overloading operators- Extending Classes: Introduction-Defining derived classes-single inheritance- Multiple Inheritance-Multilevel Inheritance-**Hierarchical inheritance- Hybrid Inheritance(Self Study)**-Virtual Base classes- Abstract Classes- Constructor in Derived Classes-Member Classes: Nesting of Classes.

UNIT –III POINTERS, VIRTUAL FUNCTIONS & POLYMORPHISM (17 HRS.)

Pointers: Pointers to Objects – This Pointers – Pointers to Derived Class - Virtual Functions- Pure virtual function - **Virtual Constructors and Destructors (Self Study)**.DATA STRUCTURES: Introduction to Data Structures – Types of Data Structures - Data Structures Operations.

UNIT –IV LINKED LIST, STACKS & QUEUES (17 HRS.)

Linked List –Basic Concepts – Linked List Implementation – Types of Linked List- Circular Linked List – Doubly Linked List – Stack – Stack Operations – Stack Implementation – Queue – Basic Concepts –Queue Operations –Queue Implementations - Circular queues –Priority Queue – **Double Ended Queues (Self Study).**

UNIT –V TREES, SEARCHING AND SORTING (17 HRS.)

Trees: Basic Concepts - Binary trees – Binary Tree Representation - Binary tree Traversal - Sorting Techniques – Searching Techniques

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Real- time Applications using C++

TEXT BOOK:

1. Balagurusamy, E. Object Oriented Programming and Data Structures, Tata McGraw-Hill Education, 2015. Chapters 4, 6, 5,7,8, 9,10,12,13,14,15,17

REFERENCES:

1. Dewhurst, Stephen C., and Kathy T. Stark.Programming in C++. Prentice-Hall, Inc., 1989.
2. Lafore, Robert. Object-oriented programming in Turbo C++.Galgotia publications, 2001.

3. Allen, Weiss Mark. Data structures and algorithm analysis in C++.Pearson Education India, 2007.

Digital Open Educational Resources (DOER):

1. Data Structure and Algorithms Tutorial

https://www.tutorialspoint.com/data_structures_algorithms/index.htm

2. Introduction To Data Structure

https://www.w3schools.in/data-structures-tutorial/intro/

3. C++ Tutorial

https://www.tutorialspoint.com/cplusplus/index.htm

4. C++ Tutorials and Resources

https://www.w3schools.in/category/cplusplus-tutorial/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 OBJECT ORIENTED CONCEPTS				
1.1	Classes and Objects: Specifying a class Defining Member functions, C++ Program with Class	2	Chalk & Talk	Black Board
1.2	Making an Outside function Inline Nesting of Member Function	2	Chalk & Talk	Black Board
1.3	Memory allocation for objects Static Data Members & Member Functions	3	Lecture	PPT& White board
1.4	Array of Objects, Friendly functions, Local Classes	2	Lecture	Smart Board
1.5	Constructors and Destructors: Constructors	2	Lecture	Black Board
1.6	Parameterized Constructors	2	Discussion	Google classroom
1.7	Multiple Constructors in Class, Destructors.	2	Chalk & Talk	Green Board
1.8	Copy constructors, Dynamic Constructors (Self Study)	2	Discussion	Black Board
UNIT -2 OPERATOR OVERLOADING & INHERITANCE				
2.1	Defining operator overloading: Overloading unary operators, Overloading binary operators	3	Lecture	Green Board Charts

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.2	Using friend function, Manipulation of strings using operators-Rules for overloading operators	4	Chalk & Talk	Green Board
2.3	Extending Classes: Introduction, Defining Derived Classes, Single Inheritance	3	Chalk & Talk	Black Board
2.4	Multiple Inheritance, Multilevel Inheritance, Virtual Base classes, Abstract Classes	3	Chalk & Talk	Black Board
2.5	Hybrid Inheritance, Hierarchical Inheritance (Self Study)	1	Discussion	Black Board
2.6	Constructor in Derived Classes, Member Classes: Nesting of Classes.	3	Chalk & Talk	Black Board
UNIT -3 POINTERS, VIRTUAL FUNCTIONS & POLYMORPHISM				
3.1	Pointers: Pointers to Objects, This Pointers	4	Chalk & Talk	Black Board
3.2	Pointers to Derived Class, Virtual Functions, Pure virtual function.	4	Chalk & Talk	Black Board
3.2	Virtual Constructors and Destructors (Self Study)	1	Discussion	Black Board
3.3	Data Structures: Introduction to Data Structures, Types of Data Structures	4	Chalk & Talk	Black Board
3.4	Data Structures Operations	4	Chalk & Talk	Black Board
UNIT -4 LINKED LIST, STACKS & QUEUES				
4.1	Linked List –Basic Concepts	1	Chalk & Talk	Black Board
4.2	Linked List Implementation, Types of Linked List	3	Chalk & Talk	Black Board
4.3	Circular Linked List, Doubly Linked List	3	Lecture	PPT& White board
4.4	Stack Operations, Stack Implementation	4	Chalk & Talk	Black Board
4.5	Basic Concepts, Queue Operations, Queue Implementations.	3	Lecture	PPT& White board
4.6	Circular queues, Priority Queue	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
4.7	Double Ended Queues (Self Study)	1	Discussion	Black Board
UNIT -5 TREES, GRAPH, SEARCHING AND SORTING				
5.1	**Trees:** Basic Concepts, Binary trees	3	Chalk & Talk	Black Board
5.2	Binary Tree Representation, Binary tree Traversal	3	Chalk & Talk	Black Board
5.3	Binary Search tree, Tree Variants	3	Chalk & Talk	Black Board
5.4	**Graphs :** Basic Concept, Graph Terminology, Graph Implementation	2	Lecture	PPT& White board
5.5	Shortest Path Algorithm	2	Lecture	PPT& White board
5.6	Graph Traversal (Self Study)	1	Discussion	Black Board
5.7	Sorting Techniques, Searching Techniques	3	Discussion	Google classroom
UNIT –6 DYNAMISM				
6.1	Real- time Applications using C++	2	Discussion	Black Board
6.2	Real- time Applications using C++	3	Discussion	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	**2**	**2**	**-**	**-**	**-**	**4**	-	**4**	10 %
K2	**2**	**2**	**5**	**-**	**-**	**9**	-	**9**	22.5 %

K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**CIA**	**ESE**	**Total**
10	**10**	**5**	**5**	**5**	**5**	**40**	**60**	**100**

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand how to apply the major OOPs concepts to implement encapsulation, inheritance and polymorphism.	K1, K2	PSO1& PSO2
CO 2	Implement an achievable practical application and analyze issues related to object-oriented techniques in the C++ programming language	K1, K2 & K3	PSO2& PSO3
CO 3	Handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.	K1 & K3	PSO1, PSO2 & PSO3
CO 4	Use linear and non-linear data structures like Stacks, Queues,	K1, K2&K3	PSO1, PSO2 & PSO3

	and Linked List.		
CO 5	Analyze various Searching and Sorting Techniques using C++.	K2 & K4	PSO5 &PSO6

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	2	3	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Employability 100%

I B.Sc. Information Technology

SEMESTER –II

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	21I2CC4	LAB II: DATA STRUCTURES USING C++	Practical	6	3

COURSE DESCRIPTION

This course enables students to identify, formulate all techniques of software development in the C++ Programming Language and demonstrate these techniques.

COURSE OBJECTIVES

To give programming skills on various concepts in Data Structures using C++ programs.

PROGRAM LIST

1. Programs using operators, decision making statements and looping statements.
2. Program using Classes and Objects
3. Program using Inline Functions.
4. Program using Functions with default arguments
5. Program using Polymorphism
6. Program using Constructors
7. Program using Destructors
8. Program using Inheritance & Its types
9. Program using Operator overloading
10. Program using Friend Functions.
11. Program for Stack Implementation
12. Program for Queue Implementation
13. Program for Linked List Implementation

14. Program for Binary Tree traversal

15. Program for Searching Techniques

16. Program for Sorting Techniques

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1	Programs using operators	3	Demonstration	Desktop PC
2	Program using decision making statements and looping statements.	3	Demonstration	Desktop PC
3	Program using Classes and Objects	6	Demonstration	Desktop PC
4	Program using Inline Functions.	3	Demonstration	Desktop PC
5	Program using Functions with default arguments	6	Demonstration	Desktop PC
6	Program using Polymorphism	3	Demonstration	Desktop PC
7	Program using Constructors	6	Demonstration	Desktop PC
8	Program using Destructors	6	Demonstration	Desktop PC
9	Program using Inheritance & Its types	6	Demonstration	Desktop PC
10	Program using Operator overloading	6	Demonstration	Desktop PC
11	Program using Friend Functions.	6	Demonstration	Desktop PC
12	Program for Stack Implementation	6	Demonstration	Desktop PC
13	Program for Queue Implementation	6	Demonstration	Desktop PC
14	Program for Linked List Implementation	6	Demonstration	Desktop PC
15	Program for Binary Tree traversal	6	Demonstration	Desktop PC
16	Program for Searching Techniques	6	Demonstration	Desktop PC
17	Program for Sorting Techniques	6	Demonstration	Desktop PC

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Implement an achievable practical application on object-oriented techniques in the C++ programming language.	K2, K3	PSO1& PSO2
CO 2	Implement linear and non-linear data structures like Stacks, Queues, linked list.	K2, K3	PSO2& PSO3
CO 3	Demonstrate the concept of classes and their types by using C++ objects.	K2, K3	PSO3
CO 4	Apply the concept of polymorphism and inheritance in C++.	K2, K3	PSO3
CO 5	Implement practical applications by applying Searching and Sorting Techniques using C++.	K3, K4	PSO5

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**CIA**	**ESE**	**Total**
20	**15**	**5**	**40**	**60**	**100**

C1 – Average of Two Model Test Marks

C2 - Average of Program Completion and Record Work

C3 - Non-Scholastic

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	3	2	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

I B.Sc. Information Technology

SEMESTER –II

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19G2ACI2	OPERATIONS RESEARCH	Lecture	5	5

COURSE DESCRIPTION

This course content helps in solving problems in different environments using Linear Programming methodologies.

COURSE OBJECTIVES

To impart the mathematical skill to develop logical thinking.

UNITS

UNIT –I LINEAR PROGRAMMING PROBLEM - MATHEMATICAL FORMULATION (14HRS.)

Introduction - Linear Programming Problem - Mathematical Formulation of the Problem - Illustration on Mathematical Formulation of LPPs, Linear Programming Problem- Graphical Solution: Introduction - Graphical Solution Method - General Linear Programming problem.

UNIT –II LINEAR PROGRAMMING - SIMPLEX METHOD (14 HRS.)

Introduction - Fundamental Properties of Solutions - The Computational Procedure - Use of Artificial Variables - Degeneracy in Linear Programming - Solution of Simultaneous Linear Equations - Inverting a Matrix Using Simplex Method - Application of Simplex Method.

UNIT –III DUAL PROBLEM (14 HRS.)

Primal-Dual Pair in Matrix Form - Duality Theorems - Complementary Slackness Theorem - Duality and Simplex Method - Economic Interpretation of Duality - Dual Simplex Method.

UNIT –IV TRANSPORTATION PROBLEM (14 HRS.)

Introduction - LP Formulation of the Transportation Problem - Existence of Solution in T.P. - Duality in Transportation Problem - The Transportation Table - Loops in Transportation Tables - Triangular Basis in a T.P. - Solution of a Transportation Problem - Finding an Initial Basic Feasible Solution - Test for Optimality

UNIT –V ASSIGNMENT PROBLEM (14 HRS.)

Introduction - Mathematical Formulation of the Problem - Solution Methods of Assignment Problem - Special Cases in Assignment Problem - Dual of the Assignment Method – The Travelling Salesman Problem.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Recent advancement in OR.

TEXT BOOK:

1. Gupta, S. C., and V. K. Kapoor. "Fundamentals of Mathematical Statistics, Ninth Extensively Revised Edition, Sultan Chand & Sons." (1997).Chapter: 2, 3, 4, 5, 10, 11

REFERENCES:

1. V.Sundaresan, K.S. Ganapathy Subramanian, K. Ganesan."Operations Research", ARS Publications, 2003.
2. Hamdy A Taha," Introduction to Operations Research", Prentice Hall India,Seventh Edition, Third Indian Reprint 2004.

OPEN EDUCATIONAL RESOURCES :

1. Operations Research - Suny Binghamton University

   https://www.youtube.com/playlist?list=PLgA4wLGrqI-ll9OSJmR5nU4lV4_aNTgKx

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 LINEAR PROGRAMMING				
1.1	Introduction - Linear Programming Problem - Mathematical Formulation of the Problem	4	Discussion	Black Board
1.2	Illustration on Mathematical Formulation of LPPs, Linear Programming Problem-	4	Chalk & Talk	Black Board
1.3	Graphical Solution: Introduction - Graphical Solution Method	4	Lecture	LCD
1.4	General Linear Programming problem.	2	Discussion	Google classroom
UNIT -2 LINEAR PROGRAMMING				
2.1	Introduction - Fundamental Properties of Solutions - The Computational Procedure	4	Lecture	PPT & White board
2.2	Use of Artificial Variables - Degeneracy in Linear Programming	4	Chalk & Talk	Green Board
2.3	Solution of Simultaneous Linear Equations - Inverting a Matrix	4	Chalk & Talk	Black Board
2.4	Using Simplex Method - Application of Simplex Method.	2	Chalk & Talk	Black Board
UNIT – 3 DUAL PROGRAM				
3.1	Primal-Dual Pair in Matrix Form - Duality Theorems	4	Discussion	PPT & White board
3.2	Complementary Slackness Theorem - Duality and Simplex Method	4	Chalk & Talk	Green Board
3.3	Economic Interpretation of Duality	4	Chalk & Talk	Black Board
3.4	Dual Simplex Method.	2	Chalk & Talk	Black Board
UNIT – 4 TRANSPORTATION PROBLEM				
4.1	Introduction - LP Formulation of the Transportation Problem - Existence of Solution in T.P. -	4	Discussion	PPT & White board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Duality in Transportation Problem			
4.2	- The Transportation Table - Loops in Transportation Tables - Triangular Basis in a T.P.	4	Chalk & Talk	Green Board
4.3	Solution of a Transportation Problem - Finding an Initial Basic Feasible Solution	4	Chalk & Talk	Black Board
4.4	Test for Optimality	2	Chalk & Talk	Black Board
UNIT – 5 ASSIGNMENT PROBLEM				
5.1	Introduction - Mathematical Formulation of the Problem	4	Lecture	PPT & White board
5.2	Solution Methods of Assignment Problem - Special Cases in Assignment Problem	4	Chalk & Talk	Black Board
5.3	Dual of the Assignment Method	4	Lecture	Black Board
5.4	The Travelling Salesman Problem.	2	Chalk & Talk	Black Board
UNIT –6 DYNAMISM				
6.1	Recent advancement in OR	2	Discussion	Black Board
6.2	Recent advancement in OR	3	Discussion	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	**2**	**2**	**-**	**-**	**-**	**4**	-	**4**	10 %
K2	**2**	**2**	**5**	**-**	**-**	**9**	-	**9**	22.5 %

K3	3	3	-	-	5	**11**	-	**11**	27.5 %
K4	3	3	-	5	-	**11**	-	**11**	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	5	5	-	4	-	-	**14**	23.33 %
K2	-	-	8	4	-	-	**12**	20 %
K3	-	-	-	-	20	-	**20**	33.33 %
K4	-	-	-	4	-	10	**14**	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**CIA**	**ESE**	**Total**
10	**10**	**5**	**5**	**5**	**5**	**40**	**60**	**100**

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Identify and develop operational research models from the verbal description of the real system.	K1, K2	PSO1& PSO2
CO 2	Understand simplex, dual problem.	K2 & K3	PSO2
CO 3	Understand the mathematical tools that are needed to solve the optimization problems.	K2 & K3	PSO1& PSO2
CO 4	Write diversified solutions for various Transportation problems.	K2 & K3	PSO3
CO 5	Analyze assignment problems.	K3& K4	PSO7

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	2	3	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: Mrs. R.Rajeswari**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Entrepreneurship 100%

I B.Sc. Information Technology

SEMESTER –II

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	22I2NME	IMAGE EDITING TOOL	Practical	2	2

COURSE DESCRIPTION

This course content is enables other disciplined students to strengthen and increase the understanding of basis Multimedia application software like Photoshop and Corel Draw.

COURSE OBJECTIVES

To impart, practical knowledge on various editing techniques in Photoshop and Corel draw.

UNITS

UNIT –I BASICS OF CORELDRAW (6HRS.)

Introduction-Getting Started-Creating A New File - Title Bar-Menu Bar- Tool Bar – Work Area-Views. TEXT Introduction-Text Tool-Converting Text-Formatting Text- Webdings Changing the Alignment-Applying Effects

UNIT –II IMAGE& LAYOUT (6 HRS.)

Bitmap Images-Vector Image-Resizing-Rotating-Skewing-Moving-Cropping-Importing Images-Adding Special Effects-Converting to Bitmap-Exporting Images.PAGE LAYOUT: Changing the Page Size-Changing the Layout-Changing the Background.

UNIT –III PHOTOSHOP : SELECTION AND PAINTING TOOLS (6 HRS.)

Marquee Tool-Crop Tool-Lasso Tool-Move Tool, Rubber/clone Stamp tool-

Eraser Tool-Paint Brush Tool-Art History/History Brush Tool-Text Tool.

UNIT –IV TRANSFORMATIONS (6 HRS.)

Resizing: Resizing an image- Resizing a canvas- Resizing a selection Rotating: Rotate 180 degrees and 90 degrees clockwise or counter clockwise- Rotate by degrees- Rotate a selection.

UNIT –V FILTERS (6 HRS.)

Sharpen Filters: Sharpen, Sharpen more, Blur Filters: Blur, Blur-more,Distort Filters: Pinch(Squeezing, bulging), Pixellate Filters: crystallize, Extracting an part of image from background image.

LAB EXERCISE

1. Drawing Basic Shapes
2. Text Effect
3. Effects
4. Image Editing
5. Layout and Page Size Change
6. Tools
7. Resizing Image
8. Rotating Image
9. Filters

REFERENCES:

1. Kumar Bittu, “Adobe Photoshop”, ISBN: 978-9350570166, V&S Publishers.
2. Photoshop 7 Complete reference , ISBN 978-0072223118 - Greenberg – McGraw Hill Publications.

OPEN EDUCATIONAL RESOURCES :

1. Photoshop Online Training
https://www.tutorialspoint.com/photoshop_online_training/index.asp
3. https://www.entheosweb.com/tutorials/coreldraw/liquid_lext/default.asp

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 BASICS OF CORELDRAW				
1.1	Creating A New File, Title Bar, Menu Bar, Tool Bar	2	Demonstration	Desktop PC
1.2	Work Area Views, Text Introduction, Text Tool Converting Text & Formatting Text	1	Demonstration	Desktop PC
1.3	Changing the Font Size Decorating the Text	2	Demonstration	Desktop PC
1.4	Changing the Alignment-Applying Effects	1	Demonstration	Desktop PC
UNIT -2 IMAGE & LAYOUT				
2.1	Bitmap Images, Vector Image, Resizing, Rotating, Skewing Moving, Cropping	2	Demonstration	Desktop PC
2.2	Importing Images, Adding Special Effects, Converting to Bitmap, Exporting Images.	1	Demonstration	Desktop PC
2.3	Page Layout, Changing the Page Size, Changing the Layout, Applying Styles	2	Demonstration	Desktop PC
2.4	Applying Bitmaps to the Background, Changing the Background,	1	Demonstration	Desktop PC
UNIT -3 PHOTOSHOP : SELECTION AND PAINTING TOOLS				
3.1	Marquee Tool, Crop Tool, Lasso Tool, Move Tool	2	Demonstration	Desktop PC
3.2	Rubber/clone Stamp tool, Eraser Tool, Paint Brush Tool	2	Demonstration	Desktop PC
3.3	Art History Tool, History Brush Tool, Text Tool.	2	Demonstration	Desktop PC
UNIT -4 TRANSFORMATIONS				
4.1	Resizing an image, Resizing a Canvas	2	Demonstration	Desktop PC
4.2	Resizing a selection Rotating, Rotate 180 degrees and 90 Degrees	2	Demonstration	Desktop PC
4.3	Clockwise or counter clockwise, Rotate by degrees-Rotate a selection.	2	Demonstration	Desktop PC
UNIT -5 FILTERS				
5.1	Sharpen Filters, Blur Filters Distort Filters	2	Demonstration	Desktop PC

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.2	Pinch(Squeezing, bulging), Pixelate Filters	2	Demonstration	Desktop PC
5.3	Extracting a part of image from background image.	2	Demonstration	Desktop PC

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Construct simple vector graphics using basic drawing elements and shape commands.	K2, K3	PSO1& PSO2
CO 2	Apply basic shape commands and image effects in processing raster format pictures	K2, K3	PSO1, PSO2 & PSO3
CO 3	Understand the basic tools for editing images.	K2, K3	PSO1& PSO2
CO 4	Develop effective graphics for both web and print media.	K2, K3	PSO1, PSO2 & PSO3
CO 5	Apply layer features and layer management techniques for creating Web pages and Invitations.	K2, K3	PSO1, PSO2 & PSO3

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC	NON -	MARKS

		SCHOLASTIC			
C1	**C2**	**C3**	**CIA**	**ESE**	**Total**
20	**15**	**5**	**40**	**60**	**100**

C1 – Average of Two Model Test Marks

C2 - Average of Program Completion and Record Work

C3 - Non-Scholastic

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	3	3	3	2	2	2	2	1
CO3	3	3	1	2	2	3	2	2
CO4	3	3	3	1	2	2	2	2
CO5	3	3	3	1	1	3	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

II B.Sc. Information Technology

SEMESTER –III

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I3CC5	DATABASEMANAGEMENT SYSTEMS	Lecture	6	4

COURSE DESCRIPTION

This course introduces database design and creation using DBMS software. It also imparts various concepts in database management system.

COURSE OBJECTIVES

To facilitate the student to understand the various functionalities of DBMS software and perform many operations related to creating, manipulating and maintaining databases for Real-world applications.

UNITS

UNIT –I DATABASES (17 HRS.)

Purpose of database systems - View of data- Database languages – Relational Databases – Database Design - Data Storage and Querying – Transaction Management- Database Architecture - Data mining and Information Retrieval – Specialty Databases - Analysis — Database users and Administrators. Relational Model - Structure of relational databases – Database Schema – Keys – Schema Diagram – **Relational Operations (Self Study).**

UNIT –II SQL (17 HRS.)

Background – Data Definition - Basic structure of SQL Queries - Set operations - Aggregate functions - Null values -nested sub queries – Complex Queries - Views - Modifications of the database – Joins – Views - relations - Embedded SQL – Dynamic SQL – SQL Functions and **procedures(Self Study).**

UNIT –III DATABASE DESIGN (17 HRS.)

Normalization - Atomic Domains and First Normal Form –Decomposition - Functional Dependencies - Multivalued Dependencies - Normal forms

UNIT –IV RELATIONAL QUERY LANGUAGES AND E-R MODEL (17 HRS.)

Algebra - The Tuple Relational Calculus - The Domain Relational Calculus - E-R Model - Constraints - E- R Diagram - **Extended E - R Features (Self Study) .**

UNIT –V PL/SQL (17 HRS.)

Introduction - The generic PL/SQL Block - The PL/SQL execution environment – PL/SQL - Control Structure. Introduction to cursors - Cursor FOR loops. Advantages of using Procedure or Function - Procedures versus Functions - Database triggers - **Deleting a trigger (Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Multidimensional databases - Mobile databases - Multimedia databases

TEXT BOOK:

1. Silberschatz, Abraham, Henry F. Korth, and S. Sudarshan." Database System Concepts.", 6th edition, McGraw Hill Education Private Limited (2016).chapters 1, 2, 3, 4, 5, 6, 7, 8
2. Bayross, Ivan. SQL, PL/SQL: The programming language of Oracle.BPB publications, 2010.chapters 15, 16, 18

REFERENCES:

1. Leon, Alexis, and Mathews Leon.Database management systems. Vikas Publishing House Pvt. Limited, 2010.
2. Elmasri, R., &Navathe, S. B. (2011).Database systems.Boston, MA: Pearson Education.

OPEN EDUCATIONAL RESOURCES:

1. Dbms Tutorial: Database Management System - Javatpoint

   https://www.javatpoint.com/dbms-tutorialIntroduction To Data Structure

2. Database Management System Tutorial - Tutorialspoint

https://www.tutorialspoint.com/dbms/index.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 DATABASES				
1.1	Purpose of database systems	1	Discussion	Black Board
1.2	View of data, Database languages	2	Chalk & Talk	Black Board
1.3	Relational Databases, Database Design	1	Lecture	LCD
1.4	Data Storage and Querying	1	Discussion	Google classroom
1.5	Transaction Management, Database Architecture	1	Chalk & Talk	Black Board
1.6	Data mining and Information Retrieval	2	Chalk & Talk	Black Board
1.7	Specialty Databases, Database users and Administrators	2	Lecture	PPT & White board
1.8	Relational Model, Structure of relational databases	2	Chalk & Talk	Black Board
1.9	Database Schema	2	Chalk & Talk	Black Board
1.10	Keys, Schema Diagram	2	Chalk & Talk	Black Board
1.11	Relational Operations (Self Study)	1	Discussion	Google classroom
UNIT -2 SQL				
2.1	Data Definition	1	Lecture	PPT & White board
2.2	Basic structure of SQL Queries	2	Chalk & Talk	Green Board
2.3	Set operations, Aggregate functions	2	Chalk & Talk	Black Board
2.4	Null values Nested sub queries	2	Chalk & Talk	Black Board
2.5	Complex Queries	2	Chalk & Talk	Black Board
2.6	Views, Modifications of the database	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.7	Joins, Relations	2	Lecture	Google classroom
2.8	Embedded SQL	2	Chalk & Talk	Black Board
2.9	Dynamic SQL, SQL Functions	1	Chalk & Talk	Black Board
2.10	SQL Procedures (Self Study)	1	Discussion	Google classroom
UNIT – 3 DATABASE DESIGN				
3.1	Normalization	1	Discussion	PPT & White board
3.2	Atomic Domains	2	Chalk & Talk	Green Board
3.3	First Normal Form (1NF)	1	Chalk & Talk	Black Board
3.4	Decomposition	2	Chalk & Talk	Black Board
3.5	Functional Dependencies	2	Discussion	Black Board
3.6	Multivalued Dependencies	1	Lecture	PPT & White board
3.7	Second Normal Form (2NF)	1	Lecture	Black Board
3.8	Third Normal Form (3NF)	1	Chalk & Talk	Black Board
3.9	Boyce-Codd Normal Form (BCNF)	2	Chalk & Talk	Black Board
3.10	Fourth Normal Form (4NF)	2	Chalk & Talk	Black Board
3.11	Fifth Normal Form (5NF)	2	Chalk & Talk	Black Board
UNIT – 4 RELATIONAL QUERY LANGUAGES AND E-R MODEL				
4.1	Algebra	2	Discussion	PPT & White board
4.2	The Tuple Relational Calculus	3	Chalk & Talk	Green Board
4.3	The Domain Relational Calculus	3	Chalk & Talk	Black Board
4.4	E-R Model	3	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
4.5	Constraints	3	Discussion	Black Board
4.6	E- R Diagram	2	Lecture	Green Board
4.7	Extended E - R Features (Self Study)	1	Discussion	Black Board
UNIT – 5 PL/SQL				
5.1	Introduction, The generic PL/SQL Block	2	Lecture	PPT & White board
5.2	The PL/SQL execution environment	1	Chalk & Talk	Black Board
5.3	PL/SQL	2	Lecture	Black Board
5.4	Control Structure	2	Chalk & Talk	Black Board
5.5	Introduction to cursors	2	Chalk & Talk	Black Board
5.6	Cursor FOR loops	2	Chalk & Talk	Black Board
5.7	Advantages of using Procedure or Function	1	Chalk & Talk	Black Board
5.8	Procedures versus Functions	1	Chalk & Talk	Black Board
5.9	Database triggers	2	Chalk & Talk	Black Board
5.10	Deleting a trigger (Self Study)	2	Discussion	Google classroom
UNIT –6 DYNAMISM				
6.1	Multidimensional databases	2	Discussion	Black Board
6.2	Mobile databases, Multimedia databases	3	Discussion	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1	T2	Quiz	Assignment	OBT/PPT				

	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC	NON -	MARKS

					SCHOLASTIC			
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Explain the structure and model of the relational database system.	K1	PSO1& PSO2
CO 2	Design multiple tables and use group functions, sub queries.	K1, K2,	PSO2
CO 3	Design a database based on a data model considering the normalization to a specified level.	K1 & K3	PSO4
CO 4	Develop E- R model based tables.	K1, K2, K3 &	PSO3

CO 5	Evaluate different PL/SQL blocks.	K2 & K4	PSO6

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	2	3	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Employability 100%

II B.Sc. Information Technology

SEMESTER –III

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I3CC6	LAB III: RDBMS	Practical	6	3

COURSE DESCRIPTION

This course gives hands on experience in relational database management system.

COURSE OBJECTIVES

To facilitate the students with hands on training on SQL to design Databases. It also gives an exposure to database design and E-R Modeling.

PROGRAM LIST

1. DDL Commands
2. DML Commands
3. DCL Commands
4. TCL Commands
5. Programs on Mathematical functions.
6. Programs on string functions.
7. Programs on Aggregate functions.
8. Programs on Date functions.
9. Program using Data Constraints like Primary Key, Foreign key, check constraints.
10. Programs on Sub queries
11. Programs on Nested queries
12. Programs on Group by and Order by
13. Implementing the concepts of Joins
14. Programs using decision making and looping statements.
15. PL/SQL program using Cursors
16. PL/SQL program using Cursors and Loops

17. PL/SQL program using triggers.

18. Programs using Forms

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1	DDL Commands	6	Demonstration	Desktop PC
2	DML Commands	6	Demonstration	Desktop PC
3	DCL Commands	6	Demonstration	Desktop PC
4	TCL Commands	6	Demonstration	Desktop PC
5	Programs on Mathematical functions.	6	Demonstration	Desktop PC
6	Programs on string functions.	6	Demonstration	Desktop PC
7	Programs on Aggregate functions.	6	Demonstration	Desktop PC
8	Programs on Date functions.	6	Demonstration	Desktop PC
9	Program using Data Constraints like Primary Key, Foreign key, check constraints.	6	Demonstration	Desktop PC
10	Programs on Sub queries	6	Demonstration	Desktop PC
11	Programs on Nested queries	3	Demonstration	Desktop PC
12	Programs on Group by and Order by	3	Demonstration	Desktop PC
13	Implementing the concepts of Joins	4	Demonstration	Desktop PC
14	Programs using decision making and looping statements.	5	Demonstration	Desktop PC
15	PL/SQL program using Cursors	5	Demonstration	Desktop PC
16	PL/SQL program using Cursors and Loops	5	Demonstration	Desktop PC
17	PL/SQL program using triggers.	5	Demonstration	Desktop PC

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Explain Various SQL Commands.	K2, K3	PSO1& PSO2
CO 2	Write SQL queries to user specifications.	K2, K3	PSO2
CO 3	Design database schema considering normalization and relationships within database.	K2, K3	PSO3
CO 4	Develop PL/SQL Programs.	K2, K3	PSO2& PSO8
CO 5	Develop triggers, procedures and Cursors.	K3, K4	PSO8

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**CIA**	**ESE**	**Total**
20	**15**	**5**	**40**	**60**	**100**

C1 – Average of Two Model Test Marks

C2 - Average of Program Completion and Record Work

C3 - Non-Scholastic

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	3	2	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

II B.Sc. Information Technology

SEMESTER –III

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19P3ACI3	DIGITAL PRINCIPLES AND COMPUTER ARCHITECTURE	Lecture	5	5

COURSE DESCRIPTION

The course content plays a vital role in making the students to understand the basic digital components.

COURSE OBJECTIVES

To make the student familiar with digital logic, data representation and functional design of arithmetic and logic unit that is capable of performing arithmetic operations and floating point operations.

UNITS

UNIT –I DIGITAL LOGIC CIRCUITS (15HRS.)

Digital Computers- Logic Gates- Boolean algebra: Complement of a Function - K-Map Simplification: Product of Sum Simplification- Don't Care Condition. Combinational Circuits: Half Adder- Full Adder. Flip- Flops: SR Flip Flop- D Flip Flop - JK Flip Flop - T Flip Flop -**Edge Triggered Flip Flops (Self Study).**

UNIT –II DATA REPRESENTATION (15 HRS.)

Data Types: Number Systems- Octal and Hexadecimal Numbers- Decimal Representation- Alphanumeric Representation. Complements:1's Complement- 2's Complement- Subtraction of Unsigned Numbers. Fixed-

Point Representation: Integer Representation-Arithmetic Addition- Arithmetic Subtraction –Overflow- Decimal Fixed Point Representation.**Floating Point Representation - Other Binary Codes (Self Study)**- Error Detection Codes.

UNIT –III DIGITAL COMPONENTS (15 HRS.)

Integrated Circuits – Decoders - Encoders – Multiplexers - Registers - Shift Register - Binary Counters.Memory Unit: Random - Access Memory - Read Only Memory - **Types of ROMs (Self Study).**General Register Organization:Control Word - Examples of Micro operations - Stack Organization- Reverse Polish Notation - Evaluation of Arithmetic Expression

UNIT –IV CENTRAL PROCESSING UNIT (15 HRS.)

Instruction formats: Three Address Instruction - Two Address Instruction – One Address Instruction- Zero Address Instructions - RISC Instruction - Addressing Modes: Types. Data Transfer and Manipulation: Data Transfer Instruction - Data Manipulation Instructions - Arithmetic Instruction –Logical and Bit Manipulation Instructions - Shift Instruction – Program Control : Program Interrupts - Types of Interrupt- Reduced Instruction Set Computer: **CISC Characteristics- RISC Characteristics(Self Study).**

UNIT –V MEMORY ORGANIZATION (15 HRS.)

Memory Hierarchy - Main Memory: RAM and ROM Chips.Auxiliary Memory: **Magnetic Disks- Magnetic Tape(Self Study)** - Associative Memory. Cache Memory: Associative Mapping - Direct Mapping – Set Associative Mapping. Virtual Memory: Address Space and Memory Space.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Recent Development computer architecture.

TEXT BOOK:

1. Mano, M. Morris.Computer system architecture.Prentice-Hall of India, 2013.Chapter 1.1 - 1.6, 3.1 - 3.6, 2.1-2.7, 8.1- 8.8, 12.1-12.6

REFERENCES:

1. Dasgupta, Subrata. Computer Architecture: A Modern Synthesis.Volume 1, Foundations.John Wiley & Sons, 1989.
2. Hwang, Kai, and Faye A. Briggs.Computer architecture and parallel processing.McGraw-Hill, 1985.

OPEN EDUCATIONAL RESOURCES:

1. Binary Numbers Representation - Tutorialspoint

   https://www.tutorialspoint.com/.../digital_circuits_binary_numbers_representation.htm

2. Digital Electronics and Logic Design Tutorials - Geeksforgeeks

   https://www.geeksforgeeks.org/digital-electronics-logic-design-tutorials

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1	**DIGITAL LOGIC CIRCUITS**			
1.1	Syllabus Discussion, Digital Computers	1	Discussion	Black Board
1.2	Logic Gates, Boolean algebra	2	Chalk & Talk	Black Board
1.3	Complement of a Function	1	Lecture	LCD
1.4	K-Map Simplification -POS	2	Chalk & Talk	Smart Board
1.5	K-Map Simplification -SOP	1	Chalk & Talk	Black Board
1.6	Don't Care Condition, Combinational Circuits	2	Discussion	Google classroom
1.7	Half Adder, Full Adder	2	Lecture	PPT & White board
1.8	Flip- Flops Introduction	1	Chalk & Talk	Black Board
1.9	SR Flip Flop, D Flip Flop	2	Chalk & Talk	Black Board
1.10	JK Flip Flop , T Flip Flop	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1.11	Edge Triggered Flip Flops (Self Study)	1	Discussion	Google classroom
UNIT -2 DATA REPRESENTATION				
2.1	Number Systems- Octal and Hexadecimal Numbers	1	Lecture	PPT & White board
2.2	Decimal Representation, Alphanumeric Representation	2	Chalk & Talk	Green Board
2.3	Complements: 1's Complement- 2's Complement	2	Chalk & Talk	Black Board
2.4	Subtraction of Unsigned Numbers	2	Chalk & Talk	Black Board
2.5	Fixed- Point Representation: Integer Representation	2	Chalk & Talk	Black Board
2.6	Arithmetic Addition, Arithmetic Subtraction	2	Chalk & Talk	Green Board
2.7	Overflow	2	Lecture	Google classroom
2.8	Decimal Fixed Point Representation.	2	Chalk & Talk	Black Board
2.9	Floating Point Representation. Other Binary Codes. (Self Study)	1	Discussion	Google classroom
2.10	Error Detection Codes	1	Chalk & Talk	Black Board
UNIT - 3 DIGITAL COMPONENTS				
3.1	Integrated Circuits	1	Discussion	PPT & White board
3.2	Decoders, Encoders	2	Chalk & Talk	Green Board
3.3	Multiplexers	1	Chalk & Talk	Black Board
3.4	Registers, Shift Register	2	Chalk & Talk	Black Board
3.5	Binary Counters	2	Discussion	Black Board
3.6	Memory Unit: Random Access Memory, Read Only Memory	1	Lecture	PPT & White board
3.7	Types of ROMs (Self Study)	1	Discussion	Google classroom

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.8	General Register Organization, Control Word	1	Chalk & Talk	Black Board
3.9	Examples of Micro operations	2	Chalk & Talk	Black Board
3.10	Stack Organization	2	Chalk & Talk	Black Board
3.11	Reverse Polish Notation, Evaluation of Arithmetic Expression	2	Chalk & Talk	Black Board
UNIT - 4 CENTRAL PROCESSING UNIT				
4.1	Instruction formats: Three Address Instruction	1	Discussion	PPT & White board
4.2	Two Address Instruction, One Address Instruction	2	Chalk & Talk	Green Board
4.3	Zero Address Instructions, RISC Instruction	2	Chalk & Talk	Black Board
4.4	Addressing Modes: Types.	2	Chalk & Talk	Black Board
4.5	Data Transfer and Manipulation: Data Transfer Instruction, Data Manipulation Instructions	2	Discussion	Black Board
4.6	Arithmetic Instruction	1	Lecture	PPT & White board
4.7	Logical and Bit Manipulation Instructions	2	Discussion	Black Board
4.8	Shift Instruction, Program Control	2	Chalk & Talk	Black Board
4.9	Program Interrupts - Types of Interrupt	1	Chalk & Talk	Black Board
4.10	Reduced Instruction Set Computer	1	Chalk & Talk	Black Board
4.11	CISC Characteristics- RISC Characteristics (Self Study)	1	Discussion	Google classroom
UNIT - 5 MEMORY ORGANIZATION				
5.1	Memory Hierarchy	2	Lecture	PPT & White board
5.2	Main Memory: RAM and ROM Chips	2	Chalk & Talk	Black Board
5.3	Auxiliary Memory: Magnetic	2	Discussion	Google

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Disks- Magnetic Tape (Self Study)			classroom
5.4	Associative Memory. Cache Memory	3	Chalk & Talk	Black Board
5.5	Associative Mapping - Direct Mapping	2	Chalk & Talk	Black Board
5.6	Set Associative Mapping	2	Chalk & Talk	Black Board
5.7	Virtual Memory	2	Chalk & Talk	Black Board
5.8	Address Space and Memory Space	2	Chalk & Talk	Black Board
UNIT –6 DYNAMISM				
6.1	Recent Development computer architecture	2	Discussion	Google classroom
6.2	Recent Development computer architecture	3	Lecture	PPT & White board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	**2**	**2**	**-**	**-**	**-**	**4**	-	**4**	10 %
K2	**2**	**2**	**5**	**-**	**-**	**9**	-	**9**	22.5 %
K3	**3**	**3**	**-**	**-**	**5**	**11**	-	**11**	27.5 %
K4	**3**	**3**	**-**	**5**	**-**	**11**	-	**11**	27.5 %
Non Scholastic	**-**	**-**	**-**	**-**	-		**5**	**5**	12.5 %
Total	**10**	**10**	**5**	**5**	**5**	**35**	**5**	**40**	**100 %**

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks

C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Explain about digital logic circuits.	K1	PSO1& PSO2
CO 2	Compute simple arithmetic operations for fixed-point and floating-point addition and subtraction.	K1, K2 & K3	PSO2
CO 3	Understand various digital components.	K1 & K3	PSO4
CO 4	Construct an instruction set capable of performing a specified set of operations.	K3	PSO3& PSO6
CO 5	Demonstrate a memory system for a given set of specifications.	K3& K4	PSO6

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	**3**	**3**	**2**	**2**	**2**	**1**	**1**	**1**
CO2	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**1**
CO3	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**2**
CO4	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2**

CO5	**2**	**2**	**2**	**2**	**2**	**3**	**1**	**1**

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Employability 100%

II B.Sc. Information Technology

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	22I3SB1	SKILLL BASED – Automation Skills	Practical	2	2

COURSE DESCRIPTION

This course trains students how to use MS Office applications use in office work such as creating professional-quality documents, store, organize and analyze information, arithmetic operations, functions and create dynamic slide presentations with animation, narration, images, and much more, digitally and effectively.

COURSE OBJECTIVES

To impart knowledge on various concepts in MS Word, Excel, PowerPoint & Publisher.

UNITS

UNIT –I WORD (6 HRS.)

Windows Basics – Introduction to word – Editing a document - Move and Copy text - Formatting text & Paragraph – Enhancing document – Columns, Tables and Other features.

UNIT –II EXCEL (6 HRS.)

Introduction to worksheet – getting started with Excel – Editing cell & using Commands and functions – Moving & Copying , Inserting & Deleting Rows & Columns - Printing work sheet.

UNIT –III ADVANCED FEATURES IN EXCEL (6 HRS.)

Creating charts – Naming ranges and using statistical, math and financial functions, in a worksheet – Additional formatting commands and toolbar – other commands & functions.

UNIT –IV POWERPOINT (6 HRS.)

Overview of Power point – presenting shows for corporate and commercial using Power point

UNIT –V ADVANCED FEATURES OF POWER POINT (6 HRS.)

Formatting text and objects to customize the look of publication- Add, Resize, Rotate, and Group objects- Creation of Product Catalogue- Create bookmarks and hyperlinks.

PROGRAM LIST

MS-WORD

1. **Text Manipulation:**Writinga paragraph about the institution and Change the font size and type, Spell check, Aligning and justification of Text
2. **Bio data:** Preparing Bio-data.
3. **Find and Replace:**Writinga paragraph about individual and do the following. Find and Replace, Use Numbering Bullets, Footer and Headers.
4. **Tables and manipulation:** Creation, Insertion, Deletion (Columns and Rows). Create a mark sheet.
5. **Mail Merge:** Prepare an invitation to invite friends for birthday party. Prepare at leastfive letters.

MS-EXCEL

1. Data sorting-Ascending and Descending (both numbers and alphabets)
2. Mark list preparation for a student
3. Individual Pay Bill preparation.
4. Invoice Report preparation.
5. Drawing Graphs. Take your own table.

MS-POWERPOINT

1. Create a slide show presentation for a seminar.
2. Preparation of Organization Charts
3. Create a slide show presentation to display percentage of marks in each semester for all students
4. Use bar chart(X-axis: Semester, Y-axis: % marks).
5. Use different presentation template different transition effect for each slide.

REFERENCES:

1. Holden, Greg. Microsoft Office 2007 in Simple Steps. Prentice Hall Press, 2009.

Digital Open Educational Resources (DOER):

1. Free Microsoft Office Tutorials At Gcfglobal

https://edu.gcfglobal.org/en/subjects/office/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 WORD				
1.1	Windows Basics, Introduction to word, Editing a document, Move and Copy text	1	Demonstration	Desktop PC
1.2	Formatting text & Paragraph	1	Demonstration	Desktop PC
1.3	Enhancing document, Columns	2	Demonstration	Desktop PC
1.4	Tables and Other features.	2	Demonstration	Desktop PC
UNIT-2 EXCEL				
2.1	Introduction to worksheet, getting started with Excel	1	Demonstration	Desktop PC
2.2	Printing work sheet	2	Demonstration	Desktop PC
2.3	Editing cell & using Commands and functions	1	Demonstration	Desktop PC
2.4	Moving & Copying, Inserting & Deleting Rows & Columns	2	Demonstration	Desktop PC
UNIT-3 ADVANCED FEATURES IN EXCEL				
3.1	Creating charts	1	Demonstration	Desktop PC
3.2	Naming ranges and using statistical function	1	Demonstration	Desktop PC
3.3	Math and financial function in a worksheet	1	Demonstration	Desktop PC
3.4	Additional formatting commands and toolbar	1	Demonstration	Desktop PC
3.5	Other commands & functions	2	Demonstration	Desktop PC
UNIT-4 POWERPOINT				
4.1	Overview of Power point	2	Demonstration	Desktop PC

4.2	Commercial Presentation using Power point	1	Demonstration	Desktop PC
4.3	Presentation shows for corporate	3	Demonstration	Desktop PC
UNIT -5 ADVANCED FEATURES OF POWER POINT				
5.1	Formatting text and objects to customize the look of publication	1	Demonstration	Desktop PC
5.2	Add, Resize, Rotate, and Group objects	2	Demonstration	Desktop PC
5.3	Creation of Product Catalogue	1	Demonstration	Desktop PC
5.4	Create bookmarks and hyperlinks.	2	Demonstration	Desktop PC

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Use Word to prepare organizational documents.	K2, K3	PSO1, PSO2& PSO3
CO 2	Design financial & other business applications requiring mathematical calculations using spread sheet software.	K2, K3	PSO1, PSO2& PSO3
CO 3	Develop various charts--pie, bar, line, column, & area using spread sheet software.	K2, K3	PSO1, PSO2& PSO3
CO 4	Create Dynamic presentations with animation.	K2, K3	PSO1, PSO2& PSO3
CO 5	Demonstrate presentations with narration and images.	K3, K4	PSO1, PSO2, PSO3 & PSO7

CIA	
Scholastic	**35**
Non Scholastic	**5**

	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	C2	C3	CIA	ESE	Total
20	15	5	40	60	100

C1 – Average of Two Model Test Marks

C2 - Average of Program Completion and Record Work

C3 - Non-Scholastic

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	3	2	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:
Staff Name: MRS. V. MAGESHWARI

V. Mageshwari

HOD'S Signature

Skill Development 100%

II B.Sc. Information Technology

SEMESTER –IV

For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	22I4CC7	PROGRAMMING IN JAVA	Lecture	6	4

COURSE DESCRIPTION

This course enable the students to build object oriented java programs using the concept of abstraction, encapsulation, exception handling, packages, interfaces, threads and AWT controls. It also imparts the ability to develop projects in java with JDBC connectivity.

COURSE OBJECTIVES

To acquaint the students with various techniques of Java Programming and help them to create effective programs in this language.

UNITS

UNIT – I :JAVA EVOLUTION & OVERVIEW (17 Hrs)

Java history – Java Features – Java Support system – Java Environment-Simple Java Program – An Application with two classes – Java Program Structure – Java Tokens – Java statements –Installing and configuring Java – Implementing a Java program – Java virtual machine –Command Line Arguments

Constants, variables, and Data types: Introduction-Constants-Variables-Data types –Declaration of variables- Giving values to variables-Scope of variables-symbolic constants-Type casting – Getting values of variables-

standard default values.

UNIT –II: BRANCHING, LOOPING & CLASSES (17 HRS.)

Decision Making and Branching: Introduction-Decision Making with if statements- simple if statements- the If Else Statement-Nesting of If Else Statements- The else if Ladder- The switch Statement- The ?: Operator

Decision Making and Looping : Introduction- The while Statement-The do statement- The for Statement- Jumps in Loops- Labeled Loops.

Classes, Objects and Methods: Introduction- Defining a class- Field declaration- method declaration - Creating Objects- Accessing Class Members- Constructors- Methods Overloading- Static Members- Nesting of Methods- Inheritance- Overriding Methods- Final Variables and Methods- Final Classes- Finalizer Methods- Abstract Methods and Classes- Visibility Control.

UNIT –III:ARRAYS , INTERFACE & PACKAGES (17 HRS.)

One dimensional arrays – creating an array – Two dimensional array –Strings – Vectors –Wrapper classes.

Defining Interface – Extending interface – Implementing interface – Accessing interface variables.

Java API Packages – Using system packages – Naming conventions- Creating package- Accessing a package – using a package – Adding class to a package – Hiding classes.

UNIT –IVMULTITHREADING,EXCEPTIONS& APPLETS (17 HRS.)

MULTITHREADING : Life cycle of Thread – Using Thread Methods – Thread Exceptions –Thread Priority –Synchronization – Implementing the'runnable' interface.

EXCEPTIONS : Types of Errors –Exceptions –Syntax of exception handling code – Multiple catch statement –Using finally statements –Throwing our own exceptions .

APPLET: Building Applet code - Applet Life cycle- Creating an Executable Applet – Designing a web page – Applet tag –Adding applet to HTML file – Passing Parameter to Applet – Displaying Numerical Values –Getting Input

from the user – Event Handling.

UNIT –V AWT& JDBC (17 HRS.)

AWT : Events-Listeners-Event Handling Methods-Labels-Button Control-Checkbox Control-radio button control-Choice control-List control-Scrollbars-Flow Layout- **Border Layout(Self Study).**

JAVA DATABASE CONNECTIVITY : Establishing a Connection-Creation of Data Tables-Entering Data into the tables _ Table Updating-Use of Prepared Statement- Obtaining Metadata-Using Transaction-Scrollable Result sets-**Stored Procedure (Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Latest Trends in Java Technologies (Angular, React)

TEXT BOOK:

1. E. Balagurusamy, " Programming with JAVA",6th Edition, 2019,McGraw Hill Education,
2. Muthu, C. "Programming with JAVA." Vijay Nicole Imprints, Chennai (2004).Chapters: 25, 8, 16, 9, 10, 11, 18, 19

REFERENCES:

1. Horstmann, Cay S., and Gary Cornell.Core Java: Advanced Features.Vol. 2.Pearson Education, 2013.
2. Naughton, Patrick, and Herbert Schildt. "The complete reference java 2." (2003).
3. Arnold, Ken, et al. The Java programming language.Vol. 2. Reading: Addison-wesley, 2000.
4. Schildt, Herbert. "Java: the complete reference." (2017)

WEB REFERNCES :

1. Java Tutorial :

https://www.tutorialspoint.com/java/

2. Java Tutorial For Beginners: Learn in 7 Days

https://www.guru99.com/java-tutorial.html

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT – I CLASSES & OBJECTS				
1.1	Class fundamentals, Declaring objects, Assigning object reference variables, introducing methods	5	Chalk & Talk	Black Board
1.2	Constructors, this keyword, finalize() method	4	Chalk & Talk	Black Board
1.3	overloading methods, using object as parameters, Argument passing, returning object, Recursion	4	Lecture	PPT& White board
1.4	Nested &Inner Classes, Inheritance & Polymorphism, Inheritance	3	Lecture	Smart Board
1.5	Method overriding (Self Study)	1	Discussion	Black Board
UNIT – II: PACKAGES, INTERFACE & EXCEPTION HANDLING				
2.1	Packages, Access Protection	4	Chalk & Talk	Black Board
2.2	Importing Packages, Interfaces	5	Chalk & Talk	Black Board
2.3	Exception Handling Function	4	Lecture	PPT& White board
2.4	Exception types, using try & catch	3	Lecture	Smart Board
2.5	Uncaught exception (Self Study)	1	Discussion	Black Board
UNIT – III: MULTITHREADING PROGRAMMING				
3.1	Life cycle of thread, Creating & Running Threads	4	Chalk & Talk	Black Board
3.2	Methods in thread classes, java. Lang, PACKAGES: Type wrapper-The number class	4	Chalk & Talk	Black Board
3.3	The byte, short, integer and Long classes, the float and Double classes	3	Lecture	PPT& White board
3.4	The character class, The Boolean class, the process class, the	3	Lecture	Smart Board

	runtime class			
3.5	The system class, the object class, the math class	2	Lecture	Black Board
3.6	String Buffer class (Self Study)	1	Discussion	Black Board
UNIT – IV : ABSTRACT WINDOW TOOLKIT - I				
4.1	Events, Listeners, Event Handling Methods, Labels, Button Control	4	Chalk & Talk	Black Board
4.2	Checkbox Control, radio button control, Choice control, List control, Scrollbars, Flow Layout	4	Chalk & Talk	Black Board
4.3	Border Layout (Self Study)	1	Discussion	Black Board
4.3	ABSTRACT WINDOW TOOLKIT - II :Windows & frames, Menus, Dialogs, Mouse Events and their Listener	2	Lecture	PPT& White board
4.3	Adapter Classes, Inner classes, Anonymous Inner classes	2	Lecture	Smart Board
4.4	SWING: JApplet class, Icons, JLabel Control, JTextfield Control, JButton Control, JCheckbox	2	Chalk & Talk	Black Board
4.5	Control, JRadioButton Control, Menus, JSlider Control, JComboBoxConrol, JgtabbedPane Control, JScrollPane Control	2	Chalk & Talk	Black Board
UNIT – V : JAVA DATABASE CONNECTIVITY				
5.1	JAVA DATABASE CONNECTIVITY: Establishing a Connection, Creation of Data Tables	4	Chalk & Talk	Black Board
5.2	Entering Data into the tables, Table Updating-Use of Prepared Statement	3	Chalk & Talk	Black Board
5.3	Obtaining Metadata, Using Transaction, Scrollable Result sets	3	Lecture	PPT& White board
5.4	Stored Procedure (Self Study)	1	Discussion	Black Board
5.5	SERVLETS: Servlet and Dynamic Web pages, Life cycle of a servlet,	4	Lecture	Smart Board

	A simple servlet			
UNIT –6 DYNAMISM				
6.1	Latest Trends in Java Technologies - Angular	2	Discussion	Black Board
6.2	Latest Trends in Java Technologies - React	3	Discussion	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	**2**	**2**	**-**	**-**	**-**	**4**	-	**4**	10 %
K2	**2**	**2**	**5**	**-**	**-**	**9**	-	**9**	22.5 %
K3	**3**	**3**	**-**	**-**	**5**	**11**	-	**11**	27.5 %
K4	**3**	**3**	**-**	**5**	**-**	**11**	-	**11**	27.5 %
Non Scholastic	**-**	**-**	**-**	**-**	-		**5**	**5**	12.5 %
Total	**10**	**10**	**5**	**5**	**5**	**35**	**5**	**40**	**100 %**

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	**5**	**5**	**-**	**4**	**-**	-	**14**	23.33 %
K2	**-**	**-**	**8**	**4**	**-**	-	**12**	20 %
K3	**-**	**-**	**-**	**-**	**20**	-	**20**	33.33 %
K4	**-**	**-**	**-**	**4**	**-**	10	**14**	23.34 %
Total	**5**	**5**	**8**	**12**	**20**	**10**	**60**	**100 %**

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**CIA**	**ESE**	**Total**
10	**10**	**5**	**5**	**5**	**5**	**40**	**60**	**100**

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the concepts of Object-Oriented Programming & Java Programming Constructs.	K1 & K2	PSO1& PSO2
CO 2	Understand basic concepts of Java such as operators, classes, objects, inheritance, packages, Enumeration and various keywords.	K1 & K2	PSO1, PSO2 &PSO3
CO 3	Understand the concept of exception handling and Input/output operations.	K1 & K2	PSO1& PSO2
CO 4	Design Java & Java applet based applications.	K2 & K3	PSO6
CO 5	Analyze & Design the concept of Event Handling and Abstract Window Toolkit.	K3 & K4	PSO3 &PSO8

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	2	3	2	2	2	2
CO4	2	2	3	2	2	2	2	2

CO5	**2**	**2**	**2**	**2**	**2**	**3**	**1**	**1**

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: V.MAGESHWARI**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Employability 100%

II B.Sc. Information Technology

SEMESTER –IV

For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	22I4CC8	LAB IV - JAVA PROGRAMMING	Practical	6	3

COURSE DESCRIPTION

This course gives hands on experience, practices the concepts of java programming language, and develops solutions for real world problems.

COURSE OBJECTIVES

To give programming skills on various concepts in JAVA.

PROGRAM LIST

1. Programs using Operator, Assignment Operator, Increment& Decrement Operator, Logical Operator and Bitwise Operator.
2. Programs Using IF, Conditional Operator, Array, While Loop, For Loop, Switch& Break and Continue.
3. Programs using the concept Overloading.
4. Programs using the concept Inheritance and Constructor
5. Programs using the concept Interface and Overriding .
6. Programs using the concept Built-in and User defined Exception Handling and Threads.
7. Programs using the concept Threads.
8. Programs using the concept String Handling.

9. Programs using the concept Packages

10. Programs for creating Applet.

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1	Programs using Operator, Assignment Operator, Increment& Decrement Operator, Logical Operator and Bitwise Operator.	9	Demonstration	Desktop PC
2	Programs Using IF, Conditional Operator, Array, While Loop, For Loop, Switch& Break and Continue.	9	Demonstration	Desktop PC
3	Programs using the concept Overloading.	9	Demonstration	Desktop PC
4	Programs using the concept Inheritance and Constructor	9	Demonstration	Desktop PC
5	Programs using the concept Interface and Overriding .	9	Demonstration	Desktop PC
6	Programs using the concept Built-in and User defined Exception Handling and Threads.	9	Demonstration	Desktop PC
7	Programs using the concept Threads.	9	Demonstration	Desktop PC
8	Programs using the concept String Handling.	9	Demonstration	Desktop PC
9	Programs using the concept Packages	9	Demonstration	Desktop PC
10	Programs for creating Applet.	9	Demonstration	Desktop PC

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING	PSOs ADDRESSED

		TO REVISED BLOOM'S TAXONOMY)	
CO 1	Implement Object Oriented programming concept using operators and control Structures.	K2, K3	PSO1& PSO2
CO 2	Design java programs using inheritance, interfaces and packages.	K2, K3	PSO1, PSO2 & PSO3
CO 3	Implement exception handling mechanism and multithreading concept.	K2, K3	PSO1, PSO2 & PSO3
CO 4	Design Java applet based applications.	K2, K3	PSO6 & PSO8
CO 5	Design applications to Handle Events using AWT components.	K3, K4	PSO6 & PSO8

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**CIA**	**ESE**	**Total**
20	**15**	**5**	**40**	**60**	**100**

C1 – Average of Two Model Test Marks

C2 - Average of Program Completion and Record Work

C3 - Non-Scholastic

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	3	2	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: Mrs. V. Mageshwari**

Forwarded By

V. Mageshwari

HOD'S Signature
& Name

Employability 100%

II B.Sc. Information Technology

SEMESTER – IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I4SB2	ANALYTICAL SKILLS	Lecture	2	2

COURSE DESCRIPTION

This course content plays a vital role for clearing any competitive exam and it covers all the Quantitative Aptitude topics and an in-depth understanding of this subject.

COURSE OBJECTIVES

To prepare the student with the range of skills which facilitate them to enhance their employability quotient and do well in the professional space.

UNITS

UNIT –I QUANTITATIVE APTITUDE – I (6HRS.)

Different Number System, More on Numbers, Ratio and Proportion, Percentage, Approximate Value Calculation.

UNIT –II QUANTITATIVE APTITUDE – II (6 HRS.)

Mixtures, Averages, Time and Distance, Problems Based on Trains, Rowing Downstream and Upstream.

UNIT –III QUANTITATIVE APTITUDE – III (6 HRS.)

Pipes and Cistern, Time and Work, Clocks, Mensuration Area and Volume.

UNIT –IV VERBAL REASONING- I (6 HRS.)

SERIES: Locating Wrong Number, Probability, Data Interpretation, Data Sufficiency Series Completion, Analogy, Classification, Coding – Decoding, Blood Relations

UNIT –V VERBAL REASONING- II (6 HRS.)

Direction Sense Test, Alphabetical Quibble, Number,Ranking& time, Sequence test, Mathematical Operations, Logical Sequence of Words, Arithmetical Reasoning.

REFERENCES:

1. Aggarwal, R. S. Quantitative Aptitude. S. Chand, 2017.

OPEN EDUCATIONAL RESOURCES :

1. Quantitative Aptitude Tutorial - Tutorialspoint
https://www.tutorialspoint.com/quantitative_aptitude/index.htm
2. Aptitude Tutorial - Students Tutorial
https://www.studentstutorial.com/aptitude/aptitude-tutorial.php/aptitude-tutorial.php

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1	**QUANTITATIVE APTITUDE – I**			
1.1	Syllabus Discussion	1	Discussion	Black Board
1.2	Different Number System	1	Chalk & Talk	Black Board
1.3	More on Numbers	1	Chalk & Talk	Black Board
1.4	Ratio and Proportion	1	Chalk & Talk	Black Board
1.5	Percentage	1	Chalk & Talk	Black Board
1.6	Approximate Value Calculation	1	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -2	**QUANTITATIVE APTITUDE – II**			
2.1	Mixtures	1	Chalk & Talk	Black Board
2.2	Averages	1	Chalk & Talk	Black Board
2.3	Time and Distance	1	Chalk & Talk	Black Board
2.4	Problems Based on Trains	1	Chalk & Talk	Black Board
2.5	Rowing Downstream and Upstream	2	Chalk & Talk	Black Board
UNIT - 3	**QUANTITATIVE APTITUDE – III**			
3.1	Pipes and Cistern	1	Chalk & Talk	Black Board
3.2	Races	1	Chalk & Talk	Black Board
3.3	Games	1	Chalk & Talk	Black Board
3.4	Time and Work	1	Chalk & Talk	Black Board
3.5	Clocks	1	Chalk & Talk	Black Board
3.6	Mensuration Area and Volume	1	Chalk & Talk	Black Board
UNIT - 4	**VERBAL REASONING- I**			
4.1	Locating Wrong Number	1	Chalk & Talk	Black Board
4.2	Probability	1	Chalk & Talk	Black Board
4.3	Data Interpretation, Data Sufficiency Series Completion	1	Chalk & Talk	Black Board
4.4	Analogy, Classification	1	Chalk & Talk	Black Board
4.5	Coding – Decoding	1	Chalk & Talk	Black Board
4.6	Blood Relations, Puzzle Test	1	Chalk & Talk	Black Board
UNIT - 5	**VERBAL REASONING- II**			

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.1	Direction Sense Test, Alphabetical Quibble	1	Chalk & Talk	Black Board
5.2	Ranking & time	1	Chalk & Talk	Black Board
5.3	Sequence test	1	Chalk & Talk	Black Board
5.4	Mathematical Operations	1	Chalk & Talk	Black Board
5.5	Logical Sequence of Words	1	Chalk & Talk	Black Board
5.6	Arithmetical Reasoning	1	Chalk & Talk	Black Board

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the short cut methods.	K1& K2	PSO1& PSO3
CO 2	Apply general mathematical techniques.	K2 & K3	PSO1& PSO3
CO 3	Develop their critical thinking.	K2 & K3	PSO1& PSO3
CO 4	Recall the formulas.	K1& K2	PSO1& PSO2
CO 5	Solve the sums by applying shortcut methods with time management.	K2 & K3	PSO8

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	C2	C3	CIA	ESE	Total
20	15	5	40	60	100

C1 – Average of Two Model Test Marks

C2 – Assignment, quiz and OBT

C3 - Non-Scholastic

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	3	2	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3

CO4	**1**	**1**	**1**	**1**
CO5	**1**	**1**	**1**	**1**

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

III B.Sc. Information Technology

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	22I5CC9	.NET PROGRAMMING	Lecture	5	5

COURSE DESCRIPTION

This course introduces .NET Framework and imparts various concepts in .NET framework.

COURSE OBJECTIVES

To facilitate the students to understand, the features of .NET framework and use the design of the language to develop robust software.

UNITS

UNIT –I INTRODUCTION (14HRS.)

.NET Framework - Development Environment: Console, Windows – Variables and expressions - Flow Control - Functions - Debugging and Error Handling -Classes - Collections, Comparisons and Conversions – Generics.

UNIT –II WINDOWS PROGRAMMING (14 HRS.)

Controls(Button, Label , Link Label, Radio Button, Check Box, Text Box, Rich Text Box, List Box, Checked List Box, List View, Tabbed), Forms (Menus and Tool Bars, SDI and MDI applications, Building MDI applications.

UNIT –III WEB PROGRAMMING (14 HRS.)

ASP.NET Web Pages - Server Controls - ASP.NET server controls: Types of control, ASP.NET state management engine. Web.config and global.asax

files. - Input Validation - State Management - Master Pages - Navigation

UNIT –IV ASP.NET& ADO.NET (14HRS.)

Data Controls - Data Bound Controls - XML - LINQ - LINQ with Databases - ADO.NET architecture- ASP.NET data control - Data source control. Crystal reports. LINQ: Operators, implementations, LINQ to objects, XML, ADO.NET

UNIT –V ADVANCED CONCEPTS (14 HRS.)

ASP.NET Security: Authentication, Authorization, Impersonation, ASP.NET provider model -WPF - WCF – WWF

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

JQuery- AJAX

TEXT BOOK:

1. Beginning Visual C# 2010, K. Watson, C. Nagel, J.H Padderson, J.D. Reid, M.Skinner, Wrox (Wiley) 2010. (Unit I and II).

REFERENCES:

1. Bruce Barstow, Tony Martin, “Visual Basic. NET in 60 Minutes a Day Bible”, Willey Dreamtech India (P) Ltd., 1st Edition, 2003.
2. Visual Basic .Net Programming Black Book by STEVEN HOLZNER, Dreamtech Press
3. Dean Alan Hume, “Fast ASP.NET Websites”, Manning Publications Co, 2013.

Digital Open Educational Resources (DOER):

1. Asp and Asp.net Tutorials

https://www.w3schools.com/asp/default.ASP

2. Asp.net Tutorial

https://www.tutorialspoint.com/asp.net/index.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1INTRODUCTION				
1.1	The Origin of .Net Technology	1	Discussion	Black Board
1.2	Common Language -Runtime (CLR)	2	Chalk & Talk	Black Board
1.3	Common Type System (CTS)	2	Lecture	LCD
1.4	Common Language Specification(CLS)	2	Discussion	Google classroom
1.5	Garbage Collector	3	Chalk & Talk	Black Board
1.6	Memory Management	2	Chalk & Talk	Black Board
1.7	Visual studio .NET (Self Study).	2	Discussion	Google classroom
UNIT -2 C#				
2.1	Building Blocks of C#	1	Lecture	PPT & White board
2.2	Type Conversion	1	Chalk & Talk	Green Board
2.3	Functions	2	Chalk & Talk	Black Board
2.4	Delegates - Error Handling	2	Chalk & Talk	Black Board
2.5	Exception Handling – Classes in c#	2	Chalk & Talk	Black Board
2.6	Access modifiers	2	Chalk & Talk	Black Board
2.7	Interface – Collections	2	Lecture	Google classroom
2.8	Generics	1	Chalk & Talk	Black Board
2.9	As Operator (Self Study)	1	Discussion	Google classroom
UNIT – 3 Window Programming and Data Access				
3.1	Controls	2	Chalk & Talk	Green Board
3.2	Common Controls (Self Study)	1	Discussion	Google classroom
3.3	Container controls –	2	Chalk &	Black

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Menus and Toolbars –		Talk	Board
3.4	Deployment	1	Chalk & Talk	Black Board
3.5	File System	2	Discussion	Black Board
3.6	XML	1	Lecture	PPT & White board
3.7	Databases and ADO.NET	1	Lecture	Black Board
3.8	ADO.NET classes	2	Chalk & Talk	Black Board
3.9	Data Binding	2	Chalk & Talk	Black Board
UNIT – 4 ASP.NET				
4.1	Features	2	Discussion	PPT & White board
4.2	Life Cycle (Self Study)	1	Chalk & Talk	Green Board
4.3	Server Controls – Control Structure	2	Chalk & Talk	Black Board
4.4	Functions – HTML Events – ASP.NET web control events	2	Chalk & Talk	Black Board
4.5	Event driven Programming – Postback - Reading from databases	3	Discussion	Black Board
4.6	HTML Server control - Web Server controls	2	Lecture	Green Board
4.7	Validation Controls	2	Discussion	Black Board
UNIT – 5 DOT NET ASSEMBLIES				
5.1	State Management	2	Lecture	PPT & White board
5.2	View State (Self Study)	1	Discussion	PPT & White board
5.3	Control State	2	Lecture	Black Board
5.4	Hidden Field	2	Chalk & Talk	Black Board
5.5	Session	2	Chalk &	Black

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
			Talk	Board
5.6	Cookies	2	Chalk & Talk	Black Board
5.7	Session Events	1	Chalk & Talk	Black Board
5.8	Web Services	1	Chalk & Talk	Black Board
5.9	XML – SOAP	2	Chalk & Talk	Black Board
5.10	Building ASP.NET Web Services	2	Chalk & Talk	Black Board
UNIT –6 DYNAMISM				
6.1	MVC Framework	2	Discussion	Black Board
6.2	WPF, AJAX	3	Discussion	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	**2**	**2**	**-**	**-**	**-**	**4**	-	**4**	10 %
K2	**2**	**2**	**5**	**-**	**-**	**9**	-	**9**	22.5 %
K3	**3**	**3**	**-**	**-**	**5**	**11**	-	**11**	27.5 %
K4	**3**	**3**	**-**	**5**	**-**	**11**	-	**11**	27.5 %
Non Scholastic	**-**	**-**	**-**	**-**	-		**5**	**5**	12.5 %
Total	**10**	**10**	**5**	**5**	**5**	**35**	**5**	**40**	**100 %**

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks

C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Explain the .NET framework	K1, K2	PSO1
CO 2	Apply the general programming structure of vb.net in developing software solutions based on user requirements.	K2 & K3	PSO1 &PSO2
CO 3	Design basic GUI applications using .NET.	K2 & K3	PSO3& PSO5
CO 4	Demonstrate advanced features of .NET programming.	K2 & K3	PSO2 &PSO3
CO 5	Develop windows application and web applications in .NET framework analyzing user requirements.	K3& K4	PSO5, PSO7 & PSO8

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	**3**	**3**	**2**	**2**	**2**	**1**	**1**	**1**
CO2	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**1**
CO3	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**2**
CO4	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2**
CO5	**2**	**2**	**2**	**2**	**2**	**3**	**1**	**1**

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

Forwarded By

V. Mageshwari

HOD'S Signature
& Name

Entrepreneurship 100%

III B.Sc. Information Technology

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	22I5CC10	LAB V: .NET PROGRAMMING	Practical	6	3

COURSE DESCRIPTION

This course gives hands on experience in C# Programming with dot net.

COURSE OBJECTIVES

To facilitate the students to understand the dot net framework environment and programming concepts in dot net framework.

PROGRAM LIST

1. Program using control statements
2. Program using array
3. Console Application
4. Creating Simple window application
5. Window application with ADO.NET
6. Using ADO.NET to insert, modify, update and delete.
7. Window application using Data Grid for displaying records.
8. Creating Simple web application
9. Creating Web application with ADO.NET
10. Creating Web application with Data Grid
11. Creating Web application with data binding concepts
12. Program implementing validation control

13. XML reading

14. XML writing

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1	Program using control statements	6	Demonstration	Desktop PC
2	Program using array	6	Demonstration	Desktop PC
3	Console Application	6	Demonstration	Desktop PC
4	Creating Simple window application	6	Demonstration	Desktop PC
5	Window application with ADO.NET	6	Demonstration	Desktop PC
6	Using ADO.NET to insert, modify, update and delete.	6	Demonstration	Desktop PC
7	Window application using Data Grid for displaying records.	6	Demonstration	Desktop PC
8	Creating Simple web application	6	Demonstration	Desktop PC
9	Creating Web application with ADO.NET	7	Demonstration	Desktop PC
10	Creating Web application with Data Grid	7	Demonstration	Desktop PC
11	Creating Web application with data binding concepts	7	Demonstration	Desktop PC
12	Program implementing validation control	7	Demonstration	Desktop PC
13	XML reading	7	Demonstration	Desktop PC
14	XML writing	7	Demonstration	Desktop PC

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand various application types.	K2& K3	PSO1& PSO2
CO 2	Create dynamic window application.	K2 & K3	PSO2& PSO3
CO 3	Use asp.net controls in web application.	K2 & K3	PSO5 & PSO6
CO 4	Build interactive Webpages.	K2 & K3	PSO5, PSO6 &PSO8
CO 5	Use XML in web application.	K3 & K3	PSO6& PSO8

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**CIA**	**ESE**	**Total**
20	**15**	**5**	**40**	**60**	**100**

C1 – Average of Two Model Test Marks

C2 - Average of Program Completion and Record Work

C3 - Non-Scholastic

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	3	2	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

III B.Sc. Information Technology

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I5CC11	SOFTWARE ENGINEERING	Theory	5	3

COURSE DESCRIPTION

This course introduces the basic steps involved in Software Development Life Cycle (SDLC).

COURSE OBJECTIVES

To facilitate the students to analyze risk in software design and quality and to plan, design, develop and validate the software project.

UNITS

UNIT –I SOFTWARE ENGINEERING AND PLANNING (15HRS.)

Size factors – Quality and Productivity Factors – Managerial Issues. Planning a Software Project - Problem definition – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure – **Other Planning Activities (Self Study).**

UNIT –II SOFTWARE COST ESTIMATION (15 HRS.)

Software Cost Estimation - **Software Cost Factors(Self Study)** – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Maintenance Costs.

UNIT –III SOFTWARE REQUIREMENTS (14 HRS.)

The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

UNIT –IV SOFTWARE DESIGN AND IMPLEMENTATION (14 HRS.)

Software Design - Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real-Time and Distributed System Design – Test Plans – Milestones, Walkthroughs, and Inspections - Design Guidelines - Structured Coding Techniques - Single Entry, Single Exit constructs – **Coding Style – Documentation Guidelines (Self Study).**

UNIT –V VERIFICATION, VALIDATION AND MAINTENANCE (14 HRS.)

Verification and Validation Techniques - Quality Assurance – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification - Software Maintenance - Enhancing Maintainability During Development – Managerial Aspects of Software Maintenance – Configuration Management – **Source-Code Metrics – Other Maintenance Tools and Techniques (Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Agile Model – Scrum - Extreme Programming

TEXT BOOK:

1. Fairley, Richard. Software engineering concepts. McGraw-Hill, Inc., 1985.Chapters 1, 2, 3, 4, 5, 6, 8.1 - 8.7, 9.1 - 9.5

REFERENCES:

1. Pressman, Roger S. Software engineering: a practitioner's approach. Palgrave macmillan, 2005.
2. Humphrey, Watts S. A discipline for software engineering. Addison-Wesley Longman Publishing Co., Inc., 1995.

OPEN EDUCATIONAL RESOURCES:

1. Software Engineering Tutorial - Tutorialspoint
https://www.tutorialspoint.com/software_engineering/index.htm
2. Software Engineering Tutorial - Tutorialride.com
https://www.tutorialride.com/software-engineering/software-engineering-tutorial.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 SOFTWARE ENGINEERING AND PLANNING				
1.1	Size factors	2	Discussion	Black Board
1.2	Quality and Productivity Factors	2	Chalk & Talk	Black Board
1.3	Managerial Issues	2	Lecture	LCD
1.4	Planning a Software Project	2	Lecture	LCD
1.5	Problem definition	2	Chalk & Talk	Black Board
1.6	Developing a Solution Strategy	1	Chalk & Talk	Black Board
1.7	Planning the Development Process	1	Chalk & Talk	Black Board
1.8	Planning an Organizational Structure	1	Chalk & Talk	Black Board
1.9	Other Planning Activities (Self Study)	1	Discussion	Google classroom
UNIT -2 SOFTWARE COST ESTIMATION				
2.1	Software Cost Estimation	2	Lecture	PPT & White board
2.2	Software Cost Factors (Self Study)	2	Discussion	Google classroom
2.3	Software Cost Estimation Techniques	3	Chalk & Talk	Black Board
2.4	Software Cost Estimation Techniques	3	Discussion	Google classroom
2.5	Staffing-Level Estimation	2	Lecture	Google classroom
2.6	Estimating Software Maintenance Costs	2	Chalk & Talk	Black Board
UNIT – 3 SOFTWARE REQUIREMENTS				
3.1	The Software Requirements Specification	2	Discussion	PPT & White board
3.2	Formal Specification Techniques	2	Chalk & Talk	Green Board
3.3	Relational Notation	2	Discussion	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.4	State oriented notation	2	Chalk & Talk	Black Board
3.5	Languages and Processors for Requirements Specification	2	Chalk & Talk	Black Board
3.6	PSL/PSA, RSL/REVS, GIST	2	Lecture	PPT & White board
3.7	SADT, SSA	2	Chalk & Talk	Black Board
UNIT – 4 SOFTWARE DESIGN AND IMPLEMENTATION				
4.1	Software Design, Fundamental Design Concepts, Modules and Modularization Criteria	2	Discussion	PPT & White board
4.2	Design Notations, Design Techniques	2	Chalk & Talk	Green Board
4.3	Detailed Design Considerations	2	Chalk & Talk	Black Board
4.4	Real-Time and Distributed System Design	2	Chalk & Talk	Black Board
4.5	Test Plans, Milestones, Walkthroughs, and Inspections	2	Chalk & Talk	Black Board
4.6	Design Guidelines, Structured Coding Techniques, Coding Style	2	Discussion	Black Board
4.7	Documentation Guidelines (Self Study)	2	Chalk & Talk	Black Board
UNIT – 5 VERIFICATION, VALIDATION AND MAINTENANCE				
5.1	Verification and Validation Techniques	2	Lecture	PPT & White board
5.2	Quality Assurance, Static Analysis, Symbolic Execution	2	Discussion	PPT & White board
5.3	Unit Testing and Debugging	2	Lecture	Black Board
5.4	System Testing, Formal Verification	2	Chalk & Talk	Black Board
5.5	Software Maintenance, Managerial Aspects of Software Maintenance	2	Chalk & Talk	Black Board
5.6	Configuration Management,	2	Chalk &	Black

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Source-Code Metrics		Talk	Board
5.7	Other Maintenance Tools and Techniques (Self Study)	2	Chalk & Talk	Black Board
UNIT –6 DYNAMISM				
6.1	Agile Model	2	Discussion	Black Board
6.2	Scrum, Extreme Programming	3	Discussion	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	5	5	-	4	-	-	14	23.33 %

K2	**-**	**-**	**8**	**4**	**-**	-	**12**	20 %
K3	**-**	**-**	**-**	**-**	**20**	-	**20**	33.33 %
K4	**-**	**-**	**-**	**4**	**-**	10	**14**	23.34 %
Total	**5**	**5**	**8**	**12**	**20**	**10**	**60**	**100 %**

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC					**NON - SCHOLASTIC**	**MARKS**		
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**CIA**	**ESE**	**Total**
10	**10**	**5**	**5**	**5**	**5**	**40**	**60**	**100**

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand how to plan a software project.	K1& K2	PSO1& PSO2
CO 2	Analyze the cost estimate and problem complexity using various estimation techniques.	K2, K3 & K4	PSO3
CO 3	Prepare the SRS, Design document, Project plan of a given software system.	K2, K3 & K4	PSO2& PSO3
CO 4	Apply Software design and implementation ideas in S/W project development.	K2, K3 & K4	PSO2& PSO3
CO 5	Generate test cases using White Box testing and Black Box testing.	K2, K3 & K4	PSO7& PSO8

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	2	3	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1

CO2	**1**	**1**	**3**	**1**
CO3	**1**	**2**	**1**	**3**
CO4	**1**	**1**	**1**	**1**
CO5	**1**	**1**	**1**	**1**

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated **-1**

COURSE DESIGNER:

1. Staff Name: MRS. V. JANE VARAMANI SULEKHA

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

III B.Sc. Information Technology

SEMESTER – V

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I5CC12	OPERATING SYSTEMS	Lecture	5	5

COURSE DESCRIPTION

This course content plays a vital role in making the students to understand the basic operating system concept.

COURSE OBJECTIVES

To introduce basic concepts and principles of operating systems, which include memory management, process management, file management.

UNITS

UNIT –I OPERATING SYSTEM OVERVIEW (15HRS.)

Operating System Overview: Operating System Objectives and **Functions(Self Study)**, the Evolution of Operating System, Major Achievements.Processes: Process, Process states- Two state, Five State, Suspended Process.

UNIT –II CONCURRENCY (15 HRS.)

Concurrency: Principles of Concurrency, Mutual Exclusion – Hardware Support, Semaphores, Monitors, Message Passing. **Deadlock:Principles of Deadlock(Self Study)**, Deadlock Prevention, Deadlock Detection, Deadlock Avoidance.

UNIT –III MEMORY MANAGEMENT & SCHEDULING (15 HRS)

Memory Management: Memory Management Requirements, Memory

Partitioning, Paging, Segmentation.**Uni-processor Scheduling**: Types of Processors Scheduling, Scheduling Algorithm, Scheduling Criteria, FIFO, Round Robin, Shortest Process Next, **Shortest Remaining Time (Self Study)**, Highest Response Ratio.

UNIT –IV I/O MANAGEMENT AND DISK SCHEDULING (15 HRS.)

I/O Management and Disk Scheduling: I/O devices, Organization of the I/O Function, I/O Buffering, DiskScheduling.**File Management:** Overview, File Organization and Access, File Directories, **File Sharing (Self Study)**.

UNIT –V LINUX FILE STRUCTURE, SHELL & FILE MANAGEMENT OPERATIONS (15 HRS.)

The Shell: The Command Line, Command Line Editing, Filename Expansion: *, ?, [ ], Standard Input/output and Redirection, Pipes | ,Redirecting and Piping the Standard Error: >&, 2>. Jobs: Background, Kills, and Interruptions.**Linux Files, Directories:** The File Structure, Listing, Displaying, and Printing Files: ls, cat, more, less, and lpr, Managing Directories: mkdir, rmdir, ls, cd, and pwd, File and **Directory Operations: fi nd, cp, mv, rm, and ln (Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Recent advancements in Operating System (Ubuntu, MAC OS, Apple iOS, Android OS)

TEXT BOOK:

1. Stallings, William. Operating systems: internals and design principles. Boston: Prentice Hall, 7th edition, 2014. Chapters: 1.1-1.3, 2.1-2.2, 4.1-4.5, 5.1 - 5.4, 6.1 - 6.4, 8.1-8.2, 10.1 -10.5, 11.1 - 11.6
2. Petersen, Richard. Linux: the complete reference.McGraw-Hill Professional, 6th edition, 2000.Chapter 3, 6

REFERENCES:

1. Deitel, Harvey M., Paul J. Deitel, and David R. Choffnes.Operatingsystems.Pearson/Prentice Hall, 2008.
2. Madnick, Stuart E., and John J. Donovan. Operating Systems: Instructor's Manual to Accompany Operating Systems. Erg. Bd. McGraw-Hill, 2007.

OPEN EDUCATIONAL RESOURCES :

1. Operating System Tutorial - Tutorialspoint
https://www.tutorialspoint.com/operating_system/index.htm
2. Learn Operating System (os) Tutorial - Javatpoint
https://www.javatpoint.com/os-tutorial
3. Operating System Tutorial | Studytonight
https://www.studytonight.com/operating-system

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 OPERATING SYSTEM OVERVIEW				
1.1	Operating System Overview	1	Discussion	Black Board
1.2	Operating System Objectives	2	Chalk & Talk	Black Board
1.3	Functions (Self Study)	1	Discussion	Google classroom
1.4	The Evolution of Operating System	2	Lecture	PPT & White board
1.5	Major Achievements	1	Chalk & Talk	Black Board
1.6	Process	1	Discussion	Google classroom
1.7	Process states- Two state	3	Chalk & Talk	Black Board
1.8	Process states-Five State	3	Chalk & Talk	Black Board
1.9	Suspended Process	3	Chalk & Talk	Black Board
UNIT -2 CONCURRENCY				
2.1	Concurrency, Principles of Concurrency	1	Lecture	PPT & White board
2.2	Mutual Exclusion	2	Chalk & Talk	Green Board
2.3	Hardware Support, Semaphores	2	Chalk & Talk	Black Board
2.4	Monitors, Message Passing	2	Chalk & Talk	Black Board
2.5	Deadlock	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.6	Principles of Deadlock (Self Study)	1	Discussion	Google classroom
2.7	Deadlock Prevention	2	Chalk & Talk	Black Board
2.8	Deadlock Detection	3	Chalk & Talk	Black Board
2.9	Deadlock Avoidance	2	Chalk & Talk	Black Board
UNIT - 3 MEMORY MANAGEMENT & SCHEDULING				
3.1	Memory Management, Memory Management Requirements	1	Discussion	PPT & White board
3.2	Memory Partitioning	2	Chalk & Talk	Green Board
3.3	Paging	2	Chalk & Talk	Black Board
3.4	Segmentation	2	Chalk & Talk	Black Board
3.5	Uni-processor Scheduling, Types of Processors Scheduling	2	Discussion	Black Board
3.6	Scheduling Algorithm	1	Lecture	PPT & White board
3.7	Scheduling Criteria	1	Chalk & Talk	Black Board
3.8	FIFO, Round Robin	1	Chalk & Talk	Black Board
3.9	Shortest Remaining Time (Self Study)	1	Discussion	Google classroom
3.10	Highest Response Ratio	2	Chalk & Talk	Black Board
3.11	Shortest Process Next	2	Chalk & Talk	Black Board
UNIT - 4 I/O MANAGEMENT AND DISK SCHEDULING				
4.1	I/O Management and Disk Scheduling	2	Discussion	PPT & White board
4.2	I/O devices	2	Chalk & Talk	Green Board
4.3	Organization of the I/O Function	2	Chalk & Talk	Black Board
4.4	I/O Buffering	2	Chalk &	Black

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
			Talk	Board
4.5	Disk Scheduling	2	Discussion	Black Board
4.6	File Management	2	Lecture	PPT & White board
4.7	File Organization and Access	2	Discussion	Black Board
4.8	File Directories	2	Chalk & Talk	Black Board
4.9	File Sharing (Self Study)	1	Discussion	Google classroom
UNIT - 5 LINUX FILE STRUCTURE, SHELL & FILE MANAGEMENT OPERATIONS				
5.1	The Shell, The Command Line	1	Lecture	PPT & White board
5.2	Command Line Editing	2	Chalk & Talk	Black Board
5.3	Filename Expansion: *, ?, [ ]	2	Discussion	Google classroom
5.4	Standard Input/output and Redirection, Pipes |	2	Chalk & Talk	Black Board
5.5	Redirecting and Piping the Standard Error: >&, 2>	2	Chalk & Talk	Black Board
5.6	Jobs: Background, Kills, and Interruptions	2	Chalk & Talk	Black Board
5.7	Linux Files, Directories	2	Chalk & Talk	Black Board
5.8	The File Structure, Listing, Displaying, and Printing Files: ls, cat, more, less, and lpr	2	Chalk & Talk	Black Board
5.9	Managing Directories: mkdir, rmdir, ls, cd, and pwd	1	Chalk & Talk	Green Board
5.10	File and Directory Operations: fi nd, cp, mv, rm, and ln (Self Study)	1	Discussion	Google classroom
UNIT –6 DYNAMISM				
6.1	Recent advancements in Operating System - Ubuntu	1	Discussion	Google classroom
6.2	MAC OS	1	Lecture	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
6.3	Apple iOS	1	Lecture	Black Board
6.4	Android OS	2	Lecture	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S	PSOs ADDRESSED

		TAXONOMY)	
CO 1	Describe the evolution, types, structure and functions of operating systems.	K1& K2	PSO1& PSO2
CO 2	Explain techniques involved in concurrency and deadlock.	K1& K2	PSO1
CO 3	Describe memory management and processor scheduling used in operating systems.	K1& K2	PSO4
CO 4	Implement disk scheduling algorithm for a given scenario.	K1, K2& K3	PSO3& PSO4
CO 5	Execute Linux basic commands and shell scripts.	K3& K4	PSO7 & PSO8

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	2	3	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

III B.Sc. Information Technology

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I5ME1	DATA MINING	Lecture	5	5

COURSE DESCRIPTION

This course introduces the basic concepts, principles, methods, implementation techniques, and applications of data mining.

COURSE OBJECTIVES

To facilitate the student to understand the concepts of data mining and to understand various techniques involved in data mining.

UNITS

UNIT –I DATA MINING AND APPLICATIONS (15HRS.)

Data mining concepts – Database & Data Warehouse - Data Mining functionalities - Technologies used - Data Mining Applications – **Major Issues in Data Mining(Self Study).**

UNIT –II DATA PREPROCESSING (15 HRS.)

Preprocessing the data – Data cleaning – Data Integration – Data Reduction – Data Transformation and **Data Discretization (Self Study).**

UNIT –III DATA MINING TECHNIQUES (15 HRS.)

Mining Frequent Patterns - Association Rule Mining – The Apriori Algorithm – FP Growth - Correlation Analysis.

UNIT –IV CLASSIFICATION (15 HRS.)

Classification – Decision Tree induction - Constructing decision tree – ID3 algorithm – Pruning – Bayesian Classification – Rule Based Classification.

UNIT –V CLUSTERING AND ADVANCED DATA MINING CONCEPTS

(15 HRS.)

Cluster Analysis – Clustering Methods – Partitioning Methods - Hierarchical Methods – Density Based Methods – Outlier Analysis – **Web Mining , Text Mining, Mining Multimedia Data and Mining data Streams (Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Artificial Neural Networks - Genetic algorithm

TEXT BOOK:

1. Han, Jiawei, Jian Pei, and MichelineKamber.Data mining: concepts and techniques.Elsevier, 2011.Chapters: 1, 13.3, 3, 6, 8.1- 8.4, 10.1 – 10.4.12.1, 13.1.3

REFERENCES:

1. Pujari, Arun K. Data mining techniques. Universities press, 2001.
2. Adriaans, Pieter, and DolfZantinge. "Data Mining. 1996." Addision-Wesley, Harlow.

OPEN EDUCATIONAL RESOURCES :

1. Data Mining Tutorial - Tutorialspoint
https://www.tutorialspoint.com/data_mining/index.htm
2. Data Mining Tutorial
https://www.tutorialride.com/data-mining/data-mining-tutorial.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 DATA MINING AND APPLICATIONS				
1.1	Data mining concepts	2	Discussion	Black Board
1.2	Database	2	Chalk & Talk	Black Board
1.3	Data Warehouse	2	Lecture	LCD
1.4	Data Mining functionalities	2	Lecture	LCD
1.5	Technologies used	2	Chalk & Talk	Black Board
1.6	Data Mining Applications	2	Chalk & Talk	Black Board
1.7	Major Issues in Data Mining (Self Study)	2	Discussion	Google classroom
UNIT -2 DATA PREPROCESSING				
2.1	Preprocessing the data	2	Lecture	PPT & White board
2.2	Why we need preprocessing	2	Chalk & Talk	Green Board
2.3	Data cleaning	2	Chalk & Talk	Black Board
2.4	Data Integration	2	Discussion	Google classroom
2.5	Data Reduction	2	Chalk & Talk	Black Board
2.6	Data Transformation	2	Chalk & Talk	Black Board
2.7	Data Discretization (Self Study)	2	Lecture	Google classroom
UNIT – 3 DATA MINING TECHNIQUES				
3.1	Mining Frequent Patterns	2	Discussion	PPT & White board
3.2	Association Rule Mining	2	Chalk & Talk	Green Board
3.3	ARM Algorithm	2	Chalk & Talk	Black Board
3.4	The Apriori Introduction	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.5	Apriori Algorithm	2	Discussion	Black Board
3.6	FP Growth Algorithm	2	Lecture	PPT & White board
3.7	Correlation Analysis	2	Lecture	Black Board
UNIT – 4 CLASSIFICATION				
4.1	Classification	2	Discussion	PPT & White board
4.2	Decision Tree induction	2	Chalk & Talk	Green Board
4.3	Constructing decision tree	2	Chalk & Talk	Black Board
4.4	ID3 algorithm	2	Chalk & Talk	Black Board
4.5	Pruning	2	Discussion	Black Board
4.6	Bayesian Classification	2	Lecture	Green Board
4.7	Rule Based Classification	2	Chalk & Talk	Black Board
UNIT – 5 CLUSTERING AND ADVANCED DATA MINING CONCEPTS				
5.1	Cluster Analysis	2	Lecture	PPT & White board
5.2	Clustering Methods	2	Discussion	PPT & White board
5.3	Partitioning Methods	2	Lecture	Black Board
5.4	Hierarchical Methods	2	Chalk & Talk	Black Board
5.5	Density Based Methods	2	Chalk & Talk	Black Board
5.6	Outlier Analysis	2	Chalk & Talk	Black Board
5.7	Web Mining , Text Mining, Mining Multimedia Data and Mining data Streams (Self	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Study)			
UNIT –6 DYNAMISM				
6.1	Artificial Neural Networks	2	Discussion	Black Board
6.2	Genetic algorithm	3	Discussion	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	**2**	**2**	**-**	**-**	**-**	**4**	-	**4**	10 %
K2	**2**	**2**	**5**	**-**	**-**	**9**	-	**9**	22.5 %
K3	**3**	**3**	**-**	**-**	**5**	**11**	-	**11**	27.5 %
K4	**3**	**3**	**-**	**5**	**-**	**11**	-	**11**	27.5 %
Non Scholastic	**-**	**-**	**-**	**-**	-		**5**	**5**	12.5 %
Total	**10**	**10**	**5**	**5**	**5**	**35**	**5**	**40**	**100 %**

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	**5**	**5**	**-**	**4**	**-**	-	**14**	23.33 %
K2	**-**	**-**	**8**	**4**	**-**	-	**12**	20 %

K3	**-**	**-**	**-**	**-**	**20**	-	**20**	33.33 %
K4	**-**	**-**	**-**	**4**	**-**	10	**14**	23.34 %
Total	**5**	**5**	**8**	**12**	**20**	**10**	**60**	**100 %**

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC					**NON - SCHOLASTIC**	**MARKS**		
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**CIA**	**ESE**	**Total**
10	**10**	**5**	**5**	**5**	**5**	**40**	**60**	**100**

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Identify data mining tools and techniques in building intelligent machines.	K1& K2	PSO1& PSO2
CO 2	Understand different preprocessing techniques.	K1& K2	PSO3
CO 3	Analyze various data mining algorithms while applying in real time applications.	K4	PSO6
CO 4	Compare various supervised and unsupervised learning techniques in data mining.	K2 & K4	PSO7 & PSO8
CO 5	Illustrate the mining techniques like association, classification and clustering.	K2 & K4	PSO7 & PSO8

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	2	3	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated **-1**

COURSE DESIGNER:

1. **Staff Name: MRS. V. JANE VARAMANI SULEKHA**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

III B.Sc. Information Technology

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I5ME2	NETWORK SECURITY	Lecture	5	5

COURSE DESCRIPTION

The course covers the basics of the science of encryption and network security technology. It also provides the knowledge about the various risks that networks are faced with in this day and age, focusing on the various vulnerabilities of systems.

COURSE OBJECTIVES

To provide a framework of knowledge related to mechanisms that makes Information secured over communication channels by adopting various types of cryptographic algorithms.

UNITS

UNIT –I INTRODUCTION (15HRS.)

Computer Security : Need for security – Security Approaches – Principles of Security – Types of Attacks. Cryptography: Concepts and Techniques :**Plain text(Self Study)** and Cipher text – Substitution techniques – Transposition techniques

UNIT –II TYPES OF CRYPTOGRAPHY (15 HRS.)

Encryption and Decryption- Symmetric and Asymmetric Key Cryptography

Symmetric key Algorithm and AES : Introduction – **Algorithm types(Self Study)** and modes – DES

UNIT –III ASYMMETRIC KEY ALGORITHMS (15 HRS.)

Introduction – History – **Overview(Self Study)** – RSA Algorithm – Digital Signature – Digital Certificates.

UNIT –IV INTERNET SECURITY PROTOCOLS (15 HRS.)

Basic concepts – Secure Socket Layer – Transport Layer Security – WAP Security – Security in GSM – **Security in 3G(Self Study)** – Link Security Vs Network Security.

UNIT –V FIREWALLS& IP SECURITY (15 HRS.)

Firewall: Introduction– **Types of Firewalls(Self Study)** - Firewall Configurations

IP security: Introduction – IPSec overview – Authentication Header – ESP – IP Sec Key Management .

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Current trend in network security (Ransomware. Malware in the Mobile Device Space, IoT Botnets)

TEXT BOOK:

1. Kahate, Atul. Cryptography and network security.Tata McGraw-Hill Education, 2013.

REFERENCES:

1. Stallings, William. Cryptography and network security, 4/E. Pearson Education India, 2006.
2. Stallings, William. Network Security Essentials: Applications and Standards, 4/e. Pearson Education India, 2003.

OPEN EDUCATIONAL RESOURCES :

1. Computer Network Security - Javatpoint

https://www.javatpoint.com/computer-network-security

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	Computer Security, Need for security	2	Discussion	Black Board
1.2	Security Approaches, Principles of Security	2	Chalk & Talk	Black Board
1.3	Types of Attacks	2	Lecture	LCD
1.4	Cryptography, Concepts and Techniques	2	Lecture	LCD
1.5	Plain text (Self Study)	2	Discussion	Google classroom
1.6	Cipher text	2	Chalk & Talk	Black Board
1.7	Substitution techniques, Transposition techniques	2	Chalk & Talk	Black Board
UNIT -2TYPES OF CRYPTOGRAPHY				
2.1	Encryption and Decryption	2	Lecture	PPT & White board
2.2	Symmetric and Asymmetric Key Cryptography	2	Chalk & Talk	Green Board
2.3	Symmetric key Algorithm	2	Chalk & Talk	Black Board
2.4	AES	2	Discussion	Google classroom
2.5	Algorithm types (Self Study)	2	Lecture	Google classroom
2.6	DES	2	Chalk & Talk	Black Board
2.7	Modes	2	Chalk & Talk	Black Board
UNIT – 3 ASYMMETRIC KEY ALGORITHMS				
3.1	Introduction	2	Discussion	PPT & White board
3.2	History	2	Chalk & Talk	Green Board
3.3	Overview (Self Study)	2	Discussion	Black Board
3.4	RSA Algorithm	3	Chalk &	Black

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
			Talk	Board
3.5	Digital Signature	3	Chalk & Talk	Black Board
3.6	Digital Certificates	2	Lecture	PPT & White board
UNIT – 4 INTERNET SECURITY PROTOCOLS				
4.1	Basic concepts	2	Discussion	PPT & White board
4.2	Secure Socket Layer	2	Chalk & Talk	Green Board
4.3	Transport Layer Security	2	Chalk & Talk	Black Board
4.4	WAP Security	2	Chalk & Talk	Black Board
4.5	Security in GSM	2	Chalk & Talk	Black Board
4.6	Security in 3G (Self Study)	2	Discussion	Black Board
4.7	Link Security Vs Network Security	2	Chalk & Talk	Black Board
UNIT – 5 FIREWALLS & IP SECURITY				
5.1	Firewall, Introduction	2	Lecture	PPT & White board
5.2	Types of Firewalls (Self Study)	2	Discussion	PPT & White board
5.3	Firewall Configurations	2	Lecture	Black Board
5.4	IP security, Introduction	2	Chalk & Talk	Black Board
5.5	IPSec overview	2	Chalk & Talk	Black Board
5.6	Authentication Header	2	Chalk & Talk	Black Board
5.7	ESP, IP Sec Key Management	2	Chalk & Talk	Black Board
UNIT –6 DYNAMISM				
6.1	Current trend in network security, Ransomware	2	Discussion	Black Board
6.2	Malware in the Mobile Device	3	Discussion	Black

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Space, IoT Botnets			Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**CIA**	**ESE**	**Total**
10	**10**	**5**	**5**	**5**	**5**	**40**	**60**	**100**

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the basic concepts of security.	K1& K2	PSO1& PSO2
CO 2	Analyze various cryptographic algorithms while applying practically.	K1, K2 & K4	PSO2& PSO3

CO 3	Identify Asymmetric based cryptographic algorithms.	K1& K2	PSO3
CO 4	Compare different internet security protocols.	K1& K2	PSO6
CO 5	Summarize the concepts of firewall and IP security.	K3& K4	PSO7 & PSO8

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	2	3	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. V. MAGESHWARI**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Employability 100%

III B.Sc. Information Technology

SEMESTER –V

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	21I5SB3	EXCEL USING VBA	Lecture	2	2

COURSE DESCRIPTION

This course is designed to learn the best practices followed in industries to develop simple projects.

COURSE OBJECTIVES

To facilitate the student to understand excel with VBA concepts and make them to automate the backend processing.

UNITS

UNIT –I VBA BASICS : (6HRS.)

Getting started with Excel VBA – Working with cells, rows, and columns to copy/paste, count, find the last used row or column, assigning formulas, working with sheets- Communicate with the end-user with message boxes and take user input with input boxes.

UNIT –II CONDITIONAL LOGIC &LOOPS : (6HRS.)

Comparing values and conditions, if statements and select cases - Repeat processes with For loops and Do While or Do Until Loops

UNIT –IIIARRAYS (6HRS.)

Dynamic arrays- populating arrays-Array declaration and resizing-Jagged

arrays.

UNIT –IVEVENTS &SETTINGS : (6HRS.)

Trigger procedures to run when certain events happen like activating a worksheet, or changing cell values- Speed up your code and improve the user experience

UNIT –VFUNCTIONS &PROCEDURES : (6HRS.)

Public variables, functions, and passing variables to other procedures- Programmatically work with series of values without needing to interact with Excel objects

LAB PROGRAMS :

1. Working with cells
2. Naming Ranges
3. Working with Input box and Message box
4. Decision making and Looping
5. Work with arrays
6. Using Named Range in VBA
7. Conditional Formatting using VBA
8. Functions and Procedures.
9. Working with Events
10. Error handlers

TEXT BOOKS:

"Excel 2019 Power Programming with VBA", by Micheal Alexander, Dick Kusleika, Wiley Publishers Pvt., Ltd.,

REFERENCES :

"Excel VBA Programming for Dummies", by John Walkenbach, Wiley Publisher, ISBN : 9781118490389,

"Excel 2016 Power Programming with VBA", by Micheal Alexander, Richard Kusleika, Wiley Publishers, ISBN : 9781119067726.

OPEN EDUCATIONAL RESOURCE:

https://goalkicker.com/ExcelVBABook

https://www.automateexcel.com/learn-vba-tutorial/

https://www.tutorialspoint.com/vba/vba_excel_macros.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 VBA BASICS				
1.1	Getting started with Excel VBA – Working with cells, rows, and columns to copy/paste, count, find the last used row or column	2	Lecture	Green Board Charts
1.2	Assigning formulas, working with sheets	1	Chalk & Talk	Green Board
1.3	Communicate with the end-user with message boxes and	1	Chalk & Talk	Green Board
1.4	Take user input with input boxes.	1	Discussion	Google Classroom
UNIT -2 CONDITIONAL LOGIC & LOOPS				
2.1	Comparing values and conditions	2	Lecture	Green Board Charts
2.2	if statements and select cases	1	Chalk & Talk	Green Board
2.3	Repeat processes with For loops and Do While	2	Chalk & Talk	Green Board
2.4	Do Until Loops	1	Discussion	Google Classroom
UNIT -3 SWINGS MENUS				
3.1	Dynamic arrays	1	Chalk & Talk	Black Board
3.2	populating arrays	1	Chalk & Talk	LCD

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.3	Array declaration and resizing.	2	Lecture	Smart Board
3.4	Jagged arrays	2	Discussion	Google Classroom
UNIT -4 EVENTS & SETTINGS				
4.1	Trigger procedures to run when certain events happen like activating a worksheet,	3	Chalk & Talk	Black Board
4.2	or changing cell values- Speed up your code and improve the user experience	3	Lecture	Smart Board
UNIT -5 FUNCTIONS & PROCEDURES				
5.1	Public variables, functions, and passing variables to other procedures-	3	Lecture	Smart Board
5.2	Programmatically work with series of values without needing to interact with Excel objects .	3	Chalk & Talk	Black Board

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand fundamentals of VBA	K1	PSO1
CO 2	Apply different conditional logics and loops	K1 & K3	PSO1,PSO4
CO 3	Build forms with interactivity	K2 & K3	PSO2,PSO4
CO 4	Apply Events and Setting in Excel sheets.	K2 & K3	PSO2,PSO4
CO 5	Develop Procedures and Array concepts.	K3	PSO4

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**CIA**	**ESE**	**Total**
20	**15**	**5**	**40**	**60**	**100**

C1 – Average of Two Model Test Marks

C2 - Average of Program Completion and Record Work

C3 - Non-Scholastic

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	3	2	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. V. MAGESHWARI**

Forwarded By

V. Mageshwari

HOD'S Signature

Employability 100%

III B.Sc. Information Technology

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	22I5SB4	SKILL BASED - IMAGE MANIPULATION TOOLS	Practical	2	2

COURSE DESCRIPTION

This course introduces the concepts and tools for design, create and manipulate images for integration in publication layout and web output by using the software tool.

COURSE OBJECTIVES

To introduce the concept of Vector based Drawing image editing techniques in Photoshop.

UNITS

UNIT –I BASICS OF CORELDRAW (6 HRS.)

Introduction-Getting Started-Creating A New File - Title Bar-Menu Bar- Tool Bar – Work Area-Views. TEXT Introduction-Text Tool-Converting Text-Formatting Text-Changing the Font Size-Decorating the Text-Webdings-Changing the Alignment-Applying Effects

UNIT –II IMAGE& LAYOUT (6 HRS.)

Bitmap Images-Vector Image-Resizing-Rotating-Skewing-Moving-Cropping-Importing Images-Adding Special Effects-Converting to Bitmap-Exporting Images. PAGE LAYOUT: Changing the Page Size-Changing the Layout-Applying Styles-Applying Bitmaps to the Background - Changing the Background-Adding a Page Frame-Moving Between Pages.

UNIT –III INTRODUCTION TO ADOBE PHOTOSHOP(6 HRS.)

Getting Started With Photoshop: About Photoshop- Exploring the Toolbox - The New CS4 Applications Bar & the Options Bar -Exploring Panels & Menus - Creating & Viewing a New Document - Customizing the Interface - Setting Preferences - Navigating Photoshop - Menus and panels -Opening new files Opening existing files.

UNIT –IV GETTING STARTED WITH LAYERS (6 HRS.)

Understanding the Background Layer- Creating, Selecting, Linking &Deleting Layers- Locking & Merging Layers- Copying Layers, Using Perspective & Layer Styles- Filling & Grouping Layers- Introduction to Blending Modes- Blending Modes, Opacity & Fill- Creating & Modifying Text

UNIT –V PHOTO RETOUCHING (6 HRS.)

The Red Eye Tool- The Clone Stamp Tool- The Patch Tool & the Healing Brush Tool - The Spot Healing Brush Tool- The Color Replacement Tool- The Toning & Focus Tools - Painting with History.

PROGRAM LIST

1. Program to create text clipping effects
2. Program for Cropping using different techniques
3. Program to change background for the image
4. Program for Creation of Wedding Invitation
5. Program for Creation of Book Front page
6. Program for Creation of Image Web gallery
7. Program for Creation of Brochure
8. Program for Visiting card creation

9. Program for how to remove redeye & hotspot in the image
10. Program for Catalogue creation.

REFERENCES:

1. Kumar Bittu, "Adobe Photoshop", ISBN: 978-9350570166, V&S Publishers.
2. Photoshop 7 Complete reference , ISBN 978-0072223118 - Greenberg – McGraw Hill Publications.

Digital Open Educational Resources (DOER):

1. Photoshop Online Training

https://www.tutorialspoint.com/photoshop_online_training/index.asp

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1BASICS OF CORELDRAW				
1.1	Introduction, Getting Started, Creating A New File, Title Bar, Menu Bar, Tool Bar	2	Demonstration	Desktop PC
1.2	Work Area Views, Text Introduction, Text Tool, Converting Text &FormattingText	1	Demonstration	Desktop PC
1.3	Changing the Font Size Decorating the Text	2	Demonstration	Desktop PC
1.4	Changing the Alignment, Applying Effects	1	Demonstration	Desktop PC
UNIT -2IMAGE & LAYOUT				
2.1	Bitmap Images, Vector Image, Resizing, Rotating, Skewing Moving, Cropping	2	Demonstration	Desktop PC
2.2	Importing Images, Adding Special Effects, Converting to Bitmap, Exporting Images.	1	Demonstration	Desktop PC
2.3	Page Layout, Changing the Page Size, Changing the Layout, Applying Styles	2	Demonstration	Desktop PC

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.4	Applying Bitmaps to the Background, Changing the Background, Adding a Page Frame, Moving Between Pages.	1	Demonstration	Desktop PC
UNIT -3INTRODUCTION TO ADOBE PHOTOSHOP				
3.1	About Photoshop, Exploring the Toolbox, The New CS4 Applications Bar & the Options Bar	1	Demonstration	Desktop PC
3.2	Exploring Panels & Menus, Creating & Viewing a New Document	2	Demonstration	Desktop PC
3.3	Customizing the Interface, Setting Preferences	2	Demonstration	Desktop PC
3.4	Navigating Photoshop, Menusand panels	1	Demonstration	Desktop PC
UNIT -4 GETTING STARTED WITH LAYERS				
4.1	Understanding the Layer, Creating, Selecting, Linking &Deleting Layers	2	Demonstration	Desktop PC
4.2	Locking & Merging Layers, Copying Layers, Using Perspective	1	Demonstration	Desktop PC
4.3	Layer Styles, Filling &Grouping Layers, Introduction to Blending Modes	1	Demonstration	Desktop PC
4.4	Blending Modes, Opacity & Fill Creating & Modifying Text	2	Demonstration	Desktop PC
UNIT -5 PHOTO RETOUCHING				
5.1	The Red Eye Tool, The Clone Stamp Tool, The Patch Tool & Healing Brush Tool	2	Demonstration	Desktop PC
5.2	The Spot Healing Brush Tool, The Color Replacement Tool	2	Demonstration	Desktop PC
5.3	The Toning & Focus ToolsPainting with History brush tools	2	Demonstration	Desktop PC

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Construct simple vector graphics by using basic drawing elements and shape commands.	K2 & K3	PSO1& PSO2
CO 2	Apply basic shape commands and image effects in processing raster format pictures.	K2 & K3	PSO2 &PSO3
CO 3	Design and edit images using image-editing tool.	K2 & K3	PSO2 &PSO3
CO 4	Apply layer features for creating images for web and print.	K2 & K3	PSO2 &PSO3
CO 5	Develop effective graphics for both web and print media.	K3 & K4	PSO6 & PSO8

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**CIA**	**ESE**	**Total**
20	**15**	**5**	**40**	**60**	**100**

C1 – Average of Two Model Test Marks

C2 - Average of Program Completion and Record Work

C3 - Non-Scholastic

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	3	2	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

III B.Sc. Information Technology

SEMESTER – VI

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	22I6CC13	PYTHON PROGRAMMING	Lecture	5	5

COURSE DESCRIPTION

This course is designed to introduce the python programming language. The focus of the course is to provide students with an introduction to programming, utilities, multitasking, GUI and network applications.

COURSE OBJECTIVES

To acquire Object Oriented Skills and programming skills in core Python.

UNITS

UNIT –I BASICS OF PYTHON PROGRAMMING. (15HRS.)

Features of Python-History of Python-The Future of Python-Literal Constant-Variables and Identifiers-Data Types-Operators and Expression-Operations on Strings-other Data types.

UNIT –II DECISION CONTROL STATEMENTS (15 HRS.)

Introduction to Decision Control Statements-Selection /Conditional Branching Statements-Basic Loop Structures/Iterative Statements-Nested Loops-The Break statement-The Continue statement-The Pass statement-The

else statement used with Loops.

UNIT –III FUNCTIONS AND MODULES: (15 HRS.)

Need for Functions-Function declaration and definition -Function call-Variable Scope and Lifetime-The return statement-More on Defining Functions-Lambda Functions or Anonymous Functions-Documentation Strings-Recursive Functions-Modules-Packages in python-Standard Library Modules-Globals(),Locals(),Reload()-Function Redefinition.

UNIT –IV PYTHON STRING REVISITED (15 HRS.)

Concatenating,Appending and Multiplying Strings-Strings are Immutable-String Formatting Operators-Built -in String Methods and Functions- Slice Operation-ord() and chr() functions-in and not in operator-Comparing Strings-Iterating String.

UNIT –V FILE HANDLING & DATA STRUCTURES (15 HRS.)

File path-Types of files-Opening and Closing Files-Reading and Writing Files-File Positions-Renaming and Deleting Files-Lists-Dictionaries.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Advanced Concepts of Python (Machine Learning in Python, Data Processing using Python).

TEXT BOOK:

1. **“ Python Programming Using Problem Solving Approach”-** ReemaThareja.- Oxford University Press.

REFERENCES:

1. Zelle, John M. Python programming: an introduction to computer science. Franklin, Beedle& Associates, Inc., 2004.
2. Jeeva Jose, SojanLal, P, Introduction to Computing & Problem Solving with Python.
3. Kulkarani, PROBLEM SOLVING AND PYTHON PROGRAMMING, Published by Yes Dee Publishing Pvt Ltd., Edition 2017

OPEN EDUCATIONAL RESOURCES :

1. Python Tutorial

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

2. https://www.w3schools.com/python/python_reference.asp

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT - IINTRODUCTION TO PYTHON PROGRAMMING				
1.1	Problem Solving, Definition of a program, Software Bug, Programming Errors. Algorithms	3	Chalk & Talk	Black Board
1.2	Definition of Algorithm, Characteristics of Algorithm	3	Chalk & Talk	Black Board
1.3	Flowcharts, System Configuration (Self Study)	2	Discussion	Black Board
1.4	Downloading Python, Testing python working properly, Installation of Python on Linux	3	Lecture	Smart Board
1.5	Structure of Python, Keywords, variable, comments, data types, Literals, Constants, Operators, Operator Precedence.	3	Lecture	Black Board
UNIT – II: PYTHON I/P & O/P STATEMENT				
2.1	Input statement in Python, Output statement in Python	3	Chalk & Talk	Black Board
2.2	Python String Formatting Options, Python Math Library.	4	Chalk & Talk	Black Board
2.3	Decision Making, if statement	3	Lecture	PPT& White board
2.4	if- else statement (Self Study)	1	Lecture	Smart Board
2.5	if- else if, else Repetition	3	Lecture	Black

	Statement, for loop			Board
UNIT – IIIUSER – DEFINED FUNCTION				
3.1	Syntax of user defined function, Return statements, Function Arguments in Python	2	Chalk &Talk	Black Board
3.2	Default Parameter, call- by - value vs Call – by – reference in Python	2	Chalk & Talk	Black Board
3.3	Nested function in Python, Closure Function Python	2	Lecture	PPT& White board
3.4	Anonymous Function in Python (Self Study)	1	Lecture	Smart Board
3.5	Function Composition in Python, Recursive Function in Python	1	Lecture	Black Board
3.6	Strings in Python, Reading Strings from Keyboard, Accessing Strings	1	Discussion	Google classroom
3.7	Modifying String in Python, String Concatenation, String updating	2	Chalk & Talk	Green Board
3.8	Iterating through a string, String Membership Operations	2	Discussion	Black Board
3.9	Built – in String Function, Escape Sequence in Python	1	Chalk & Talk	Black Board
UNIT – IV PYTHON LIST				
4.1	Read a List Type from a keyboard, Accessing Elements of a List	2	Chalk & Talk	Black Board
4.2	Modifying Elements of a List, Basic List Operation	2	Chalk & Talk	Black Board
4.3	Built in function, List function, List Duplication and comparison of Two Lists	2	Lecture	PPT& White board
4.4	Accessing Elements of a Tuple	2	Lecture	Smart Board
4.5	Modifying Elements of a Tuple	2	Lecture	Black Board
4.6	Deleting Elements of a Tuple	3	Discussion	Google classroom
4.7	Basic Tuple Operation, Tuple Built-in Functions (Self Study)	1	Discussion	Black Board
UNIT – V PYTHON DICTIONARY				

5.1	Creating a Dictionary and Printing a Dictionary	3	Chalk & Talk	Black Board
5.2	Accessing Dictionary Elements, Modifying a Dictionary, Delete Operations on Dictionary	2	Chalk & Talk	Black Board
5.3	Writing into Files, Reading from Files	2	Lecture	PPT& White board
5.4	Reading Lines from Files (Self Study)	1	Discussion	Black Board
5.5	Stripping Characters from Files, Filename and Paths, Format operator	2	Lecture	Black Board
5.6	Command Line Arguments, Exception in Python, Python Modules, Python Packages	2	Discussion	Google classroom
5.7	Dictionary Key properties, Comparing Two Dictionaries, Python Dictionary Built in functions	2	Chalk & Talk	Green Board
UNIT –6 DYNAMISM				
6.1	Machine Learning in Python	2	Discussion	Black Board
6.2	Data Processing using Python	3	Discussion	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	**2**	**2**	**-**	**-**	**-**	**4**	-	**4**	10 %
K2	**2**	**2**	**5**	**-**	**-**	**9**	-	**9**	22.5 %
K3	**3**	**3**	**-**	**-**	**5**	**11**	-	**11**	27.5 %
K4	**3**	**3**	**-**	**5**	**-**	**11**	-	**11**	27.5 %

Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks

C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Identify the basic concepts of python program.	K1& K2	PSO1& PSO2
CO 2	Apply the Input and output statements in python.	K2 & K3	PSO1& PSO2
CO 3	Analyze the usage of function control structure.	K3 & K4	PSO3
CO 4	Describe String, List and Tuples.	K2 & K3	PSO3& PSO6
CO 5	Create Python Dictionary and Files.	K2, K3& K4	PSO7 & PSO8

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1

CO2	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**1**
CO3	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**2**
CO4	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2**
CO5	**2**	**2**	**2**	**2**	**2**	**3**	**1**	**1**

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. T. LEENA PREMA KUMARI**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Entrepreneurship 100%

III B.Sc. Information Technology

SEMESTER – VI

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	22I6CC14	LAB VI PYTHON PROGRAMMING	Practical	6	3

COURSE DESCRIPTION

This course content plays a vital role in building the basic programming skill in Python.

COURSE OBJECTIVES

The focus of the lab is to provide students with an introduction to programming, I/O, and visualization using the Python programming language as a practical session. The goal of this course is to train the students to face the industrial requirements.

PROGRAM LIST

1. Python Using String
2. Python Using List
3. Python Using Dictionary
4. Python Using Tuple
5. Python Using Sets
6. Python Using Array
7. Python Using Condition Statements and Loops
8. Python Using Functions

9. Python Using Date Time

10. Python Using Class

11. Python Using Data Structure

12. Python Using Search and Sorting

13. Python Using Recursion

14. Python Using Math

15. Python Using File I/O

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1	Python Using String	6	Demonstration	Desktop PC
2	Python Using List	6	Demonstration	Desktop PC
3	Python Using Dictionary	6	Demonstration	Desktop PC
4	Python Using Tuple	6	Demonstration	Desktop PC
5	Python Using Sets	6	Demonstration	Desktop PC
6	Python Using Array	6	Demonstration	Desktop PC
7	Python Using ConditionStatements and Loops	6	Demonstration	Desktop PC
8	Python Using Functions	6	Demonstration	Desktop PC
9	Python Using Date Time	6	Demonstration	Desktop PC
10	Python Using Class	6	Demonstration	Desktop PC
11	Python Using Recursion	6	Demonstration	Desktop PC
12	Python Using Search and Sorting	6	Demonstration	Desktop PC

13	Python Using Math	6	Demonstration	Desktop PC
14	Python Using Loops	6	Demonstration	Desktop PC
15	Python Using File I/O	6	Demonstration	Desktop PC

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Demonstrate the basic concepts of variables expressions.	K2 & K3	PSO1& PSO2
CO 2	Develop basic python programs with I/O operations.	K2 & K3	PSO2, PSO3 & PSO5
CO 3	Develop programs with function control structure.	K2 & K3	PSO2, PSO3& PSO5
CO 4	Apply strings and lists in python.	K2 & K3	PSO3& PSO5
CO 5	Develop python programs with files.	K3 & K4	PSO6, PSO7 & PSO8

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	C2	C3	CIA	ESE	Total
20	15	5	40	60	100

C1 – Average of Two Model Test Marks

C2 - Average of Program Completion and Record Work

C3 - Non-Scholastic

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	3	2	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. T. LEENA PREMA KUMARI**

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

III B.Sc. Information Technology

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I6CC15	DATA COMMUNICATION AND NETWORKING	Lecture	5	5

COURSE DESCRIPTION

This course is to provide information about various data communication techniques like switching and networking concepts which includes layers and their corresponding protocols.

COURSE OBJECTIVES

To impart knowledge on data communication technologies, protocol and their applications.

UNITS

UNIT –I INTRODUCTION (14HRS.)

Data communications-components-data representation-data flow. Networks-distributed Processing-Network criteria-Physical structures-Network Models-Categories of Networks-Interconnection of Networks; Internetwork.osi model: Layered Architecture-Peer-to-peer Processes-Encapsulation. Layers in the osi model: Physical layer-Data Link Layer-Network Layer-transport layer-Session Layer-Presentation layer-Application Layer-Summary of layers.TCP/IP Protocol Suite: Physical and Data link layer-Network layer-transport Layer-Application Layers. **Addressing: physical Addresses-Logical Addresses-Port Addresses-Specific Addresses (Self Study).**

UNIT –II SWITCHING (14 HRS.)

Transmission Media-Guided Media-Twisted pair cable-Coaxial Cable-Fiber-optic cable unguided media: wireless-Radio waves-microwaves-Infrared.

Circuit Switched Networks-Three Phases-Efficiency-Delay-Circuit-Switched Technology in Telephone Networks-Datagram Networks-Routing Table-Efficiency- Delay-Datagram Networks in the Internet-Virtual-Circuit Networks-Addressing-Three Phases-Efficiency-Delay in Virtual-Circuit Networks- **Circuit-Switched Technology in WANs (Self Study).**

DATALINK CONTROL: Framing-Fixed Size Framing-Variable-Size framing. Flow and error control- Protocols: Point-to-point protocol-framing-Transition Phases-Multiplexing-Multilink PPP.

UNIT –III NETWORK LAYER: INTERNET PROTOCOL (14 HRS.)

INTERNETWORKING-need for Network Layer-internet As a Datagram Network-Internet as a Connectionless Network.IPv4-Dtagram-IPv6-Advantages-Packet format-Extension Headers. Transition from IPv4 To IPv6-Dual Stack-Tunneling-Header Translation. NETWORK LAYER:DELIVERY,FORWARDING AND ROUTING-Delivery-direct versus Indirect delivery-Forwarding- Forwarding Techniques- Forwarding Process-Routing Table. Unicast Routing Protocols-Optimization-Intra-and Inter domain Routing-**Distance Vector routing (Self Study).**

UNIT –IV TRANSPORT LAYER (14 HRS.)

PROCESS-TO-PROCESS DELIVERY-client/Server paradigm-Multiplexing and Demultiplexing-Connectionless versus Connection-oriented Service-Reliable versus unreliable-Three Protocols. User Datagram Protocol-Well-Known ports of UDP-User datagram-checksum-UDP operation-Use of UDP.TCP-TCP Services-TCP features-Segment-A TCP connection-.SCTP-SCTP Services-SCTP Features-**Packet format (Self Study).**

UNIT –V APPLICATION LAYER (14 HRS.)

Name space-Flat Name Space-Hierarchical space-domain Name space-Label-domain Name-Domain-distribution of Name space-Hierarchy of name Servers-Zone-Root Server-Primary and secondary servers-DNS in the Internet-generic domains-Country Domains-Inverse domain-DNS Messages-Header. REMOTE

LOGGING,ELECTRONIC MAIL,AND FILE TRANSFER-Remote Logging-Telnet-Electronic Mail-Architecture-User Agent-Message Transfer Agent-PoP and IMAP-Web-Based Mail-**File Transfer Protocol-Anonymous FTP (Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Routing Protocols for Ad Hoc Mobile Wireless Networks, Broadband Communications Networks

TEXT BOOK:

1. Forouzan, A. Behrouz. Data communications &networking.Tata McGraw-Hill Education, 2007. Chapters: 1, 2, 3, 7, 8, 11, 19, 20,22, 23, 25, 26.

REFERENCES:

1. Tanenbaum, Andrew S. "Computer Networks Forth Edition." VrijeUniversiteit (2003).
2. Madhulika Jain, Satish Jain, Jain, M. "Data Communication and Networking". BPB Publications, Updated Edition

OPEN EDUCATIONAL RESOURECES:

1. Computer Network Tutorial - Javatpoint
   https://www.javatpoint.com/computer-network-tutorial
2. Computer Network Tutorials
   https://www.geeksforgeeks.org/computer-network-tutorials/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1INTRODUCTION				
1.1	Data communications, components, data representation	1	Discussion	Black Board
1.2	Networks, distributed Processing	1	Chalk & Talk	Black Board
1.3	Network criteria, Physical structures	1	Lecture	LCD
1.4	Network Models, Categories of Networks	1	Lecture	LCD

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1.5	Interconnection of Networks	1	Chalk & Talk	Black Board
1.6	Internetwork, OSI model, Layered Architecture	2	Chalk & Talk	Black Board
1.7	Peer-to-peer Processes, Encapsulation	1	Discussion	Google classroom
1.8	Layers in the OSI model	2	Chalk & Talk	Black Board
1.9	TCP/IP Protocol Suite	2	Chalk & Talk	Black Board
1.10	Addressing: physical Addresses, Logical Addresses, Port Addresses	1	Chalk & Talk	Black Board
1.11	Specific Addresses (Self Study)	1	Discussion	Google classroom
UNIT -2SWITCHING				
2.1	Transmission Media	1	Lecture	PPT & White board
2.2	Circuit Switched Networks	1	Chalk & Talk	Green Board
2.3	Datagram Networks in the Internet	2	Chalk & Talk	Black Board
2.4	Circuit-Switched Technology in WANs (Self Study).	2	Discussion	Google classroom
2.5	DATALINK CONTROL: Framing-Fixed Size Framing-Variable	2	Chalk & Talk	Black Board
2.6	Size framing, Flow and error control	2	Chalk & Talk	Black Board
2.7	Protocols: Point-to-point protocol	2	Lecture	Google classroom
2.8	Transition Phases	1	Chalk & Talk	Black Board
2.9	Multiplexing, Multilink PPP	1	Chalk & Talk	Black Board
UNIT – 3 NETWORK LAYER: INTERNET PROTOCOL				
3.1	INTERNETWORKING, Internet As a Datagram Network	1	Discussion	PPT & White board
3.2	Internet as a Connectionless Network	2	Chalk & Talk	Green Board
3.3	IPv4-Dtagram-IPv6-Advantages	1	Chalk &	Black

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
			Talk	Board
3.4	Packet format, Extension Headers	2	Chalk & Talk	Black Board
3.5	Transition from IPv4 To IPv6-Dual Stack	2	Discussion	Black Board
3.6	Tunneling, Header Translation	1	Lecture	PPT & White board
3.7	NETWORK LAYER:DELIVERY,FORWARDING AND ROUTING	1	Lecture	Black Board
3.8	Delivery, direct versus Indirect delivery	1	Chalk & Talk	Black Board
3.9	Forwarding, Forwarding Techniques, Forwarding Process	2	Chalk & Talk	Black Board
3.10	Routing Table, Unicast Routing Protocols	2	Chalk & Talk	Black Board
3.11	Optimization, Intra-and Inter domain	1	Chalk & Talk	Black Board
3.12	Routing-Distance Vector routing (Self Study)	1	Discussion	Google classroom
UNIT – 4 TRANSPORT LAYER				
4.1	PROCESS-TO-PROCESS DELIVERY	2	Discussion	PPT & White board
4.2	Multiplexing and Demultiplexing	2	Chalk & Talk	Green Board
4.3	Connectionless versus Connection, Reliable versus unreliable	2	Chalk & Talk	Black Board
4.4	Three Protocols, User Datagram Protocol	2	Chalk & Talk	Black Board
4.5	UDP operation, Use of UDP	2	Discussion	Black Board
4.6	TCP-TCP Services, TCP features, Segment	1	Lecture	Green Board
4.7	TCP connection	1	Chalk & Talk	Black Board
4.8	SCTP-SCTP Services, SCTP Features	1	Chalk & Talk	Black Board
4.9	Packet format (Self Study)	1	Discussion	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT – 5 APPLICATION LAYER				
5.1	Name space, Flat Name Space, Hierarchical space, domain Name space	2	Lecture	PPT & White board
5.2	Label, domain Name,Domain, Distribution of Name space	1	Discussion	PPT & White board
5.3	Hierarchy of name Servers	2	Lecture	Black Board
5.4	Zone, Root Server, Primary and secondary servers	2	Chalk & Talk	Black Board
5.5	DNS in the Internet, Country Domains, Inverse domain	2	Chalk & Talk	Black Board
5.6	DNS Messages, Header	2	Chalk & Talk	Black Board
5.7	REMOTE LOGGING,ELECTRONIC MAIL,AND FILE TRANSFER	1	Chalk & Talk	Black Board
5.8	Remote Logging, Telnet-Electronic Mail	1	Chalk & Talk	Black Board
5.9	IMAP-Web-Based Mail	2	Chalk & Talk	Black Board
5.10	File Transfer Protocol-Anonymous FTP (Self Study)	2	Discussion	Black Board
UNIT –6 DYNAMISM				
6.1	Routing Protocols for Ad Hoc Mobile Wireless Networks	2	Discussion	Black Board
6.2	Broadband Communications Networks	3	Discussion	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1	T2	Quiz	Assignment	OBT/PPT				
	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %

K2	**2**	**2**	**5**	**-**	**-**	**9**	-	**9**	22.5 %
K3	**3**	**3**	**-**	**-**	**5**	**11**	-	**11**	27.5 %
K4	**3**	**3**	**-**	**5**	**-**	**11**	-	**11**	27.5 %
Non Scholastic	**-**	**-**	**-**	**-**	-		**5**	**5**	12.5 %
Total	**10**	**10**	**5**	**5**	**5**	**35**	**5**	**40**	**100 %**

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	**5**	**5**	**-**	**4**	**-**	-	**14**	23.33 %
K2	**-**	**-**	**8**	**4**	**-**	-	**12**	20 %
K3	**-**	**-**	**-**	**-**	**20**	-	**20**	33.33 %
K4	**-**	**-**	**-**	**4**	**-**	10	**14**	23.34 %
Total	**5**	**5**	**8**	**12**	**20**	**10**	**60**	**100 %**

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC					**NON - SCHOLASTIC**	**MARKS**		
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**CIA**	**ESE**	**Total**
10	**10**	**5**	**5**	**5**	**5**	**40**	**60**	**100**

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Describe the components of a data communications system.	K1& K2	PSO1& PSO2
CO 2	Identify key considerations in selecting various switching techniques and various transmission media in networks.	K1& K2	PSO1& PSO2
CO 3	Describe the various types of Protocols in Network layer and their features.	K1& K2	PSO3 &PSO4
CO 4	Illustrates the functionality of transport layer and their corresponding protocols.	K1, K2& K3	PSO3 & PSO6
CO 5	Analyze different usage of application layer protocols.	K3& K4	PSO7

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	2	3	2	2	2	2

CO4	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2**
CO5	**2**	**2**	**2**	**2**	**2**	**3**	**1**	**1**

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. V. MAGESHWARI**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

III B.Sc. Information Technology

SEMESTER –VI

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	21I6ME3	CLOUD TECHNOLOGY	Lecture	5	5

COURSE DESCRIPTION

This course facilitates the students to understand, analyze the various applications of cloud tool and also provide solutions for cloud security and storage.

COURSE OBJECTIVES

To impart the knowledge about the Computations done in cloud, its architecture and to build their own cloud.

UNITS

UNIT –I UNDERSTANDING CLOUD COMPUTING (14 HRS.)

Origin and Influence- Basic concepts and terminology-goals and benefits-Risks and challenges.fundamental concepts and models: **Roles and Boundaries-Cloud Characteristics-Cloud Delivery Models (Self Study).**

UNIT –II CLOUD ENABLING TECHNOLOGY (14 HRS.)

Broad band Network and Internet Architecture-Data center Technology-Virtualization Technology-Web Technology-Multitenant Technology-**Service Technology (Self Study).**

UNIT –III FUNDAMENTAL CLOUD SECURITY (14 HRS.)

Basic terms and Concepts-Threat Agents-Cloud Security Threats.**Cloud Infrastructure Mechanism:** Virtual server-cloud storage devices-cloud usage monitor-Resource replication-**readymade Environment(Self Study).**

UNIT –IV SPECIALIZED CLOUD MECHANISMS (14 HRS.)

Automated Scaling Listener-Load balancer-SLA monitor-Pay-per-use monitor-Audit monitor. Hypervisor-**Multi Device Broker-state management database (Self Study)**-Remote Administration System-Resource Management System-SLA Management System-Billing Management System.

UNIT –V CLOUD COMPUTING ARCHITECTURE (14 HRS.)

Workload Distribution Architecture-Resource Pooling Architecture-Cloud Bursting Architecture-Redundant Storage Architecture.ADVANCED CLOUD ARCHITECTURES:Hypervisor clustering architecture-**Load balanced virtual server instances architecture(Self Study)**--Zero downtime architecture-cloud balancing architecture.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (14HRS.)

Virtual server-cloud storage devices.

TEXT BOOK:

1. Erl, Thomas, Ricardo Puttini, and ZaighamMahmood.CLOUD COMPUTING: CONCEPTS, TECHNOLOGY &ARCHITECTURE.Pearson Education, 2013.CHAPTER 3.1-3.4, 4.1-4.4, 5.1-5.6, 6.1-6.3, 7.2-7.6, 8.1-8.10,9.1-9.4,10.1-10.4, 10.5-10.8, 11.1, 11.2, 11.6, 11.8.

REFERENCES:

1. Buyya, Rajkumar, James Broberg, and Andrzej M. Goscinski, eds. Cloud computing: Principles and paradigms. Vol. 87.John Wiley & Sons, 2010.
2. Rhoton, John. "Cloud Computing Explained: Implementation Handbook for Enterprises. 2009." Recursive Limited.
3. Linthicum, David S. Cloud computing and SOA convergence in your enterprise: a step-by-step guide. Pearson Education, 2009.

Digital Open Educational Resources (DOER):

1. Learn Cloud Computing Tutorial - Java point
   https://www.javatpoint.com/cloud-computing-tutorial
2. Cloud Computing Tutorial For Beginners
   https://www.guru99.com/cloud-computing-for-beginners.html

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT – I UNDERSTANDINGCLOUDCOMPUTING				
1.1	Origin and Influence	4	Chalk & Talk	Black Board
1.2	Basic concepts and terminology, goals and benefits	4	Chalk & Talk	Black Board
1.3	Risks and challenges	4	Lecture	PPT& White board
1.4	Roles and Boundaries-Cloud Characteristics-Cloud Delivery Models (Self Study).	2	Discussion	Black Board
UNIT – IICLOUDENABLINGTECHNOLOGY				
2.1	Broad band Network and Internet Architecture	3	Chalk & Talk	Black Board
2.2	Data center Technology	3	Chalk & Talk	Black Board
2.3	Virtualization Technology, Web Technology	4	Lecture	PPT& White board
2.4	Multitenant Technology	2	Lecture	Smart Board
2.5	Service Technology (Self Study)	2	Discussion	Black Board
UNIT – III FUNDAMENTALCLOUDSECURITY				
3.1	Basic terms and Concepts, Threat Agents	3	Chalk & Talk	Black Board
3.2	Cloud Security Threats	3	Chalk & Talk	Black Board
3.3	Cloud InfrastructureMechanism:Virtual server	2	Lecture	PPT& White board
3.4	cloud storage devices, cloud usage monitor	2	Lecture	Smart Board
3.5	Resource replication	2	Chalk &	Black

			Talk	Board
3.6	Readymade Environment (Self Study)	2	Discussion	Black Board
UNIT – IV SPECIALIZEDCLOUDMECHANISMS				
4.1	Automated Scaling Listener, Load balancer	2	Chalk & Talk	Black Board
4.2	SLAmonitor, Pay-per-use monitor, Audit monitor	1	Chalk & Talk	Black Board
4.3	Fail over system, Hypervisor, Resource cluster	2	Chalk & Talk	Black Board
4.4	Multi Device Broker-state management database (Self Study)	1	Lecture	PPT& White board
4.5	Adapter Classes, Inner classes, Anonymous Inner classes	2	Lecture	Smart Board
4.6	Cloud security mechanism**:** Encryption	2	Discussion	Black Board
4.7	Hashing	2	Chalk & Talk	Black Board
4.8	Digitalsignature, Public key Infrastructure	2	Chalk & Talk	Black Board
UNIT – V CLOUD COMPUTING ARCHITECTURE				
5.1	Identity and access management	3	Chalk & Talk	Black Board
5.2	single sign on, Cloud Based security groups	3	Chalk & Talk	Black Board
5.3	Hardened Virtual Server Images	2	Lecture	PPT& White board
5.4	Fundamental cloud architecture	2	Lecture	Smart Board
5.5	Workload Distribution Architecture, Resource Pooling Architecture	2	Discussion	Black Board
5.6	Cloud Bursting Architecture-Redundant Storage Architecture (Self Study)	2	Discussion	Black Board
UNIT –6 DYNAMISM				
6.1	Server less Computing	2	Discussion	Black Board
6.2	Omni-Cloud, Quantum	3	Discussion	Black

	Computing			Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand fundamental concepts of cloud service and deployment models.	K1& K2	PSO1& PSO2
CO 2	Identify the importance of virtualization along with their technologies.	K1& K2	PSO3
CO 3	Analyze different cloud computing Services.	K3 & K4	PSO6
CO 4	Analyze the components and the security in cloud.	K3 & K4	PSO6

CO 5	Illustrate different design & develop backup strategies for cloud data based on features.	K3 & K4	PSO6, PSO7 & PSO8

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	2	3	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. T. LEENA PREMA KUMARI**

V. Mageshwari

HOD'S Signature

Skill Development 100%

SEMESTER –VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	**21I6ME4**	**MOBILE COMMUNICATION**	**Lecture**	**5**	**5**

COURSE DESCRIPTION

This course gives the ability to acquire the knowledge about the technologies in mobile computing and its security issues.

COURSE OBJECTIVES

To obtain knowledge on Mobile Computing Concepts and emerging technologies and applications.

UNITS

UNIT –I INTRODUCTION (15 HRS.)

Mobile Computing – Dialogue Control – Networks – Middleware & Gateways - MOBILE COMPUTING ARCHITECTURE: History of computers and Internet – Architecture for mobile computing – **Three-tier architecture (Self Study).**

UNIT –II MOBILE COMPUTING THROUGH TELEPHONY (15 HRS.)

Evaluation of telephony – Multiple access procedures – Satellite Communication Systems. – EMERGING TECHNOLOGIES: Introduction – **Blue Tooth(Self Study)** – RFID – WiMAX – Mobile IP

UNIT –III GSM & GPRS (15 HRS.)

Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GPRS and packet data network – GPRS network architecture – GPRS network operations – Data services in GPRS – Application for GPRS- **Limitations(Self Study).**

UNIT –IV WIRELESS APPLICATION PROTOCOL & WIRELESS LAN (15 HRS.)

Introduction –WAP – MMS- GPRS Application –Wireless LAN: Introduction - Wireless LAN Advantages – IEEE 802.11 Standards – Wireless LAN Architecture – Mobility in Wireless LAN-Deploying Wireless LAN -Mobile Adhoc Networks and Sensor networks **(Self Study).**

UNIT –V CDMA AND SECURITY (15 HRS.)

Spread spectrum technology – CDMA vs. GSM – **Wireless Data(Self Study)** – Third generation networks – Applications on 3G. SECURITY ISSUES IN MOBLIE COMUTING: Information Security – Security Techniques & Algorithms.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Recent Trends in Mobile Computing (Business Intelligence (BI) Mobile Apps, IoT, Non-Removable Battery and Memory).

TEXT BOOK:

1. Talukdar, Asoke K. Mobile Computing, 2E.Tata McGraw-Hill Education, 2010.Chapter 1.1 - 1.6, 2.1, 2.2 - 2.5, 3.1 - 3.3, 4.1 - 4.5, 5.1 - 5.5, 5.7, 7.1 - 7.7, 8.1-8.4,9.1, 9.2, 9.4 - 9.7, 10.1-10.7,20.1 - 20.3.

REFERENCES:

1. Stüber, Gordon L., and Gordon L. Stèuber.Principles of mobile communication.Vol.2. Norwell, Mass, USA: Kluwer Academic, 1996.
2. Schiller, Jochen H. Mobile communications.Pearson education, 2003.

OPEN EDUCATIONAL RESOURCES :

1. Mobile Communication Tutorial - Javatpoint
https://www.javatpoint.com/mobile-communication-tutorial

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	Mobile Computing, Dialogue Control	3	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1.2	Networks, Middleware & Gateways	3	Lecture	PPT& White board
1.3	MOBILE COMPUTING ARCHITECTURE: History of computers and Internet	3	Lecture	Black Board
1.4	Architecture for mobile computing	3	Chalk & Talk	Black Board
1.5	Three-tier architecture (Self Study)	2	Discussion	Black Board
UNIT -2MOBILE COMPUTING THROUGH TELEPHONY				
2.1	Evaluation of telephony	2	Chalk & Talk	Black Board
2.2	Multiple access procedures	3	Chalk & Talk	Black Board
2.3	Satellite Communication Systems	3	Lecture	PPT& White board
2.4	EMERGING TECHNOLOGIES, RFID	2	Lecture	Smart Board
2.5	Blue Tooth (Self Study)	2	Discussion	Google classroom
2.6	WiMAX, Mobile IP	2	Lecture	PPT& White board
UNIT -3 GSM				
3.1	Global System for mobile, communications	2	Chalk & Talk	Black Board
3.2	GSM Architecture, GSM Entities	3	Chalk & Talk	Black Board
3.3	Call routing in GSM, PLMN Interfaces	3	Lecture	PPT& White board
3.4	GSM Addresses and Identifiers, Network Aspects in GSM	3	Lecture	Smart Board
3.5	SMS: Mobile Computing over SMS, Short Message Service	1	Chalk & Talk	Black Board
3.6	Value Added Service through SMS (Self Study)	2	Discussion	Google classroom

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -4 GPRS				
4.1	GPRS and packet data network	3	Chalk & Talk	Black Board
4.2	GPRS network architecture	3	Chalk & Talk	Black Board
4.3	GPRS network operations	3	Lecture	PPT& White board
4.4	Data services in GPRS	2	Lecture	Smart Board
4.5	Application for GPRS	2	Discussion	Black Board
4.6	Limitations (Self Study)	1	Discussion	Google classroom
UNIT -5CDMA and 3G				
5.1	Spread spectrum technology	3	Chalk &Talk	Black Board
5.2	CDMA vs. GSM	2	Chalk & Talk	Black Board
5.3	Wireless Data(Self Study))	1	Discussion	Google classroom
5.4	Third generation networks, Applications on 3G	2	Lecture	Smart Board
5.5	Information Security	3	Discussion	Black Board
5.6	Security Techniques & Algorithms.	3	Lecture	Smart Board
UNIT –6 DYNAMISM				
6.1	Business Intelligence (BI) Mobile Apps	2	Discussion	Black Board
6.2	IoT, Non-Removable Battery and Memory	3	Discussion	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1	T2	Quiz	Assignment	OBT/PPT				

	10 Mks.	10 Mks.	5 Mks.	5 Mks	5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the infrastructure to develop mobile communication systems.	K1& K2	PSO1& PSO2
CO 2	Identify the characteristics of different multiple access techniques in mobile communication.	K1& K2	PSO3
CO 3	Analyse the measures GSM systems and the entire protocol architecture of GSM.	K3 & K4	PSO4
CO 4	Understand the GPRS technologies and architecture for communication using Mobile Devices.	K1& K2	PSO3&PSO4
CO 5	Illustrate the Security issues in Mobile Computing.	K3 & K4	PSO6, PSO7 & PSO8

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1

CO3	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**2**
CO4	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2**
CO5	**2**	**2**	**2**	**2**	**2**	**3**	**1**	**1**

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

III B.Sc. Information Technology

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I6ME5	INFORMATION STORAGE &MANAGEMENT	Lecture	5	5

COURSE DESCRIPTION

This course provides a comprehensive understanding of the various storage infrastructure components in classic and virtual environments. It enables the students to make informed decisions in an increasingly complex IT environment.

COURSE OBJECTIVES

To impart the comprehensive understanding of all segments of Storage Technologies.

UNITS

UNIT –I STORAGE SYSTEM (14HRS.)

Introduction to Information Storage and Management: Information storage – Evolution of Storage Architecture – Data Center Infrastructure – Virtualization and Cloud Computing – Data Center Environment: Application – DBMS – Host – **Connectivity (Self Study).**

UNIT –II DATA PROTECTION (14 HRS.)

RAID: RAID Implementation methods – RAID Array Components – RAID Techniques – RAI levels.Intelligent Storage System: Components of an Intelligent Storage System – **Storage Provisioning (Self Study).**

UNIT –III STORAGE NETWORKING TECHNOLOGIES (14 HRS.)

Fibre Channel Storage area Networks: Fibre Channel: Overview - The SAN and Its Evolution – Components of FC SAN – Network Attached Storage: General Purpose Servers Vs NAS Devices – Benefits of NAS – **File System and Network File Sharing (Self Study)**– Components of NAS.

UNIT –IV BACKUP, ARCHIVE AND REPLICATION (14 HRS.)

Backup and Archive: Backup Purpose – Backup Considerations – Backup Granularity - Recovery Considerations – Backup Methods – Backup Architecture – Backup and Restore Operations – **Data Archive(Self Study)** – Archiving Solution Architecture

UNIT –V SECURING AND MANAGING STORAGE INFRASTRUCTURE

(14 HRS.)

Securing the Storage Infrastructure: Information Security Framework – Risk Triad- Storage Security Domains-Security implementation in storage networking- Managing the Storage infrastructure: **Monitoring the Storage Infrastructure(Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Latest storage device (Cloud, SSD(solid-state drive), NVMe (Non-Volatile Memory Express).

TEXT BOOK:

1. Somasundaram, Gnanasundaram, and AlokShrivastava, eds. Information storage and management: storing, managing, and protecting digital information in classic, virtualized, and cloud environments. John Wiley & Sons, 2012.Chapters - 1.1 – 1.4, 2.1 – 2.4, 3.1-3.4, 4.1- 4.2, 5.1-5.3, 7.1-7.4, 10.1 – 10.7, 10.13, 10.14, 14.1 – 14.3, 15.1

REFERENCES:

1. Robert Spalding, “Storage Networks ” The Complete Reference, Tata McGraw Hill, 2003
2. Marc Fairley, “Building Storage Networks”, Tata McGraw Hill, 2001

WEB REFERNCES :

1. Management Information System Tutorial https://www.tutorialspoint.com/management_information_system/index.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 STORAGE SYSYEM				
1.1	Introduction to Information Storage and Management: Information storage	3	Chalk & Talk	Black Board
1.2	Evolution of Storage Architecture	3	Chalk & Talk	LCD
1.3	Data Center Infrastructure, Virtualization and Cloud Computing	3	Lecture	PPT& White board
1.4	Data Center Environment: Application DBMS, Host	3	Lecture	Smart Board
1.5	Connectivity (Self Study)	2	Discussion	Black Board
UNIT -2 DATA PROTECTION				
2.1	RAID: RAID Implementation methods, RAID Array Components	4	Lecture	PPT& White board
2.2	RAID Techniques – RAID levels	4	Lecture	PPT& White board
2.3	Intelligent Storage System: Components of an Intelligent Storage System	4	Discussion	Black Board
2.4	Storage Provisioning (Self Study)	2	Discussion	Black Board
UNIT -3 STORAGE NETWORKING TECHNOLOGIES				
3.1	Fibre Channel Storage area Networks: Fibre Channel-Overview	2	Chalk & Talk	Black Board
3.2	The SAN and Its Evolution	2	Discussion	Google classroom
3.3	Components of FC SAN	2	Lecture	Black Board
3.4	Network Attached Storage: General Purpose Servers Vs NAS Devices	3	Lecture	PPT& White board
3.5	Benefits of NAS	2	Chalk & Talk	Black Board
3.6	File System and Network File	1	Discussion	Google

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Sharing (Self Study)			classroom
3.7	Components of NAS	2	Chalk & Talk	Black Board
UNIT – 4 BACKUP, ARCHIVE AND REPLICATION				
4.1	Backup and Archive: Backup Purpose	2	Lecture	Black Board
4.2	Backup Considerations, Backup Granularity	2	Chalk & Talk	Black Board
4.3	Recovery Considerations, Backup Methods	2	Lecture	Black Board
4.4	Backup Architecture	2	Chalk & Talk	Black Board
4.5	Backup and Restore Operations	2	Discussion	Google classroom
4.6	Data Archive (Self Study)	2	Lecture	PPT& White board
4.7	Archiving Solution Architecture	2	Discussion	Google classroom
UNIT -5 SECURING AND MANAGING STORAGE INFRASTRUCTURE				
5.1	Securing the Storage Infrastructure: Information Security Framework	5	Lecture	Black Board
5.2	Risk Triad- Storage Security Domains	5	Lecture	PPT& White board
5.3	Managing the Storage infrastructure	3	Chalk & Talk	Black Board
5.4	Monitoring the Storage Infrastructure (Self Study)	1	Discussion	Google classroom
UNIT –6 DYNAMISM				
6.1	Cloud, SSD(solid-state drive)	2	Discussion	Black Board
6.2	NVMe (Non-Volatile Memory Express	3	Discussion	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment

	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total

10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Know the concepts of Storage and Data structure Environment based on growth and challenges in IT.	K1& K2	PSO1& PSO2
CO 2	Understand data protection by using related and recent techniques.	K1& K2	PSO1& PSO2
CO 3	Identify the parameters of managing and monitoring the storage infrastructure and manage the solutions.	K1, K2 & K3	PSo3 & PSO4
CO 4	Know backup and archival data in both classic and virtualized environment.	K1& K2	PSO6
CO 5	Analyze, Monitoring and managing the storage infrastructure in cloud environments.	K3& K4	PSO7 & PSO8

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8

CO1	**3**	**3**	**2**	**2**	**2**	**1**	**1**	**1**
CO2	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**1**
CO3	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**2**
CO4	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2**
CO5	**2**	**2**	**2**	**2**	**2**	**3**	**1**	**1**

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated **-1**

COURSE DESIGNER:

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Skill Development 100%

III B.Sc. Information Technology

SEMESTER – VI

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I6ME6	COMPUTER GRAPHICS	Lecture	5	5

COURSE DESCRIPTION

This course is designed to facilitate to understand, design and implementation of pictorial data and will make the students to be a successful Graphics programmer.

COURSE OBJECTIVES

To impart the core concepts of computer graphics. Apply graphics techniques to design and create graphics patterns.

UNITS

UNIT –I INTRODUCTION (14HRS.)

A survey of computer graphics: Computer-Aided Design - Presentation Graphics – **Computer Art – Entertainment – Education and Training(Self Study)** – Visualization – Image Processing – Graphical User Interfaces Overview of Graphics Systems: Video Display Devices – Raster Scan Systems – Random Scan Systems – Input Devices – Hard Copy Devices..

UNIT –II OUTPUT PRIMITIVES (14 HRS.)

Output Primitives: Points and Lines – Line Drawing Algorithms – Circle Generating Algorithms – Filled Area primitives.

UNIT –III ATTRIBUTES OF OUTPUT PRIMITIVES (14 HRS.)

Line Attributes – Curve Attributes(Self Study) – Color and Gray Scale Levels – Area Fill Attributes – Character Attributes – Bundled Attributes– Antialiasing

UNIT –IV TWO –DIMENSIONAL GEOMETRIC TRANSFORMATIONS (14 HRS.)

Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations – Transformations Between Coordinate Systems

UNIT –V TWO –DIMENSIONAL VIEWING (14 HRS.)

The Viewing Pipeline(Self Study) – Viewing Coordinate Reference Frame – Window –to- Viewport Coordinate Transformation – Two-Dimensional Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Polygon Clipping – Curve Clipping – **Text Clipping– Exterior Clipping(Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Current trends in Computer Graphics (Image-Based 3D Face Modeling, Holographic 3D Display System, Human Action Recognition Technology)

TEXT BOOK:

1. Hearn, Donald. Computer graphics, C version.Pearson Education India, 2012. Chapters: 1.1 – 1.8, 2.1-2.3, 2.5, 2.6, 3.1, 3.2, 3.5, 3.11, 4.1 – 4.8, 5.1 – 5.5, 6.1 – 6.11

REFERENCES:

1. Hughes, John F., et al. Computer graphics: principles and practice. Pearson Education, 2014.
2. McConnell, Jeffrey J. Computer graphics: theory into practice.Jones& Bartlett Learning, 2005.
3. Hill Jr, Francis S. Computer graphics using open gl. Pearson Education, 2008.
4. Newman, William M., and Robert F. Sproull.Principles of interactive computer graphics. McGraw-Hill, Inc., 1979.

OPEN EDUCATIONAL RESOURCES :

1. Computer Graphics Tutorial

https://www.tutorialspoint.com/computer_graphics/index.htm

2. Computer Graphics Tutorial - Javatpoint

https://www.javatpoint.com/computer-graphics-tutorial

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 A SURVEY ON COMPUTER GRAPHICS				
1.1	A survey of computer graphics:Computer-Aided Design	2	Chalk & Talk	Black Board
1.2	Presentation Graphics	1	Lecture	PPT& White board
1.3	Computer Art, Entertainment, Education and Training (Self Study)	1	Discussion	Google classroom
1.4	Visualization	2	Lecture	Black Board
1.5	Image Processing, Graphical User Interfaces	2	Chalk & Talk	Black Board
1.6	Video Display Devices	2	Chalk & Talk	Black Board
1.7	Raster Scan Systems, Random Scan Systems	2	Chalk & Talk	Black Board
1.8	Input Devices, Hard Copy Devices	2	Lecture	PPT& White board
UNIT -2 OUTPUT PRIMITIVES				
2.1	Points and Lines	3	Chalk & Talk	Black Board
2.2	Line Drawing Algorithms	4	Chalk & Talk	Black Board
2.3	Circle Generating Algorithms	4	Lecture	PPT& White board
2.4	Filled Area primitives.	3	Chalk &Talk	Black Board
UNIT -3ATTRIBUTES OF OUTPUT PRIMITIVES				
3.1	Line Attributes, Curve Attributes(Self Study)	2	Discussion	Google classroom
3.2	Color and Gray Scale Levels	3	Lecture	PPT& White

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
				board
3.3	Area Fill Attributes	3	Lecture	Black Board
3.4	Character Attributes	3	Chalk & Talk	Black Board
3.5	Bundled Attributes Antialiasing	3	Chalk & Talk	Black Board
UNIT -4TWO –DIMENSIONAL GEOMETRIC TRANSFORMATIONS				
4.1	Basic Transformations	2	Chalk & Talk	Black Board
4.2	Matrix Representations	3	Lecture	PPT& White board
4.3	Composite Transformations	3	Lecture	Black Board
4.4	Other Transformations	3	Discussion	Google classroom
4.5	Transformations Between Coordinate Systems	3	Chalk & Talk	Black Board
UNIT -5TWO –DIMENSIONAL VIEWING				
5.1	The Viewing Pipeline, Viewing Coordinate Reference Frame	2	Chalk & Talk	Black Board
5.2	Window –to- Viewport Coordinate Transformation	2	Lecture	PPT& White board
5.3	Two-Dimensional Viewing Functions	2	Lecture	Black Board
5.4	Clipping Operations, Point Clipping, Line Clipping	3	Chalk & Talk	Black Board
5.5	Polygon Clipping , Curve Clipping	3	Chalk & Talk	Black Board
5.6	Text Clipping, Exterior Clipping (Self Study)	2	Discussion	Google classroom
UNIT –6 DYNAMISM				
6.1	Image-Based 3D Face Modeling, Holographic 3D Display System	2	Discussion	Black Board
6.2	Human Action Recognition Technology	3	Discussion	Black Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the need and concepts of computer graphics.	K1& K2	PSO1& PSO2
CO 2	Describe the procedure for points, lines and Circle.	K1& K2	PSO3
CO 3	Analyze various attributes of output primitives.	K3& K4	PSO3
CO 4	Illustrate two-dimensional geometric transformation.	K3& K4	PSO3& PSO6
CO 5	Analyze windowing and clipping concepts.	K3& K4	PSO6, PSO7 & PSO8

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1

CO2	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**1**
CO3	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**2**
CO4	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2**
CO5	**2**	**2**	**2**	**2**	**2**	**3**	**1**	**1**

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Employability 100%

III B.Sc. Information Technology

SEMESTER – VI

For those who joined in 2021onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	22I6SB5	SKILL BASED – WEB PROGRAMMING USING PHP	Practical	2	2

COURSE DESCRIPTION

This is a Web scripting language PHP able to build dynamic Web applications. Semantics and syntax of the PHP language, including discussion on the practical problems that PHP solves.

COURSE OBJECTIVES

The objective of this course is to provide the necessary knowledge to design and develop dynamic, database-driven web applications using PHP.

UNITS

Unit 1: PHP in Web (6 HRS)

Dynamic Content and the Web - PHP and MySQL's Place in Web Development - The components of a PHP Application - Integrating Many Sources of Information - Requesting Data from a Web Page. Developing Locally - working remotely.

Unit II: Introduction to PHP (6 HRS)

Exploring PHP-PHP and HTML text - coding building blocks.PHP decision making-Expressions - Operator Concepts - Conditionals-Looping. Functions - calling functions - defining functions- Object-Oriented Programming. Arrays:

Array fundamentals. Database basics: Data base design-Structured Query Language

Unit III: PHP with MYSQL (6 HRS)

Using MySQL: MySQL Database - Managing the Database - Backing up and Restoring Data - Advanced SQL.Getting PHP to talk to MySQL: The process-querying the database with PHP functions - Using PEAR. Working with Forms: Building a form - Templates.

Unit IV: PHP Functions (6 HRS)

String functions-Date and time functions - File Manipulation – Calling System Calls - Modifying MySQL objects and PH data: Changing database objects from PHP - Manipulating table data-displaying results with Embedded links-presenting a form to add and process in one file - updating data – deleting data – performing a subquery

Unit V: Cookies, Sessions and Access Control (6 HRS)

Cookies, Sessions and Access Control: Cookies - PHP and HTTP Authentication – sessions - using Auth_HTTP to Authenticate. Security: Session security. Validation and Error handling: Validating user input with JavaScript- Pattern Matching - Redisplaying a form after PHP validation fails. Building a Blog

REFERENCES:

1. Dave W Mercer, Allan Kent, Steven D Nowicki, David Mercer, Dan Squier, Wankyu Choi - Beginning PHP‖, Wiley Publishing, Inc

2. Ivan Bayross -“HTML, DHTML, JavaScript, Pearl & CGI”, Fourth Revised Edition, BPB Publication

3. “Programming PHP”,RasmusLerdorf and Kevin Tatore, Shroff Publishers & Distributors Pvt.Ltd

4. “Beginning PHP”, Dave W Mercer, Allan Kent, Steven D Nowicki, David Mercer, Dan Squier, Wankyu Choi, Wiley Publishing

OPEN EDUCATIONAL RESOURCES:

1. https://www.tutorialspoint.com › php
2. https://www.php.net › manual › tutorial

Program List:

1. Develop a Program with basic expressions.
2. Develop a Program with decision making statements
3. Develop a Program with Looping statements
4. Develop a Program for the implementation of database
5. Develop a Program for database connectivity
6. Develop a Program with string functions
7. Develop a Program with manipulation function.
8. Develop a Program with cookies
9. Develop a Program with session control
10. Develop a Program for authentication process.

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 PHP IN WEB				
1.1	Dynamic Content and the Web PHP and MySQL's Place in Web Development	2	Demonstration	Desktop PC
1.2	The components of a PHP Application - Integrating Many Sources of Information -	1	Demonstration	Desktop PC
1.3	Requesting Data from a Web Page. Developing Locally,	1	Demonstration	Desktop PC

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	working remotely			
UNIT -2 INTRODUCTION TO PHP				
2.1	Exploring PHP-PHP and HTML text - coding building blocks. PHP decision making-Expressions Operator Concepts, Conditionals Looping.	2	Demonstration	Desktop PC
2.2	Functions - calling functions - defining functions-	1	Demonstration	Desktop PC
2.3	Object-Oriented Programming. Arrays: Array fundamentals.	2	Demonstration	Desktop PC
2.4	Database basics: Data base design-Structured Query Language	1	Demonstration	Desktop PC
UNIT -3 PHP WITH MYSQL				
3.1	Using MySQL: MySQL Database Managing the Database .	1	Demonstration	Desktop PC
3.2	Backing up and Restoring Data - Advanced SQL.	1	Demonstration	Desktop PC
3.3	Getting PHP to talk to MySQL: The process-querying the database with PHP functions - Using PEAR	1	Demonstration	Desktop PC
3.4	Working with Forms: Building a form - Templates.	1	Demonstration	Desktop PC
UNIT -4 PHP FUNCTIONS				
4.1	String functions, Date and time functions, File Manipulation Calling System Calls	2	Demonstration	Desktop PC

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
4.2	Modifying MySQL objects and PH data: Changing database objects from PHP	2	Demonstration	Desktop PC
4.3	Manipulating table data-displaying results with Embedded links-	1	Demonstration	Desktop PC
4.4	presenting a form to add and process in one file, updating data , deleting data , performing a subquery	1	Demonstration	Desktop PC
UNIT -5 COOKIES, SESSION AND ACCESS CONTROL				
5.1	PHP and HTTP Authentication , Sessions - using Auth_HTTP to Authenticate.	1	Demonstration	Desktop PC
5.2	Security: Session security.	1	Demonstration	Desktop PC
5.3	Validation and Error handling: Validating user input with JavaScript-Pattern Matching	1	Demonstration	Desktop PC
5.4	Redisplaying a form after PHP validation fails. Building a Blog	1	Demonstration	Desktop PC

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED

CO 1	Describe fundamentals of webin PHP scripts to handle HTML forms.	K2 & K3	PSO1& PSO2
CO 2	Describe the importance regular expressions including modifiers, operators, and metacharacters	K2 & K3	PSO2 &PSO3
CO 3	Create PHP programs that use various PHP library functions, and that manipulate files and directories	K2 & K3	PSO2, PSO3&PSO7
CO 4	Analyze and solve various database tasks using the PHP language.	K2 & K3	PSO2, PSO3 &PSO7
CO 5	Analyze and solve common Web application tasks by writing PHP programs.	K3 & K4	PSO7& PSO8

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		**NON - SCHOLASTIC**	**MARKS**		
C1	**C2**	**C3**	**CIA**	**ESE**	**Total**
20	**15**	**5**	**40**	**60**	**100**

C1 – Average of Two Model Test Marks

C2 - Average of Program Completion and Record Work

C3 - Non-Scholastic

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	3	2	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

Staff Name: MRS.T.CHARANYA NAGAMMAL
Forwarded By

V. Mageshwari

HOD'S Signature

& Name

Employability 100%

III B.Sc. Information Technology

SEMESTER – VI

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	21I6SB6	FUNDAMENTALS OF ANDROID PROGRAMMING	Practical	2	2

COURSE DESCRIPTION

This course introduces to learn basic Android programming concepts and build a variety of apps by using the concepts Android Architecture Components.

COURSE OBJECTIVES

To facilitate the student to understand the Mobile Application Programming sequence.

UNITS

UNIT –I INTRODUCING ANDROID STUDIO (6HRS.)

Installing the Java Development Kit on Windows–Installing Android Studio

Creating First Android Project - Using Android Virtual Device Manager

UNIT –II NAVIGATING ANDROID STUDIO (6 HRS.)

The Editor – The Gutter – Navigation Tool Windows – Navigation tool Windows – The Project Tool Window – The Structure Tool Window - The Main Menu Bar

UNIT –III PROGRAMMING IN ANDROID STUDIO (6 HRS.)

Using code Folding – Performing Code Completion – Commenting Code – Using Code Generation – Constructors – Override Methods –toString Method

UNIT –IV CREATING APPLICATIONS (6 HRS.)

Introducing the application Manifest File – Using the Manifest Editor – Introducing Layouts.

UNIT –V FILES, SAVING STATE AND PREFERENCES (6 HRS.)

Saving simple Application data – Creating and saving Shared Preferences – Retrieving shared Preferences.

PROGRAM LIST

1. To study Android Studio and android studio installation.
2. To understand Activity, Intent, Create sample application.
3. To design simple GUI application with activity and intents e.g. calculator.
4. To write an application that draws basic graphical primitives on the screen
5. Create an android app for database creation

REFERENCES:

1. Learn Android Studio –Adam Gerber, Clifton Craig-Apress.
2. Android Application Development – Reto Meier.

OPEN EDUCATIONAL RESOURCES :

1. http://yuliana.lecturer.pens.ac.id/Android/Buku/professional_android_4_application_development.pdf
2. https://www.tutorialspoint.com/android/android_tutorial.pdf
3. http://barbra-coco.dyndns.org/student/learning_android_studio.pdf

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCING ANDROID STUDIO				
1.1	Installing the Java Development Kit on Windows	2	Demonstration	Desktop PC
1.2	Installing Android Studio	1	Demonstration	Desktop PC
1.3	Creating First Android Project	1	Demonstration	Desktop PC
1.4	Using Android Virtual Device Manager	1	Demonstration	Desktop PC
UNIT -2 NAVIGATING ANDROID STUDIO				
2.1	The Editor ,The Gutter	2	Demonstration	Desktop PC
2.2	Navigation tool Windows	1	Demonstration	Desktop PC
2.3	The Project Tool Window	2	Demonstration	Desktop PC
2.4	The Structure Tool Window The Main Menu Bar	1	Demonstration	Desktop PC
UNIT -3 PROGRAMMING IN ANDROID STUDIO				
3.1	Using code Folding – Performing Code Completion	1	Demonstration	Desktop PC
3.2	Using Code Generation	1	Demonstration	Desktop PC
3.3	Commenting Code Constructors	1	Demonstration	Desktop PC

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.4	Override Methods – toString Method	1	Demonstration	Desktop PC
UNIT -4 CREATING APPLICATIONS				
4.1	Introducing the application Manifest File —	2	Demonstration	Desktop PC
4.2	Using the Manifest Editor	2	Demonstration	Desktop PC
4.3	Introducing Layouts	2	Demonstration	Desktop PC
UNIT -5 FILES,SAVING STATE & PREFERENCES				
5.1	Saving simple Application data	1	Demonstration	Desktop PC
5.2	Creating and saving Shared Preferences	1	Demonstration	Desktop PC
5.3	Retrieving shared Preferences	1	Demonstration	Desktop PC

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Able to Install Java Development Toolkit.	K2 & K3	PSO1& PSO2
CO 2	Install and configure Android	K2 & K3	PSO2 &PSO3

	application development tools		
CO 3	Design and develop user Interfaces for the Android platform.	K2 & K3	PSO2, PSO3&PSO7
CO 4	Identify the Application & Layouts Concepts.	K2 & K3	PSO2, PSO3 &PSO7
CO 5	Save state information across important operating system events.	K3 & K4	PSO7& PSO8

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		**NON - SCHOLASTIC**	**MARKS**		
C1	**C2**	**C3**	**CIA**	**ESE**	**Total**
20	**15**	**5**	**40**	**60**	**100**

C1 – Average of Two Model Test Marks

C2 - Average of Program Completion and Record Work

C3 - Non-Scholastic

Mapping of COs with PSOs

CO/PSO	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**	**PSO7**	**PSO8**
CO1	**3**	**3**	**2**	**2**	**2**	**1**	**1**	**1**
CO2	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**1**
CO3	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2**
CO4	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2**
CO5	**2**	**2**	**2**	**2**	**2**	**3**	**1**	**1**

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

Staff Name: Mrs.T.Charanya Nagammal

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

I B.Sc. Information Technology

SEMESTER –I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	HRS/WEEK	CREDITS
USIT	21I1SLK1	TRENDS IN INFORMATION TECHNOLOGY	-	2

COURSE DESCRIPTION

The new trends and disruptive technologies in IT (Information Technology) emphasis is given to the way technologies create a competitive edge and generate business value. This year the course will have a special emphasis in cloud computing, artificial intelligence, internet of things, and big data.

COURSE OBJECTIVES

To impact the knowledge about the recent trends in IT

UNITS

UNIT –I E-COMMERCE INTRODUCTION

E-commerce Infrastructure: Introduction, E-commerce Infrastructure-An Overview, Hardware, Server Operating System, Software, Network Website

UNIT –II MANAGING THE E-ENTERPRISE

Managing the e-Enterprise: Introduction, e-Enterprise, Managing the e-Enterprise, E-business Enterprise, Comparison between Conventional Design and E-organisation, Organisation of Business in an e-Enterprise

UNIT –III TRANSACTION PROCESSING SYSTEMS

Transaction Processing Systems - Features of TPS -**E-World:** Features Of E-Commerce - Importance Of E-Commerce - Types of Electronic Commerce - E-Commerce Activities -E-Learning - E-Banking - E-Governance - E-Agriculture- E-Logistics..

UNIT –IV TYPES OF WIRELESS SERVICES

Benefits - Working of Biometric Systems – Uses – Types - **RFID:** Components - Working of RFID - Advantages. Embedded Systems – UAV(Unmanned Aerial Vehicle) - GPS - 3G - 4G - 5G - Wi-Fi - Wi-Max – Bluetooth- Infrared Communication - Firewall - Data Security and Cryptography - Parallel and Distributed Computing – VLSI - Smart Card.

UNIT –V BIG DATA

Knowledge Management – CRM - BPO – KPO – NLP - Artificial Intelligence - Big data - Big data Analytics – Cloud – Mobile - Internet of things - Image Processing - Nano technology - Semantic web - Social media - Soft Computing -Speech Recognition - Virtual Reality and Augmented reality - Third Eye: A Shopping Assistant for the Visually Impaired - Machine Learning - Neural Network.

UNIT –VI DYNAMISM(for CIA only)

Applications of wireless services

TEXT BOOK:

1) Peter Nortorn‟s, " Introduction to Computer", TMH, 2004, ISBN-0-07-05-3142-0
2) ChetanShrivastava" Fundamentals of Information Technology", Kalyani publishers, 2002,
ISBN-81-7663-576-6
3) DrMadhulikaJain,"Information Technology Concept", BPB,2006,ISBN – 81-7656-276-9
4) Alexis and Mathews Leon, "Fundamentals of Information Technology", Leon Press, ISBN
:8182090105
5) Verma,"Computer, Internet & Multimedia – Dictionary", Universities Press

REFERENCE BOOKS:

1. Suresh K. Basandra, Computers Today, Galgotia Publications Pvt Ltd., New Delhi.
2. Computer Applications In Business, R. Parameswaran
3. ITL Education Solutions Limited, Introduction to Information Technology,PearsonEducation,New Delhi.
4. Perry, P.J., Worldwide Web secrets, Comdex Publishing, New Delhi..
5. Davis,Gordon.B, and Olson, Malgrethe H., Management Information systems, Mcgraw Hill Book company
6. Emerging Trends in Information Technology, Mrs. Jigisha D. Pardesi
7. Textbook of Emerging Trends in Information Technology Paperback – 2011,by Ravi P Patki
8. E-world: Emerging Trends in Information Technology.by ArpitaGopal&Chandrani Singh
9.

Digital Open Educational Resources (DOER) :.

1. https://www.tutorialspoint.com/fundamentals_of_science_and_technology/information_technology.htm
2. https://www.tutorialspoint.com/fundamentals_of_science_and_technology/information_technology.htm

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	To understand how virtualization improves cloud computing and common standards for cloud.	K1	PSO1
CO 2	Understand different cloud platforms, application and programming support for it.	K1, K2,	PSO2
CO 3	Understand Big Data primitives	K1 & K3	PSO5
CO 4	Understand and demonstrate Big Data processing skills by developing applications	K1, K2, K3 &	PSO4
CO 5	Understand the applications & impact of big data technologies	K2 & K4	PSO3

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	1	2	2	2	1	1	1
CO2	1	3	1	2	2	2	2	1
CO3	1	2	1	1	3	2	2	2
CO4	1	1	1	3	2	1	2	2
CO5	1	2	3	1	1	1	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	1	1	1	1
CO2	1	1	1	1
CO3	1	3	1	1
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated **-1**

V. Mageshwari

II B.Sc. Information Technology

SEMESTER – III

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	HRS/WEEK	CREDITS
USIT	21I2SL1	GREEN COMPUTING	-	2

COURSE DESCRIPTION

The course content plays a vital role in making the students to understand the basic concepts in Green Computing.

COURSE OBJECTIVES

To facilitate the student to learn the fundamentals of Green Computing and to understand the issues related with Green compliance

UNITS

UNIT –I INTRODUCTION

Green IT Fundamentals - Business, IT, and the Environment – Green computing: carbon foot print, scoop on power – Green IT Strategies: Drivers, Dimensions, and Goals – Environmentally Responsible Business: Policies, Practices, and Metrics.

UNIT –II GREEN ASSETS AND MODELING

Green Assets: Buildings, Data Centers, Networks, and Devices – Green Business Process Management: Modeling, Optimization, and Collaboration – Green Enterprise Architecture – Environmental Intelligence – Green Supply Chains – Green Information Systems: Design and Development Models.

UNIT –III GRID FRAMEWORK

Virtualization of IT systems – Role of electric utilities, Telecommuting, teleconferencing and teleporting – Materials recycling – Best ways for Green PC – Green Data center – Green Grid framework.

UNIT –IV GREEN COMPLIANCE

Socio-cultural aspects of Green IT – Green Enterprise Transformation Roadmap – Green Compliance: Protocols, Standards, and Audits – Emergent Carbon Issues: Technologies and Future.

UNIT –V CASE STUDIES

The Environmentally Responsible Business Strategies (ERBS) – Case Study Scenarios for Trial Runs – Case Studies – Applying Green IT Strategies and Applications to a Home, Hospital, Packaging Industry and Telecom Sector.

UNIT –VI DYNAMISM (for CIA only)

Case study review

TEXT BOOK:

1. Bhuvan Unhelkar, —Green IT Strategies and Applications-Using Environmental Intelligence, CRC Press, June 2014.
2. Woody Leonhard, Katherine Murray, —Green Home computing for dummies, August 2012.

REFERENCE BOOKS:

1. Alin Gales, Michael Schaefer, Mike Ebbers, —Green Data Center: steps for the Journey, Shroff/IBM rebook, 2011.
2. John Lamb, —The Greening of IT, Pearson Education, 2009.
3. Jason Harris, —Green Computing and Green IT- Best Practices on regulations & industry, Lulu.com, 2008
4. Carl speshocky, —Empowering Green Initiatives with IT, John Wiley & Sons, 2010.
5. Wu Chun Feng (editor), —Green computing: Large Scale energy efficiency, CRC Press

Digital Open Educational Resources (DOER) :.

1. https://www.tutorialspoint.com/environmental_studies/environmental_studies_towards_sustainable_future.htm

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Acquire knowledge to adopt green computing practices to minimize negative impacts on the environment.	K1	PSO3
CO 2	Enhance the skill in energy saving practices in their use of hardware.	K1, K2	PSO3
CO 3	Evaluate technology tools that can reduce paper waste and carbon footprint by the	K1 & K3	PSO3

	stakeholders.		
CO 4	Explain issues related to green compliances.	K1, K2, K3	PSO6
CO 5	Understand the ways to minimize equipment disposal requirements	K1 & K3	PSO6

V. Mageshwari

III B.Sc. Information Technology

SEMESTER –V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	21J5SLI1	DATA SCIENCE AND TOOLS	PRACTICAL	-	2

COURSE DESCRIPTION

This course gives basic understanding about big data analytics using R language and to disseminate knowledge in cutting edge technologies to store and visualize huge data.

COURSE OBJECTIVES

1. Recognize the essential notion of data science
2. Examine the Tools and skills of a data scientist
3. Figure out the working of R Tool

UNITS

UNIT I : DATA SCIENCE AND DATA SCIENTISTS

Introduction – Need of Data Science – Business Intelligence Vs Data Analysis – Features – Life Cycle – Discovery – Data Preparation – Model Planning – Model Building – Operationalize – Communicate Results – Who are Data Scientists? – Skills needed for Data Scientists

UNIT II : TOOLS FOR DATA SCIENCE

EXCEL – R Tool - Apache Hadoop – BigML – SaS – MATLAB – WEKA – Tableau – QlikView

UNIT III : R TOOL

Startup – The Workspace – Variable – Constants – Data Types – R Operators

UNIT IV : R STATEMENTS AND FUNCTIONS

Control Statements – If – If.. Else – Switch – Looping Statements – Functions – Strings

UNIT V : R INTERFACES AND VISUALIZATION

CSV Files – Excel Files – XML Files – R Database – Pie Chart – Bar Chart – Histograms – Line Graphs – Statistical Display of Results

WEB REFERENCES :

https://data-flair.training/blogs/data-science-tools/

OER REFERENCES :

https://github.com/chaconnewu/free-data-science-books

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Foresee the life cycle of data science and the skills of data scientists.	**K1**	**PSO1& PSO2**
CO 2	Compare the pros and cons of the tools of data science	**K1, K2**	**PSO2, PSO3**
CO 3	Analyze the methodologies R Tool	**K1 & K3**	**PSO3, PSO5**
CO 4	Implement the programming erect of R.	**K1, K2 & K3**	**PSO5, PSO8**
CO 5	Design the code for the problems related to data science using R	**K3 & K4**	**PSO8**

Forwarded By