FATIMA COLLEGE (AUTONOMOUS)

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

Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT: COMPUTER SCIENCE

NAME OF THE PROGRAMME: B.Sc. COMPUTER SCIENCE

PROGRAMME CODE : UACS

ACADEMIC YEAR : 2022 - 2023

VISION OF THE DEPARTMENT

To be in the Zenith of Scholastic Excellence in Computer Science by imparting Value Based, Skill Based and Career Oriented Education for Holistic Development.

MISSION OF THE DEPARTMENT

As a Department, we are committed to

- Empower Women and First generation learners
- Inculcate lateral thinking and make them professionally competent to meet the global challenge in the field of Computer Science
- Develop the programming skills of the young learners to meet the current trends of Computer Science
- Motivate the students to be socially responsible and acquire entrepreneurial skills to become global leaders
- Promote quality and ethics among the students through Value Based Education

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

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 their strengths and improving on 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 entrepreneurs and 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 discipline 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 learner 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 Environment Building Initiatives

PROGRAMME SPECIFIC OUTCOMES (PSO)

On completion of three years of B.Sc. Computer Science programme, the graduates would be able to

PSO 1	Develop professionally competent citizens by applying the scientific knowledge of Computer Science with the ability to think clearly, rationally and creatively to support in evolving solutions to the social/public/scientific issues with responsible democratic participation
PSO 2	Enterprising resourcefulness to identify, plan, formulate, design and evaluate solutions for complex computing problems that address the specific needs with appropriate consideration for Societal, Cultural, Environmental and Industrial domains.
PSO 3	Holistic development to ignite the lateral thinking ability in problem solving, acquisition of new skills, open-minded and organized way of facing problems with self awareness and evolving analytical solutions
PSO 4	Create and initiate innovations effectively and communicate efficiently with the computing community and society at large to bridge the gap between computing industry and academia
PSO 5	Through Digital Literacy, understand, assess and commit to professional and ethical principles, norms and responsibilities of the cyber world and the ability for work efficacy as a part of a team and engage effectively with diverse stakeholders
PSO 6	Ability and willingness to embark on new ventures and initiatives with critical thinking and desire for more continuous learning focusing on life skills.

FATIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF COMPUTER SCIENCE

For those who joined in June 2019 onwards

PROGRAMME CODE : UACS

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	CREDITS	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	CREDITS	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 - LE NIVEAU INTERMEDIAIRE – LA CIVILISATION, LA LITTERATURE ET LA GRAMMAIRE	**5**	**3**	**40**	**60**	**100**
4.	**IV**	19RL4C4	PART 1 LANGUAGE FRENCH - LE NIVEAU DE SUIVRE – LA CIVILISATION, LA LITTERATURE ET LA GRAMMAIRE	**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	CREDITS	CIA Mks	ESE Mks	TOT. MKs
1.	**I**	19DL1C1	PART 1 LANGUAGE HINDI - बोलचालकीहिंदी	**5**	**3**	**40**	**60**	**100**
2.	**II**	19DL2C2	PART 1 LANGUAGE HINDI - कार्यालयीनहिंदी	**5**	**3**	**40**	**60**	**100**
3.	**III**	19DL3C3	PART 1 LANGUAGE HINDI - हिंदीसाहित्यकाआदिकालऔरभक्तिकाल	**5**	**3**	**40**	**60**	**100**
4.	**IV**	19DL4C4	PART 1 LANGUAGE HINDI - हिंदीसाहित्यकाआधुनिककाल	**5**	**3**	**40**	**60**	**100**
			Total	**20**	**12**			

PART – II -ENGLISH – 12 CREDITS

Offered by The Research Centre of English

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
1.	I	19EL1LB	BASIC COMMUNICATIVE ENGLISH	5	3	40	60	100
2.		19EL1LI	INTERMEDIATE COMMUNICATIVE ENGLISH					
3.		19EL1LA	ADVANCED COMMUNICATIVE ENGLISH					
4.	II	19EL2LB	ENGLISH COMMUNICATION SKILLS	5	3	40	60	100
5.		19EL2LI	ENGLISH FOR EMPOWERMENT					
6.		19EL2LA	ENGLISH FOR CREATIVE WRITING					
7.	III	19EL3LN	ENGLISH FOR DIGITAL ERA	5	3	40	60	100
8.	IV	19EL4LN	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.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. Mks
1.	I	19B1CC1	Programming in c	6	4	40	60	100
2.		19B1CC2	Lab – I (programming in c)	6	3	40	60	100
3.	II	22B2CC3	PYTHON PROGRAMMING	6	4	40	60	100
4.		22B2CC4	LAB II - PYTHON PROGRAMMING	6	3	40	60	100
5.	III	19B3CC5	DATA STRUCTURES AND ALGORITHMS	6	4	40	60	100
6.		19B3CC6	LAB III - DATA STRUCTURES IN C++	6	3	40	60	100
7.	IV	19B4CC7	RELATIONAL DATABASE SYSTEM CONCEPTS	6	4	40	60	100
8.		22B4CC8	LAB IV – RDBMS & Data Analytics using Spreadsheets	6	3	40	60	100
9.	V	19B5CC9	PROGRAMMING IN JAVA	5	5	40	60	100
10.		19B5CC10	OPERATING SYSTEM CONCEPTS	5	5	40	60	100
11.		19B5CC11	LAB V - PROGRAMMING IN JAVA	6	3	40	60	100
12.		19B5PR1	PROJECT - I	4	3	40	60	100
13.	VI	19B6CC12	J2EE PROGRAMMING	5	5	40	60	100

14.		19B6CC13	DATA COMMUNICATIONS AND NETWORKING	5	5	40	60	100
15.		19B6CC14	LAB VI - J2EE PROGRAMMING	6	3	40	60	100
16.		19B6PR2	PROJECT - II	-	3	40	60	100
			Total	**84**	**60**			

ALLIED COURSES- 20 CREDITS

S.NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19P1ACB1	DIGITAL PRINCIPLES & APPLICATIONS (ALLIED - I - OFFERED BY PHYSICS)	5	5	40	60	100
2.	II	19B2AC2	Computer System Architecture	5	5	40	60	100
3.	III	19B3ACM1	LINEAR PROGRAMMING (ALLIED – III - OFFERED BY MATHS)	5	5	40	60	100
4.	IV	19B4ACM2	ALGEBRA AND GRAPH THEORY (ALLIED- IV – OFFERED BY MATHS)	5	5	40	60	100

ELECTIVES-15 CREDITS

S.No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	V	19B5ME1	Software Engineering	5	5	40	60	100
2.	V	19B5ME2	Python Programming	5	5	40	60	100
3.	V	19B5ME3	Data Mining And Data Warehousing	5	5	40	60	100
4.	V	19B5MEP1	Programming With C	5	5	40	60	100
5.	V	19B5MEP2	Web Development	5	5	40	60	100
6.	VI	19B6ME4	Computer Graphics	5	5	40	60	100
7.	VI	19B6ME5	Software Testing	5	5	40	60	100
8.	VI	19B6ME6	Cloud Computing	5	5	40	60	100
9.	VI	19B6ME7	Introduction To Artificial Intelligence	5	5	40	60	100
10.	VI	19B6ME8	Mobile Computing Using Android	5	5	40	60	100
11.	VI	19B6ME9	Big Data Fundamentals	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	21G1VE1	PERSONAL VALUES	1	1	40	60	100
2.		19B1NME	Animation Techniques (NME)	2	2	40	60	100
3.	II	21G2VE2	VALUES FOR LIFE	1	1	40	60	100
4.		19B2NME	Animation Techniques (NME)	2	2	40	60	100
5.	III	19G3EE1	ENVIRONMENTAL EDUCATION	1	1	40	60	100
6.		22B3SB1	**SKILL BASED ELECTIVE-** INTERNET PROGRAMMING PAPER:I - WEB DESIGNING USING HTML AND CSS	2	2	40	60	100
7.	IV	19G4EE2	GENDER STUDIES	1	1	40	60	100
8.		22B4SB2	**SKILL BASED ELECTIVE-** INTERNET PROGRAMMING PAPER:II - CLIENT SIDE PROGRAMMING USING JAVA SCRIPT	2	2	40	60	100
9.	V	19B5SB3	**SKILL BASED ELECTIVE-** INTERNET PROGRAMMING PAPER:III – CLIENT SIDE PROGRAMMING USING JAVA SCRIPT& CSS	2	2	40	60	100
10.		22B5SB3	WEB APPLICATION DESIGN USING ANGULAR(To be offered from 2023 – 2024)	2	2	40	60	100
11.		19B5SB4	**SKILL BASED ELECTIVE-** INTERNET PROGRAMMING PAPER:IV – SERVER SIDE PROGRAMMING USING ASP.NET	2	2	40	60	100
12.	VI	19B6SB5	**SKILL BASED ELECTIVE-** INTERNET PROGRAMMING PAPER:V - SERVER SIDE PROGRAMMING USING PHP	2	2	40	60	100

13.		19B6SB6	**SKILL BASED ELECTIVE-** INTERNET PROGRAMMING PAPER:VI -WEB SERVICES DEVELOPMENT USING XML	2	2	40	60	100

PART – V – 1 CREDIT

OFF-CLASS PROGRAMMES - ALL PART-V

SHIFT - I

S.No	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	TOT. Mks
1.	I - IV	21A4PED	Physical Education	30/ SEM	1	100
2.		21A4NSS	NSS			
3.		21A4NCC	NCC			
4.		21A4WEC	Women Empowerment Cell			
5.		21A4ACUF	AICUF			

OFF-CLASS PROGRAMMES
ADD-ON COURSES

COURSE CODE	COURSE TITLE	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA Mks	ESE Mks	TOTAL Mks
19UADCA	**COMPUTER APPLICATIONS** (offered by the department of PGDCA for Shift I)	40	2	I & II	40	60	100
19UADFC1	**ONLINE SELF LEARNING COURSES**- Basic Multidisciplinary Course - Arts	-	2	I	-	-	50
19UADFC2	**ONLINE SELF LEARNING COURSE-** Basic Multidisciplinary Course - Science	-	2	II	-	-	50
21UAD3ES	Professional Ethics	15	1	III	40	60	100
21UAD4ES	Personality Development	15	1	IV	40	60	100
21UAD5ES	Family Life Education	15	1	V	40	60	100
21UAD6ES	Life Skills	15	1	VI	40	60	100
19UAD5HR	**HUMAN RIGHTS**	15	2	V	100	-	100
19UADRS	**OUTREACH PROGRAMME**- Reach Out to Society through Action **ROSA**	100	3	V & VI	100	-	100
19UADPR	**PROJECT**	30	4	VI	40	60	100
19UADRC	**READING CULTURE**	10/ Semester	1	II-VI	-	-	-

TOTAL		**20**				

SELF LEARNING EXTRA CREDIT COURSES

COURSE CODE	COURSE	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA MKS	ESE MKS	TOTAL MARKS
20UGSLB1	**SELF LEARNING COURSE for ADVANCED LEARNERS** **DIGITAL IMAGE PROCESSING**	-	2	ANY SEMESTER	40	60	100
21UGSLB2	**SELF LEARNING COURSE for ADVANCED LEARNERS** **PRINCIPLES OF CRYPTOGRAPHY**	-	2	ANY SEMESTER	40	60	100
21UGSLB3	**SELF LEARNING COURSE for ADVANCED LEARNERS** **WEB APP WITH SPRING BOOT**	-	2	ANY SEMESTER	40	60	100
21UGSLB4	**SELF LEARNING COURSE for ADVANCED LEARNERS** **CONTENT MANAGEMENT SYSTEMS**	-	2	ANY SEMESTER	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	-	-	

IV-B INTERDISCIPLINARY SELF-LEARNING EXTRA CREDIT COURSES

COURSE CODE	COURSE	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA MKS	ESE MKS	TOTAL MARKS
21UGIDBP1	**FUNDAMENTALS & PROGRAMMING OF MICROPROCESSOR 8085**	-	2	ANY SEMESTER	40	60	100
21UGIDBT1	**TAMILUM INAIYAMUM**	-	2	ANY SEMESTER	40	60	100
21UGIDBC1	**Chemistry Problem Solving using C Programming**		2	ANY SEMESTER	40	60	100

OFF CLASS PROGRAMMES

COURSE CODE	COURSE	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA MKS	ESE MKS	TOTAL MARKS
21UGVAONB1	**ONLINE COURSES for ADVANCED LEARNERS** **PHOTO EDITING TECHNIQUES**	-	2	ANY SEMESTER	40	60	100
21UGVAONB2	**ONLINE COURSE for ADVANCED LEARNERS** **WEB DESIGNING USING HTML**	-	2	ANY SEMESTER	40	60	100
21UGSEB1	**SKILL EMBEDDED COURSE IN CYBER SECURITY FOR BEGINNERS**	-	2	ANY SEMESTER	40	60	100

I B.Sc. Computer Science
SEMESTER –I
For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B1CC1	PROGRAMMING IN C	MAJOR	6	4

COURSE DESCRIPTION

This course helps to provide the fundamental knowledge of a programming language and its features which enhances the user to write general purpose application programs.

COURSE OBJECTIVES

- To introduce and form a firm foundation in programming
- To stress the importance of clarity , simplicity and the efficiency in writing programs

SYLLABUS

UNIT I : INTRODUCTION TO C PROGRAMMING (18 Hrs)

The C Character set – Identifiers and Keywords – Data types – Constants - Variable and Arrays – Declarations – Expressions – Statements – Symbolic Constants. *OPERATORS AND EXPRESSIONS:* Arithmetic Operators – Unary Operators – Relational and Logical Operators – Assignment Operators – The Conditional Operator – Library Functions.

UNIT II : DATA INPUT AND OUTPUT (18 Hrs)

The getchar() Function – The putchar() Function – The scanf() Function – The printf() Function– The gets() and puts() Functions. *CONTROL STATEMENTS:* The if-else Statement – The While Statement – The Do-While Statement – The For statement – Nested Control Structures – The Switch Statement – The Break Statement – The Continue Statement – The Comma Operator – The goto Statement.

UNIT III : FUNCTIONS AND STORAGE CLASSES (18Hrs)

FUNCTIONS : Defining a Function – Accessing a Function – Function Prototypes - Passing arguments to a Function – Recursion. *STORAGE CLASSES*: Storage classes-Automatic variables-External variables- Static variables.

UNIT IV : ARRAYS AND STRINGS (18 Hrs)

ARRAYS: Defining an Array – Processing an Array – Passing Arrays to Functions – Multidimensional Arrays. *STRINGS:* Defining a string – NULL Character – Initialization of Strings – Reading and Writing a String – Processing the Strings – Character arithmetic - Searching and Sorting of Strings.

UNIT V :STRUCTURES AND FILES (18 Hrs)

STRUCTURES: Defining a Structure - Processing a Structure - User-Defined Data Types (typedef) - - Passing Structures to a Function. *FILES:* Why Files - Opening and Closing a Data file – Reading and writing a Data file - Processing a Data file

- Unformatted Data files.

SELF STUDY:

Unit I: Library Functions
Unit II: The comma operator
Unit IV: String Functions
Unit V: Unformatted Data Files

TEXT BOOK

Programming with C, Byron S Gottfried &Jitender Kumar Chhabra, 3rd Edition, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2014.
Chapters : 2- 4, 6-10, 12-13

REFERENCE BOOKS

1. ***Programming in ANSI C***, E. Balagurusamy, 2nd Edition, Tata McGrawHill Publishing company Ltd, New Delhi, 2004.
2. ***Let Us C***, Yashwant P. Kanetkar, 8th Edition, BPB Publications, New Delhi, 2007.
3. ***C Programming Language***, 2nd Edition, by B. W. Kernighan & D. M. Ritchie, Prantice Hall Publications, 2011.

Digital Open Educational Resources (DOER)

1. https://www.tutorialspoint.com/cprogramming/index.htm
2. https://www.studytonight.com/c/
3. https://www.youtube.com/watch?v=Rx_U5bxz4qI

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
	Unit -1 HEADING			
1.1	C character set- Identifiers - Key words – Data types	4	Chalk & Talk	Black Board & PPT
1.2	Constants and Variables – Declarations – Expressions – statements – Symbolic constants	4	Chalk & Talk	Black Board
1.3	Arithmetic Operators – Unary operators	3	Chalk & Talk Demonstration	Black Board & LCD
1.4	Relational and Logical operators	3	Chalk & Talk Demonstration	Black Board & LCD
1.5	Assignment and conditional operators, Library functions	4	Chalk & Talk Demonstration	Black Board & LCD
	Unit -2			
2.1	Data Input functions	4	Chalk & Talk	Black Board
2.2	Data Output functions	4	Chalk & Talk	Black Board
2.3	If-else statement	2	Chalk & Talk	Black Board
2.4	Looping statements : while, do-while, for statements	5	Chalk & Talk Demonstration	Black Board & LCD
2.5	Switch, Break, Continue &goto statements	3	Chalk & Talk	Black Board
	Unit -3			
3.1	Defining a function, function prototype	3	Chalk & Talk	Black Board
3.2	Accessing a function & Passing arguments	5	Chalk & Talk	Black Board
3.3	Recursive function	3	Chalk &Talk	Black Board
3.4	Storage class, Automatic variables	3	Chalk & Talk	Black Board

3.5	External & static variables	4	Chalk & Talk	Black Board
	Unit -4			
4.1	Array Introduction - Defining an array	3	Chalk & Talk	Black Board
4.2	Processing an array – Passing an array to a function	3	Chalk & Talk	Black Board
4.3	Multidimensional arrays	3	Chalk & Talk	Black Board
4.4	Defining a String - reading and writing a string	3	Chalk & Talk	Black Board
4.5	String processing – String array, String sorting	3	Chalk & Talk	Black Board
4.6	Character arithmetic, Character array processing	3	Chalk & Talk	Black Board
	Unit – 5			
5.1	Defining a structure, Processing a structure	4	Chalk & Talk	PPT & White board
5.2	User defines data types – passing structure to functions	4	Chalk & Talk	PPT & White board
5.3	Introduction to files, Opening and closing a file	4	Chalk & Talk	Black Board
5.4	Reading and writing data file	3	Chalk & Talk Demonstration	Black Board & LCD
5.5	Unformatted data files	3	Chalk & Talk	Black Board

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

✔ **All the course outcomes are to be assessed in the various CIA components.**

✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy for I UG are :**

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

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

COURSE OUTCOMES (CO)

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Identify the basic concepts needed for program development	K1	PSO1& PSO2	PO1
CO 2	Apply the basic concepts and develop program to find solutions for simple problems	K2	PSO3	PO3
CO 3	Design programs to solve complex problems by using suitable control statements	K3	PSO4	PO2
CO 4	Analyze the problem and design efficient program using functions	K4	PSO5	PO2
CO 5	Use array and structure to handle volume of data	K3	PSO6	PO4

Mapping of C0s with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	3	3	2	1	2	2
CO2	2	1	3	2	2	2
CO3	2	2	2	3	1	2
CO4	2	2	1	2	3	2
CO5	2	1	2	2	2	3

Mapping of C0s with Pos

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

Note:♦ Strongly Correlated – **3**

♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

COURSE DESIGNER:
Staff Name : Dr. K. Rosemary Euphrasia

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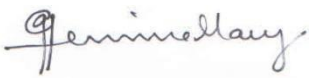

(Dr.G.Germine Mary)

HOD'S Signature& Name

I B.Sc. Computer Science

SEMESTER –I

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B1CC2	LAB I – PROGRAMMING IN C	MAJOR	6	3

COURSE DESCRIPTION

This course aims to provide practical application of the concepts which were discussed in the theory.

COURSE OBJECTIVES

- Enhance the students for the development of application programs
- Facilitates with high level language features for better programming

SYLLABUS

Programs to be written using the following concepts.

1. Simple Programs
2. Control Statements
3. Functions
4. Passing parameters to functions
5. Recursive Functions
6. One dimensional arrays
7. Multi dimensional arrays
8. Structures
9. Formatted files
10. Unformatted files

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 daily program completion and Record work

C3 – Non – Scholastic

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level(According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Develop algorithms to find solutions for simple problems	K2	PSO1	PO1
CO 2	Analyze the source code and rectify errors if any and bring out necessary solution	K3	PSO2 & PSO3	PO2
CO 3	Utilize proper control statements to find solution for a given problem	K3	PSO6	PO3
CO 4	Develop source code using arrays to handle volume of data	K4	PSO5	PO3
CO 5	Design source code for console applications	K3	PSO4	PO4

Mapping COs Consistency with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	**2**	**2**	**2**	**1**	**2**
CO 2	**2**	**3**	**3**	**2**	**2**	**1**
CO 3	**2**	**1**	**2**	**2**	**2**	**3**
CO 4	**2**	**2**	**2**	**1**	**3**	**2**
CO 5	**2**	**2**	**2**	**3**	**1**	**1**

Note: ♦ Strongly Correlated – **3**
♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

Mapping of C0s with POs

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

COURSE DESIGNER:

Dr.K.Rosemary Euphrasia

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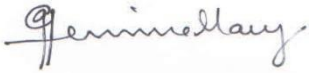

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HOD'S Signature& Name

I B.Sc. Computer Science
SEMESTER –II
For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	22B2CC3	Python Programming	Major Core	6	4

COURSE DESCRIPTION

Python is an interpreted, high-level, general-purpose programming language. it provides constructs that enable clear programming on both small and large scales.

COURSE OBJECTIVES

- To understand why python is a useful scripting language for developers.
- To learn how to design and program python applications.
- To learn how to use lists, tuples, and dictionaries in python programs
- To build real-world applications using OOPs,

UNITS

UNIT I: BASIC OF PYTHON PROGRAMMING (18 HRS)

Features of Python-History of Python-The Future of Python-Writing and Executing First Python Program-Literal Constants-Variables and Identifiers-Data Types- Input Operation-Comments-Reserved Words-Indentation- Operation and Expressions-Expression in Python –Operations on Strings-Other Data Types-Type Conversion.

UNIT II: DECISION CONTROL STATEMENTS (18 HRS)

Introduction to Decision Control Statements-Selection /Conditional Branching Statements-Basic Loop Structure /Iterative Statements-Nested Loops-The Break Statement-The Continue Statement-The Pass Statement-The Else Statement used with Loops. Functions and Modules: Introduction –Function Declaration and Definition-Function Call-Variables Scope and Lifetime-The Return Statement-More On Defining Function-Lambda Functions or Anonymous Functions-Documentation Strings.

UNIT III: PYTHON STRINGS REVISITED (18 HRS)

Concatenating ,Appending ,and Multiplying Strings-String Formatting Operator-Build in String Methods and Functions-Slice Operation-Ord()and Chr() Function-Comparing String-Iteration String –The String Module-Regular Expressions-Metacharacters in Regular Expression. File Handling: File Path-Types of Files-Opening and Closing Files-Reading and Writing Files-File Positions-Renaming and Deleting Files-Directory Methods.

UNIT IV: DATA STRUCTURES (18 HRS)

Sequence-Lists-Functional Programming-Tuple-Sets-Dictionaries Classes and Objects:Classes and Objects-Class Methods and Self Arguments,Constructer-Class Variables and Object Variables-Other Special Methods-Public and Private Data Members-Private Methods-Built in Function-Built in Class Attributes-Garbage Collection-Class Methods-Static Methods

UNIT V: INHERITANCE (18 HRS)

Inheriting Classes in Python-Types of Inheritance-Composition-Abstract Classes

and Interfaces-Metaclass. Operator overloading: Introduction-Implementing Operator Overloading-Reverse Adding-Overriding –Getitem-(),Setitem-(),Methods-Overriding the in Operator-Overloading Miscellaneous Function-Overriding the –Call-() Method. Error and Exception Handling: Introduction to Errors and Exceptions-Handling Exceptions-Multiple Except Blocks-Multiple Exceptions in A Single Block-Except Block without Exception –The else Clause- Raising Exception-Instantiating Exceptions-Handling Exception in Invoked Functions.

DYNAMISM :(For CIA Only)
SELF STUDY :

UNIT I: Arithmetic Operators

UNIT II: DECISION CONTROL STATEMENTS
Introduction to Decision Control Statements-Selection /Conditional Branching Statements-Basic Loop Structure /Iterative Statements-Nested Loops-The Break Statement-The Continue Statement-The Pass Statement-The Else Statement used with Loops.
UNIT III: Standard Mathematical Functions

TEXT BOOK:

1. ***Python Programming using Problem Solving Approach,*** ReemaThareja,Published By Oxford Higher Education, 2017.

REFERENCES:

1. ***Problem Solving and Python Programming,*** S.A. Kulkarni, Published By Yesdee,2017
2. ***Python for Software Design How to Think Like a computer scientist***, Allen B.Downey Cambridge University Press,2018
3. ***Introduction to Programming using Python ,***Y.DanielLiang,Published By Pearson,2018.

WEB REFERENCES:

1.http://spoken-tutorial.org/tutorial-search/python

2.https://docs.python.org

COURSE CONTENTS &LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I : [15 HRS]				
1.1	Features of Python-History of Python-The Future of Python-Writing and Executing First Python Program-Literal Constants-Variables and Identifiers-	6	Lecture	PPT &Smart Board
1.2	Data Types- Input Operation-Comments-Reserved Words-Indentation-	6	Chalk & Talk Lecture	Black Board
1.3	Operation and Expressions-Expression in Python –Operations on Strings-Other Data Types-Type Conversion.	6	Chalk & Talk Lecture	Black Board
UNIT II : [15 HRS]				
2.1	Introduction to Decision Control Statements-Selection /Conditional Branching Statements-Basic Loop Structure /Iterative Statements-Nested Loops-	6	Lecture	PPT &Smart Board
2.2	The Break Statement-The Continue Statement-The Pass Statement-The Else Statement used with Loops. Functions and Modules:.	6	Chalk & Talk Lecture	Black Board
2.3	Introduction –Function Declaration and Definition-Function Call-Variables Scope and Lifetime-The Return Statement-More On Defining Function-Lambda Functions or Anonymous Functions-Documentation Strings	6	Chalk & Talk Lecture	Black Board
UNIT III : [15 HRS]				
3.1	Concatenating ,Appending ,and Multiplying Strings-String Formatting Operator-Build in String Methods and Functions-Slice Operation-Ord()and Chr() Function-Comparing String-Iteration String –	6	Lecture	PPT &Smart Board
3.2	The String Module-Regular Expressions-Metacharacters in Regular Expression.	6	Lecture	PPT &Smart Board

3.3	File Handling: File Path-Types of Files-Opening and Closing Files-Reading and Writing Files-File Positions-Renaming and Deleting Files-Directory Methods	6	Chalk & Talk Lecture	Black Board
UNIT IV : [15 HRS]				
4.1	Sequence-Lists-Functional Programming-Tuple-Sets-Dictionaries Classes and Objects:Classes and Objects-Class Methods and Self Arguments,	6	Lecture	PPT &Smart Board
4.2	Constructer-Class Variables and Object Variables-Other Special Methods-Public and Private Data Members-Private Methods-	6	Chalk & Talk Lecture	Black Board
4.3	Built in Function-Built in Class Attributes-Garbage Collection-Class Methods-Static Methods	6	Chalk & Talk Lecture	Black Board
UNIT V : [15 HRS]				
5.1	Inheriting Classes in Python-Types of Inheritance-Composition-Abstract Classes and Interfaces-Metaclass.	6	Lecture	PPT &Smart Board
5.2	Operator overloading: Introduction-Implementing Operator Overloading-Reverse Adding-Overriding –Getitem-(),Setitem-(),Methods-Overriding the in Operator-Overloading	6	Lecture	PPT &Smart Board
5.3	Miscellaneous Function-Overriding the –Call-() Method. Error and Exception Handling: Introduction to Errors and Exceptions-Handling Exceptions-Multiple Except Blocks-Multiple Exceptions in A Single Block-Except Block without Exception –The else Clause- Raising Exception-Instantiating Exceptions-Handling Exception in Invoked Functions	6	Chalk & Talk Lecture	Black Board

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

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

COURSE OUTCOMES (CO)

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 python as a useful scripting language for developers.	K1	PSO1& PSO2
CO 2	Solve problems requiring the writing of well-documented programs in the Python language, including use of the logical constructs of that language.	K2, K3, K4	PSO2& PSO3
CO 3	Apply lists, tuples, and dictionaries to develop robust programs in python	K2 & K3	PSO3,PSO5
CO 4	Identify the structure and components of a python program.	K1 & K3	PSO4
CO 5	Apply object-oriented programming concepts to develop dynamic interactive Python applications.	K2 & K4	PSO6

Mapping COs Consistency with PSOs

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

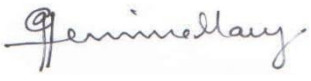
Mapping COs Consistency with Pos

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

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

COURSE DESIGNER:
Dr.G.Germine Mary

Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature& Name

I B.Sc. Computer Science
II SEMESTER

(For those who join in 2022 onwards)

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	22B2CC4	LAB II – PYTHON PROGRAMMING	MAJOR LAB	6	3

COURSE DESCRIPTION

This course focus on imparting the practical knowledge of using Python Language for problem solving with basic constructs and functions. Also it aims to provide a clear understanding of the compound data using lists, tuples and dictionaries.

COURSE OBJECTIVES

- To write, test and debug simple Python programs.
- To use functions and various string operations to write efficient Python programs.
- To read and write data from/to files in Python.

SYLLABUS

Programs to be written using the following concepts.

1. Simple Programs
2. Data types/data type conversion
3. Decision control and conditional branching
4. Functions and Modules
5. Various string operations
6. Files
7. Sequence & lists
8. Classes and object
9. Inheritance
10. Exception handling

EVALUATION PATTERN

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

C1 – Average of Two Model Tests

C2 – Average of class Performance and Record work

C3 – Non – Scholastic

COURSE OUTCOMES (CO)

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
CO1	Write programs using basic programming constructs	K1,K3,K5	PSO1, PSO2 & PSO4
CO 2	Express different Decision Making statements and Functions.	K2	PSO1, PSO2 & PSO3
CO 3	Implement Math functions, Strings, List and Tuple in Python programs.	K2, K3, K4	PSO3 & PSO4
CO 4	Interpret Object oriented programming in Python & File handling operations.	K2, K3 & K5	PSO5 & PSO6
CO5	Write programs that enhances reusability – Inheritance	K2,K3,K4	PSO3, PSO4 & PSO6

Mapping COs Consistency with PSOs

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

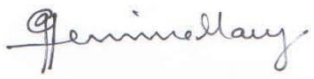
Mapping COs Consistency with POs

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

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

COURSE DESIGNER:
Dr.A.Vimala

Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature& Name

II B.Sc. Computer Science

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B3CC5	Data Structures And Algorithms	MAJOR CORE	6	4

COURSE DESCRIPTION

This course aims to impart fundamental knowledge on application of data structures in problem solving and about predefined algorithms

COURSE OBJECTIVES

- To impart knowledge and skill on identifying apt data structures to solve problems efficiently.
- To impart skill to write time and space efficient algorithms.
- To provide basic knowledge about predefined algorithms and where they could be applied.

SYLLABUS

UNIT I : BASIC CONCEPTS & ARRAYS [18 HRS]

Overview: System Life Cycle – Object Oriented Design – Data Abstraction and Encapsulation - Algorithm Specification – Performance Analysis and Measurement - - Abstract Data Types and the C++ Class – The array as an Abstract Data Type – The Polynomial Abstract Data Type – Sparse Matrices – Representation of Arrays – The String Abstract Data Type

UNIT II: STACKS AND QUEUES [18 HRS]

Templates in C++ - The Stack Abstract Data Type – The Queue Abstract Data Type – Subtyping and Inheritance in C++ - A Mazing problem – Evaluation of Expressions.

UNIT III: LINKED LISTS [18 HRS]

Singly linked lists and chains– Representing Chains in C++ - The Template class chain - Circular lists – Available Space lists - Linked stacks and queues – Polynomials – Equivalence classes – Sparse matrices.

UNIT IV: TREES [18 HRS]

Introduction - Binary trees – Binary tree traversal and Tree Iterators – Additional binary tree operations – Threaded binary trees

UNIT V: ALGORITHM [18 HRS]

Divide and Conquer: The general method - Binary search Greedy method: The general method – Knapsack problem Dynamic Programming: The general method - Multi-stage graphs.

SELF STUDY:

UNIT III: Available Space lists - Polynomials –Sparse matrices.

TEXT BOOKS

1. ***Fundamentals of Data Structures in C++,*** Ellis Horowitz, SartajSahni, Dinesh Mehta, 2nd Edition, Universities Press, 2016. Chapter: 1, 2, 3, 4.1 - 4.9, 5.1 - 5.5

2. ***Computer Algorithms/C++,*** Ellis Horowitz, SartajSahni, SanguthevarRajasekaran, 1st Edition, Galgotia Publications, 2016. Chapter: 3.1, 3.2, 4.1, 4.2, 5.1, 5.2

REFERENCE BOOKS

1. ***Fundamentals of Data Structures in C++,*** Ellis Horowitz, SartajSahni, Galgotia Publications, 2006.

2. ***Fundamentals of Computer Algorithms***, Ellis Horowitz, SartajSahni, Galgotia Publications, 2010.

3. ***Data structures with C***, Seymour Lipschutz., Tata McGraw Hill, New Delhi, 2011.

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
	Unit -1 HEADING			
1.1	Overview: System Life Cycle – Object Oriented Design – Data Abstraction and Encapsulation -	4	Chalk & Talk	Black Board
1.2	Algorithm Specification – Performance Analysis and Measurement - -	4	Chalk & Talk	Black Board
1.3	Abstract Data Types and the C++ Class – The array as an Abstract Data Type – The Polynomial Abstract Data Type	4	Chalk & Talk	Black Board
1.4	Sparse Matrices – Representation of Arrays –	4	Chalk & Talk	Black Board
1.5	The String Abstract Data Type	2	Chalk & Talk	Black Board
	Unit -2			
2.1	Templates in C++ -	4	Chalk & Talk	Black Board
2.2	The Stack Abstract Data Type	4	Chalk & Talk	Black Board
2.3	– The Queue Abstract Data Type –	4	Chalk & Talk	Black Board
2.4	Subtyping and Inheritance in C++ -	4	Chalk & Talk	Black Board
2.5	A Mazing problem – Evaluation of Expressions.	2	Chalk & Talk	Black Board
	Unit -3			
3.1	Singly linked lists and chains– Representing Chains in C++ - The Template class chain	5	Chalk & Talk	Black Board
3.2	Circular lists – Available Space lists	4	Chalk & Talk	Black Board
3.3	Linked stacks and queues – Polynomials –	4	Chalk & Talk	Black Board
3.4	Equivalence classes – Sparse matrices.	4	Chalk & Talk	Black Board
	Unit -4			
4.1	Introduction - Binary trees –	4	Chalk & Talk	Black Board
4.2	Binary tree traversal and Tree Iterators –	5	Chalk & Talk	Black Board
4.3	Additional binary tree operations –	5	Chalk & Talk	Black Board

4.4	Threaded binary trees	4	Chalk & Talk	Black Board
Unit – 5				
5.1	Divide and Conquer: The general method-Binary search	6	Chalk & Talk	Black Board
5.2	Greedy method: The general method – Knapsack problem	6	Chalk & Talk	Black Board
5.3	Dynamic Programming: The general method - Multi-stage graphs	6	Chalk & Talk	Black Board

EVALUATION PATTERN

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 %**

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

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

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

COURSE OUTCOMES

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

No.	Course Outcome	Knowledge Level(According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Identify data structures needed to solve specific problems	K1	PSO1& PSO2	PO2
CO 2	Analyse the data structures for effective use in problem solving	K2	PSO3	PO1
CO 3	Design and develop efficient algorithms in terms of Space and Time	K3	PSO5	PO3
CO 4	Troubleshoot algorithms	K4	PSO6	PO2
CO 5	Analyse time complexity of algorithms	K3	PSO4	PO2 &PO3

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**3**	1	1	2	1
CO2	2	1	**3**	2	2	2
CO3	2	2	1	1	**3**	1
CO4	1	2	2	2	1	**3**
CO5	1	1	2	**3**	1	2

Mapping COs Consistency with POs

CO/ PO	PO 1	PO 2	PO 3	PO 4
CO1	**2**	**3**	**2**	**2**
CO2	**3**	**2**	**1**	**1**
CO3	**2**	**2**	**3**	**2**
CO4	**2**	**3**	**1**	**2**
CO5	**2**	**3**	**3**	**1**

Note: ♦ Strongly Correlated – **3**
♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

COURSE DESIGNER:
Dr. S. Vidya

Forwarded By

(Dr. G. Germine Mary)
HOD'S Signature& Name

II B.Sc. Computer Science

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B3CC6	LAB III - Data Structures In C++	MAJOR CORE	6	3

COURSE DESCRIPTION

This practical course is to provide students the laboratory skill to apply all that they have learnt in the Major Core Theory course B3CC5. The lab work goes in parallel with the theory course.

COURSE OBJECTIVES

- To develop programming skill
- To impart the skill of debugging
- To effectively utilise the apt data structures to solve problems
- To write efficient algorithms for solving problems

SYLLABUS

Programs to be written using the following concepts.

1. Arrays
2. Stacks
3. Queues
4. String Processing
5. Basic operations on linked lists – Creation, Insertion, Deletion
6. Problems using linked lists
7. Tree traversals

EVALUATION PATTERN

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

C1 – Average of Two Model Tests

C2 – Average of class Performance and Record work

C3 – Non – Scholastic

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level(According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Write efficient programs consuming less memory	K3	PSO1& PSO3	PO1
CO 2	Compile and Execute programs using required data structures	K4	PSO2	PO2
CO 3	Implement the algorithms using C++	K2	PSO4	PO4
CO 4	Debug programs	K2	PSO6	P03

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	2	**3**	1	1	2
CO2	2	**3**	2	2	1	1
CO3	2	1	2	**3**	2	2
CO4	1	2	2	1	1	**3**
CO5						

Mapping COs Consistency with POs

CO/ PO	PO 1	PO 2	PO 3	PO 4
CO1	3	1	2	2
CO2	2	3	1	1
CO3	2	2	1	3
CO4	2	1	3	2
CO5				

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

COURSE DESIGNER:
Dr. S. Vidya

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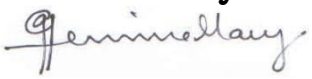


(Dr.G.Germine Mary)
HOD'S Signature& Name

II B.Sc. Computer Science

SEMESTER –IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B4CC7	RELATIONAL DATABASE SYSTEM CONCEPTS	MAJORE CORE	6	4

COURSE DESCRIPTION

This course helps the students to understand the need for database management systems, their architecture, data models and a detailed explanation of database schema. This course also facilitates the students to acquire the skill of using SQL as a tool to access database entities.

COURSE OBJECTIVES

- To impart complete understanding of Relational database concepts and its usage in the real world applications
- To encapsulate the implementation of database system concepts in SQL

SYLLABUS

UNIT I: INTRODUCTION (18 Hrs)

An Overview of DBMS and DB Systems Architecture - Introduction to database management systems – data models – database system architecture .

An Introduction to SQL and Relational Database Concepts : The SQL Language-Relational Database Management Systems – Candidate Key and Primary Key of Relation – Foreign Keys – Relational Operators –Attribute Domains and their Implementations.

UNIT II: NORMALIZATION PROCESS (18 Hrs)

Functional Dependencies: Introduction – Definition of Functional Dependencies – Functional Dependencies and Keys – Inference Axioms for Functional Dependencies – Redundant Functional Dependencies – Closures, Cover and Equivalence of Functional Dependencies.

Normalization Process: Introduction – First Normal Form – Data Anomalies in 1NF Relations – Partial Dependencies – Second Normal Form – Data Anomalies in 2NF Relations – Transitive Dependencies – Third Normal Form – Data anomalies in 3NF Relations – Boyce-Codd Normal Form – Lossless or Lossy Decompositions – Preserving Functional Dependencies.

UNIT III: ENTITY-RELATIONSHIP MODEL (18 Hrs)

The Entity-Relationship Model : The Entity-Relationship Model – Entities and Attributes – Relationships – One-to-One Relationships – Many-to-One and Many-to-Many Relationships – Normalizing the Model – Table Instance Charts.

Name conventions for Database objects – Structure of SQL statements and SQL

writing Guidelines – Interacting with the Oracle RDBMS through SQL*Plus – Creating tables – Describing the structure of the Table – Populating Tables - Implementation of the Relational Operators in SQL – Implementation of the Selection Operator – Using Aliases to control Column Headings – Implementation of the Projection Operator – Implementation of the Join Operator – Creating Foreign Keys – Defining Primary Keys in an Existing Table – Using CHECK Constraints to restrict a Column's Input Values – Adding Columns to an Existing Table – Modifying Columns of an Existing Table – Removing Constraints from a Table.

UNIT IV: BOOLEAN AND ARITHMETIC OPERATIONS (18 Hrs)

Boolean Operators and Pattern Matching – Boolean Operators and Pattern Matching Compound Clauses – Pattern Matching – the like statement and wildcard characters – Matching values in a List or a Range of values

Arithmetic Operations and Built-in Functions – Arithmetic Operations – Built-in functions – Built-in Functions – Individual Numeric – Built-in – Character – Important Conversion Functions

UNIT V: FUNCTIONS (18 Hrs)

Group Functions – Introduction to Group Functions – The SUM(n) and AVG(n) Functions – The max(n) and min(n) functions – The count Functions – Combining Single-Value and Group Functions – Displaying Specific Groups.

Processing Date and Time Information – Introduction to Processing Date and Time- Arithmetic With Dates – Date Functions- Formatting Dates and Times

SELF – STUDY :

UNITIV: Arithmetic Operations and Built-in Functions – Arithmetic Operations – Built-in functions – Built-in Functions – Individual Numeric – Built-in – Character – Important Conversion Functions

UNITV: Processing Date and Time Information – Introduction to Processing Date and Time- Arithmetic With Dates – Date Functions- Formatting Dates and Times

TEXT BOOK

Database Management Systems, Ramon A. Mata-Toledo and Pauline K. Cushman, Schaum's Outline Series, Tata Mc-Graw Hill Publications, Second reprint 2008.

Chapters: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

REFERENCE BOOKS

1. ***Oracle Database 11g The Complete Reference,*** Kevin Loney, Oracle Press, MGH, 2008.

2. ***Database system Concepts***, Abraham silberschatz, Henry F.Korth, S.Sudharshan, MGH, 6th Edition, 2013.

3. Fundamentals of Database System, RamezElmasri, Shamkant B. Navathe, Pearson Education Publications, 6th Edition, 2017.

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I: INTRODUCTION (16 Hrs)				
1.1	An Overview of DBMS and DB Systems Architecture - Introduction to database management systems	3	Lecture	PPT &Smart Board
1.2	Data models – database system architecture	3	Chalk & Talk Lecture	Black Board
1.3	An Introduction to SQL and Relational Database Concepts : The SQL Language	2	Chalk & Talk Lecture	Black Board
1.4	Relational Database Management Systems	2	Chalk & Talk Lecture	Black Board
1.5	Candidate Key and Primary Key of Relation	2	Chalk & Talk Lecture	Black Board
1.6	Foreign Keys	2	Chalk & Talk Lecture	Black Board
1.7	Relational Operators.	2	Chalk & Talk Lecture	Black Board
1.8	Attribute Domains and their Implementations	2	Discussion	Google classroom
UNIT II : NORMALIZATION PROCESS (16 Hrs)				
2.1	Functional Dependencies: Introduction – Definition of Functional Dependencies – Functional Dependencies and Keys	3	Lecture	PPT &Smart Board
2.2	Inference Axioms for Functional Dependencies	3	Chalk & Talk Lecture	Black Board
2.3	Redundant Functional Dependencies – Closures, Cover and Equivalence of Functional Dependencies.	3	Chalk & Talk Lecture	Black Board
2.4	Normalization Process: Introduction – First Normal Form – Data Anomalies in 1NF Relations – Partial Dependencies – Second Normal Form – Data Anomalies in 2NF Relations	3	Chalk & Talk Lecture	Black Board

2.5	Transitive Dependencies – Third Normal Form – Data anomalies in 3NF Relations – Boyce-Codd Normal Form	2	Chalk & Talk Lecture	Black Board
2.6	Lossless or Lossy Decompositions – Preserving Functional Dependencies.	2	Blended Learning	Online/ E-Content/ Text Books /Materials
UNIT III :ENTITY-RELATIONSHIP MODEL (16 Hrs)				
3.1	The Entity-Relationship Model : The Entity-Relationship Model – Entities and Attributes	3	Lecture	PPT &Smart Board
3.2	Relationships – One-to-One Relationships – Many-to-One and Many-to-Many Relationships – Normalizing the Model – Table Instance Charts.	3	Lecture	PPT &Smart Board
3.3	Name conventions for Database objects – Structure of SQL statements and SQL writing Guidelines – Interacting with the Oracle RDBMS through SQL*Plus –	3	Chalk & Talk Lecture	Black Board
3.4	Creating tables – Describing the structure of the Table – Populating Tables - Implementation of the Relational Operators in SQL – Implementation of the Selection Operator – Using Aliases to control Column Headings – Implementation of the Projection Operator – Implementation of the Join Operator	3	Chalk & Talk Lecture	Black Board
3.5	Creating Foreign Keys – Defining Primary Keys in an Existing Table – Using CHECK Constraints to restrict a Column's Input Values	2	Chalk & Talk Lecture	Black Board
3.6	Adding Columns to an Existing Table – Modifying Columns of an Existing Table – Removing Constraints from a Table	2	Blended Learning	Online/ E-Content/ Text Books /Materials
UNIT IV : BOOLEAN AND ARITHMETIC OPERATIONS (16 Hrs)				

4.1	Boolean Operators and Pattern Matching – Boolean Operators and Pattern Matching Compound Clauses	3	Lecture	PPT &Smart Board
4.2	Pattern Matching – the like statement and wildcard characters – Matching values in a List or a Range of values	3	Chalk & Talk Lecture	Black Board
4.3	Arithmetic Operations and Built-in Functions – Arithmetic Operations – Built-in functions	3	Chalk & Talk Lecture	Black Board
4.4	Built-in Functions – Individual Numeric –	2	Chalk & Talk Lecture	Black Board
4.5	Built-in Functions – Character	3	Chalk & Talk Lecture	Black Board
4.6	Important Conversion Functions	2	Chalk & Talk Lecture	Black Board
UNIT V : FUNCTIONS (16 Hrs)				
5.1	Group Functions – Introduction to Group Functions – The SUM(n) and AVG(n) Functions	3	Lecture	PPT &Smart Board
5.2	The max(n) and min(n) functions – The count Functions	3	Lecture	PPT &Smart Board
5.3	Combining Single-Value and Group Functions	3	Chalk & Talk Lecture	Black Board
5.4	Displaying Specific Groups.	3	Chalk & Talk Lecture	Black Board
5.5	Processing Date and Time Information – Introduction to Processing Date and Time	2	Chalk & Talk Lecture	Black Board
5.6	Arithmetic With Dates – Date Functions- Formatting Dates and Times	2	Blended Learning	Online/ E-Content/ Text Books /Materials

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

The levels of CIA Assessment based on Revised Bloom's Taxonomy are :

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

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

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	Pos ADDRESSED
CO1	Explain basic architecture, major components behind relational databases, various set operations and their implementation in RDBMS and key, advantages of using RDBMS in real world computing.	K1	PSO1& PSO2	PO1 & PO4
CO2	Assess how SQL evolves as the communication language to access the data.	K1	PSO3	PO3
CO3	Discuss functional dependencies and various forms of normalization in maintaining the integrity of data.	K1 & K2	PSO4	PO4
CO4	Prepare E-R diagram which represents the data their relationship.	K2 & K4	PSO6	PO1 & PO4
CO5	Demonstrate implementation of the relational operators in SQL, Boolean and Arithmetic operators, Pattern matching techniques and Utilize group, date and time functions to handle complex queries.	K2 & K3	PSO5	PO2 & PO3

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**3**	1	2	2	1
CO2	2	1	**3**	2	2	1
CO3	1	1	1	**3**	1	2
CO4	2	2	1	2	2	**3**
CO5	1	2	2	1	**3**	1

Mapping of C0s with POs

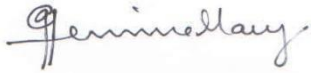
CO/ PO	PO1	PO2	PO3	PO4
CO1	**3**	2	1	**3**
CO2	1	2	**3**	1
CO3	2	1	2	**3**
CO4	**3**	2	1	**3**
CO5	1	**3**	**3**	2

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**

♦ WeaklyCorrelated -**1**

COURSE DESIGNER:
Dr.A.Vimala

Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature & Name

II B.Sc. Computer Science
SEMESTER – IV

(For those who join in 2021 onwards)

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	22B4CC8	LAB IV – RDBMS & Data Analytics using Spreadsheets	MAJOR LAB	6	3

COURSE DESCRIPTION

This course provides practical knowledge in PL/SQL programming, utilizing the services provided by Oracle database in a stored procedure perspective. This course also provides knowledge to perform data analysis using Excel's most popular features.

COURSE OBJECTIVE

- To give a good formal foundation on the relational model of data
- To present the techniques relating to query processing by SQL engines.
- Learn about the pivot tables in Spreadsheet
- Provide knowledge on Data Checking and Evaluation.
- Perform Data Analysis and Evaluation

LAB LIST
SQL QUERIES

1. SQL queries to implement DDL statements to Create, Alter, Drop, Truncate and rename tables.
2. SQL queries to implement DML statements to perform Select, Insert, Delete, Update on tables.
3. SQL queries to implement DCL statements to access database using Grant and Revoke.
4. SQL queries to implement TCL statements to work on Commit, Rollback and Savepoint.

5. SQL queries to implement Where, Like, Order By, Group By, Having clauses.

6. SQL queries to implement arithmetic, Logical, Concatenation and Quote operators.

7. SQL queries to implement mathematical functions. (count, minimum value, maximum value, sum, average, First and Last)

8. SQL queries to implement scalar functions. (UCASE, LCASE, MID, ROUND)

9. SQL queries to implement Set Operations. (Intersect, Union, Union All, Minus)

10. SQL queries to implement column and table level constraints.(NOT NULL, UNIQUE, PRIMARY KEY, FOREIGN KEY, CHECK and DEFAULT)

11. Implement simple PL/SQL Programs

12. Cleaning Data & Working With Pivottables

13. Pivottable & Pivotcharts

14. Database Functions & Statistics Functions:

EVALUATION PATTERN

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

C1 – Average of Two Model Tests

C2 – Average of class Performance and Record work

C3 – Non – Scholastic

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	Enhance Programming skills and techniques.	K2	PSO1, PSO2 & PSO3
CO 2	Formulate complex queries using SQL	K2, K3, K4	PSO1 & PSO2
CO 3	Ability to analyze data is a powerful skill that helps you make better decisions	K2	PSO1 & PSO5
CO4	Identify the basic principles of a Pivot Table and Recognize how to use Pivot Table and Pivot chart	K2, K3	PSO4 & PSO6
CO 5	Use Excel's powerful functions to efficiently transform mountains of raw data into clear insights	K2,K3,K4	PSO4 & PSO5

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	3	**3**	1	1	2
CO2	3	**3**	2	2	1	1
CO3	3	1	2	**2**	3	2
CO4	1	2	2	3	1	**3**
CO5	2	3	1	3	3	1

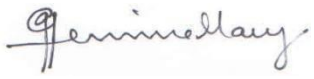
Mapping COs Consistency with POs

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

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

COURSE DESIGNER:
Dr.G.Germine Mary

Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature& Name

III B.Sc. Computer Science

SEMESTER –V

For those who joined in 2018 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	19B5CC9	PROGRAMMING IN JAVA	Major core	5	5

COURSE DESCRIPTION

This Java Programming course provides extensive programming experience with Java and its object-oriented features.

COURSE OBJECTIVES

- To introduces platform independent, Object Oriented Programs destined for distribution on the internet.
- To implement refinements and improvements in the art of programming.
- To introduce and understand the usage of Applet in implementing dynamic web pages by embedding in HTML.
- To explore advanced Java concepts and to develop user friendly GUI based web Applications

SYLLABUS

UNIT I : INTRODUCTION (15 Hrs)

The History and Evolution Java- An Overview of Java - Data types, Variables and Arrays - Operators - Control Statements - Introducing Classes - A Closer look at Methods and Classes.

UNIT II: INHERITANCE AND PACKAGES (15 Hrs)

Inheritance - Packages and Interfaces – Exception Handling.

UNIT III: MULTITHREAD AND IO STREAMS (15 Hrs)

Multithread Programming: The Java Thread Model – The Main Thread – Creating a Thread - Creating Multiple Threads – Using isAlive( ) and join( ) – Thread Priorities. String Handling: The String Constructors – String Length – Special String Operations – Character Extraction – String Comparison – Searching Strings – Modifying a String – Data Conversion Using valueOf( ) – Changing the Case of Characters Within a String – Joining Strings. Input/ Output: Exploring java.io: The I/O Classes and Interfaces – File – The AutoClosable, Closeable, and Flushable Interfaces – I/O Exceptions - Two ways to Close a Stream – The Stream Classes - The Byte Streams – Input, Output, FileInput, FileOutput Stream - The Character Streams – Reader, Writer, FileReader, FileWriter – Serialization – Networking.

UNIT IV : APPLET (15 Hrs)

The Applet Class: Two types of Applets - Applet Basics- Applet Architecture – An

Applet Skeleton – Simple Applet Display Methods – Requesting Repainting – Using the Status Window – The HTML APPLET Tag – Passing Parameters to Applets – getDocumentBase() and getCodeBase() – AppletContext and showDocument() – The AudioClip Interface – The AppletStub Interface – Outputting to the Console. Event Handling: Two Event Handling Mechanisms – The Delegation Event Model – Event Classes – The KeyEvent Class - Sources of Events – Event Listener Interfaces – Using the Delegation Event Model – Adapter Classes – Inner Classes.

UNIT V: ABSTRACT WINDOWING TOOLKIT (15 Hrs)

Introducing the AWT: Working with Windows, Graphics and Text : AWT classes – Window Fundamentals – Working with Frame Windows – Creating a Frame Window in an AWT-Based Applet – Creating a Windowed Program – Displaying Information Within a Window – Introducing Graphics – Working with Color – Setting the Paint Mode – Working with Fonts – Managing Text Output Using FontMetrics. Using AWT Controls, Layout Managers, and Menus: AWT Control Fundamentals – Labels – Using Buttons – Applying Check Boxes – CheckboxGroup – Choice Controls – Using Lists – Managing Scroll Bars – Using a TextField – Using a TextArea – Understanding Layout Managers – Menu Bars and Menus – Dialog Boxes – FileDialog – A Word About Overriding paint( ).

SELF – STUDY :

Inheritance -Creating Multiple Threads – Using isAlive( ) and join( ) – Thread Priorities. The AutoClosable, Closeable, and Flushable Interfaces – I/O Exceptions - Two ways to Close a Stream – The Stream Classes - The Byte Streams – Input, Output, FileInput, FileOutput Stream - The Character Streams – Reader, Writer, FileReader, FileWriter – Serialization – Networking - Passing Parameters to Applets – getDocumentBase() and getCodeBase() – AppletContext and showDocument() – The AudioClip Interface – The AppletStub Interface – Outputting to the Console.

TEXT BOOK

1. ***JAVA The Complete Reference,*** Herbert Schildt**,** 9th Edition, Tata McGraw-Hill Publication, 2016.

Chapters **:** 1 – 11, 16, 20, 22 - 26.

REFERENCE BOOKS

1. ***Programming with JAVA,*** Dr.C.Muthu, Vijay Nicole Imprints Private Limited, 2nd Edition, 2009.
2. ***Thinking in Java,*** Harry and Chris James, 2nd Edition, 2009.
3. ***Java in a Nutshell,*** David Flnagan, O'Reilly Media Inc., 5th Edition, 2014.

Programming with Java, E. Balagurusamy, McGraw-Hill, 5th Edition, 2017.

COURSE CONTENTS & TEACHING/LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I : INTRODUCTION (15 Hrs)				
1.1	Introduction to Java Characteristics of Java Tokens and Data Types	3	Lecture Chalk & Talk	Black Board, Computer & LCD Projector
1.2	Operators and Hierarchy, Writing and Executing Simple Programs	3	Chalk and Talk,Programs written in the class, Practical demonstration using LCD	Black Board, Computer & LCD Projector
1.3	Procedure to read input - simple programs Control Statement - program for each statement discussed	3	Participative Learning-making students try out programs and present using LCD Chalk and Talk, Problem Solving exercises, Interaction	Black Board, Computer & LCD Projector
1.4	Introducing Class in Java Declaring Objects Array of Objects	3	Program demonstration & discussion, Lecture, Programs explained by live demo-executing in the class	Black Board, Computer & LCD Projector
1.5	Constructors - overloading Methods and method overloading	3	Program demonstration and discussion Chalk and Talk, Simple exercises, Interaction	Black Board, Computer & LCD Projector
UNIT II: INHERITANCE AND PACKAGES(13 Hrs)				
2.1	Inheritance -Basics Creating multilevel Inheritance Constructors & Method Overriding-difference	3	Lecture method, Program demonstration & discussion	Black Board, Computer & LCD Projector
2.2	Packages	3	Chalk & Talk Lecture	Black Board, Computer & LCD Projector

2.3	Access Specifiers Interfaces Program using Interface and Packages	3	Lecture method, Program demonstration & discussion Chalk and Talk, interaction	Black Board, Computer & LCD Projector
2.4	Exception Handling	3	Lecture method, Programs explained by live demo-executing in the class	Black Board, Computer & LCD Projector
2.5	Nested try-catch Throw, throws, Custom Exception	3	Blended Learning Lecture method, Program demonstration & discussion	Black Board, Computer & LCD Projector
UNIT III: MULTITHREAD AND IO STREAMS (13 Hrs)				
3.1	Multithreading Thread Priorities, Synchronization	3	Lecture method, Program demonstration & discussion	Black Board, Compute r & LCD Projector
3.2	Deadlock in threads Inter-thread Communication	3	Lecture method, Program demonstration & discussion Presentation and explanation	Black Board, Compute r & LCD Projector
3.3	String Handling	3	Lecture, Problem Solving- Programs written in the class	Black Board, Compute r & LCD Projector
3.4	Exploring java.io	3	Chalk & Talk Lecture	Black Board, Compute r & LCD Projector
3.5	The Stream Classes	3	Blended Learning	Black Board, Compute r & LCD Projector
UNIT IV : APPLET (13 Hrs)				

4.1	The Applet Class HTML Applet tag & Passing parameters	3	Blended Learning Lecture method,	Black Board, Compute r & LCD Projector
4.2	Introduction to Event Handling	3	Lecture method, Program, interaction demonstration & discussion	Black Board, Compute r & LCD Projector
4.3	The Delegation Event Model	3	Chalk & Talk Lecture	Black Board, Compute r & LCD Projector
4.4	Event Classes and Methods	3	Chalk & Talk Lecture	Black Board, Compute r & LCD Projector
4.5	Event Listener Interfaces	3	Lecture method, Program demonstration & discussion	Black Board, Compute r & LCD Projector
UNIT V: ABSTRACT WINDOWING TOOLKIT (13 Hrs)				
5.1	Introducing the AWT: Working with Windows, Graphics and Text : AWT classes	3	Problem Solving-Programs written in the class, Lecture	Black Board, Compute r & LCD Projector
5.2	Window Fundamentals – Working with Frame Windows	3	Lecture Programs explained by live demo	Black Board, Compute r & LCD Projector
5.3	Introducing Graphics – Working with Color	3	Lecture, Video Demonstration of Programs	Black Board, Compute r & LCD Projector

5.4	Using AWT Controls	3	Lecture method, Program demonstration & discussion	Black Board, Compute r & LCD Projector
5.5	Understanding Layout Managers – Menu Bars and Menus	3	Blended Learning Lecture, Explanation using sample program	Black Board, Compute r & LCD Projector

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember**, K2-**Understand**, K3-**Apply**, K4-**Analyse

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

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level(According toBloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Explain the fundamental concepts of object-oriented programming and acquire programming skills using the basic language constructs and the core APIs provided by Java.	K1,K2	PSO1& PSO2	PO1 &PO2
CO 2	Design, write, compile, execute, test, and debug object-oriented programs in Java	K1,K2,K3	PSO3	PO2
CO 3	Develop well-documented and structured event handling programs using Applet	K2,K3	PSO5	PO4
CO 4	Identify the use of Java in a variety of technologies and on different platforms.	K1,K2,K4	PSO4	PO3
CO 5	Implement GUI based client applications and TCP/ IP and UDP based Network programs	K2,K3	PSO6	PO1

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**3**	2	1	2	2
CO2	1	2	**3**	1	1	2
CO3	2	1	1	2	**3**	**3**
CO4	1	2	2	**3**	1	1
CO5	2	1	2	2	1	**3**

Mapping of COs with POs

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

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**

♦ WeaklyCorrelated -**1**

COURSE DESIGNER:
Dr. G.Germine Mary

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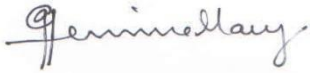

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III B.Sc. Computer Science

SEMESTER –V

For those who joined in 2018 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	19B5CC10	**Operating System Concepts**	Major core	5	5

COURSE DESCRIPTION

This course helps the students to understand the role of operating system as a resource manager, its architecture, types. Also this paper facilitates the students to understand vulnerabilities and the various techniques to protect them.

COURSE OBJECTIVE/S

- To develop critical thinking, inquiring, technology skills to describe and to paraphrase what operating systems are, what they do and how they are designed & construct.
- To identify, infer and summarize the resource management utility.
- To develop collaborative and soft skills to compare the structure & basic organization of different operating system.
- To provide understanding skills to identify the vulnerabilities and to combat them

SYLLABUS

UNIT I : INTRODUCTION [15 HRS]

Introduction: What Operating Systems Do – Operating-System Structure - Operating-System Operations –Distributed Systems – Special-Purpose Systems – Computing Environments – Open-Source Operating-Systems. System Structures: Operating-System Services – User Operating-System Interface – System Calls – Types of System Calls – System Programs - Operating-System Design and Implementation.

UNIT II : PROCESS CONCEPT [15 HRS]

Process Concept:Process Concept – Process Scheduling – Operations on Processes – Interprocess Communication. Process Scheduling: Basic Concepts – Scheduling Criteria – Scheduling Algorithms. Deadlocks: System Model – Deadlock Characterization – Methods for Handling Deadlocks – Deadlock Prevention.

UNIT III : MEMORY MANAGEMENT STRATEGIES [15 HRS]

Memory-Management Strategies: Background – Swapping – Contiguous Memory Allocation – Paging – Structure of the Page Table – Segmentation.

UNIT IV : FILE SYSTEM [15 HRS]

File System: File Concept – Access Methods – Directory and Disk Structure. Implementing File Systems: File-System Structure – File-System Implementation.

UNIT V : SECONDARY STORAGE STRUCTURE [15 HRS]

Secondary-Storage Structure: Overview of Mass-Storage Structure – Disk Structure – Disk Attachment – Disk Scheduling – Disk Management. System Security: The Security Problem – Program Threats – System and Network Threats.

SELF – STUDY :

System Calls – Types of System Calls – Segmentation - The Security Problem – Program Threats – System and Network Threats.

TEXT BOOK

Operating System Concepts, Abraham Silberschatz, Peter B.Galvin, Greg Gagne, John Wiley & Sons, Inc.8th Edition, Reprint, 2014.

Chapters: 1(1.1, 1.4, 1.5, 1.10 – 1.13), 2(2.1 – 2.6), 3(3.1 – 3.4), 5(5.1 – 5.3), 7(7.1 – 7.4), 8(8.1 – 8.6), 10(10.1 – 10.3), 11(11.1 – 11.2), 12(12.1 – 12.5), 15(15.1 – 15.3)

REFERENCE BOOKS

1. ***Operating Systems,*** Harvey M.Deitel, Paul J.Deitel, David R.Choffines, Pearson Prentice Hall, 3rd Edition, 2007.
2. ***Operating Systems – A Concept-Based Approach,*** DhananjayM.Dhamdhere, MGH, 3rd Edition, 2017.
3. ***Operating Systems : Internals and Design Principles,*** William Stallings, 9th edition, 2018.

Digital Open Educational Resources (DOER) :

1. https://edu.gcfglobal.org/en/computerbasics/understanding-operating-systems/1/
2. https://www.tutorialspoint.com/operating_system/os_useful_resources.htm

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I : INTRODUCTION [15 HRS]				
1.1	Introduction: What Operating Systems Do – Operating-System Structure - Operating-System Operations	3	Lecture	PPT &Smart Board
1.2	Distributed Systems – Special-Purpose Systems – Computing Environments – Open-Source Operating-Systems.	3	Chalk & Talk Lecture	Black Board
1.3	System Structures: Operating-System Services – User Operating-System Interface	3	Chalk & Talk Lecture	Black Board
1.4	System Calls – Types of System Calls – System Programs	3	Chalk & Talk Lecture	Black Board
1.5	Operating-System Design and Implementation.	3	Discussion	Google classroom
UNIT II : PROCESS CONCEPT [15 HRS]				
2.1	Process Concept: Process Concept – Process Scheduling – Operations on Processes	3	Lecture	PPT &Smart Board
2.2	Inter - Process Communication.	3	Chalk & Talk Lecture	Black Board
2.3	Process Scheduling: Basic Concepts – Scheduling Criteria – Scheduling Algorithms.	3	Chalk & Talk Lecture	Black Board
2.4	Deadlocks: System Model – Deadlock Characterization.	3	Chalk & Talk Lecture	Black Board
2.5	Methods for Handling Deadlocks – Deadlock Prevention	3	Blended Learning	Online/ E-Content/ Text Books /Materials
UNIT III : MEMORY MANAGEMENT STRATEGIES [15 HRS]				

3.1	Memory-Management Strategies: Background – Swapping	3	Lecture	PPT &Smart Board
3.2	Contiguous Memory Allocation	3	Lecture	PPT &Smart Board
3.3	Paging	3	Chalk & Talk Lecture	Black Board
3.4	Structure of the Page Table	3	Chalk & Talk Lecture	Black Board
3.5	Segmentation.	3	Blended Learning	Online/ E-Content/ Text Books /Materials
UNIT IV : FILE SYSTEM [15 HRS]				
4.1	File System: File Concept	3	Lecture	PPT &Smart Board
4.2	Access Methods.	3	Chalk & Talk Lecture	Black Board
4.3	Directory and Disk Structure.	3	Chalk & Talk Lecture	Black Board
4.4	Implementing File Systems: File-System Structure	3	Chalk & Talk Lecture	Black Board
4.5	File-System Implementation	3	Chalk & Talk Lecture	Black Board
UNIT V : SECONDARY STORAGE STRUCTURE [15 HRS]				
5.1	Secondary-Storage Structure: Overview of Mass-Storage Structure	3	Lecture	PPT &Smart Board
5.2	Disk Structure	3	Lecture	PPT &Smart Board
5.3	Disk Attachment	3	Chalk & Talk Lecture	Black Board
5.4	Disk Scheduling – Disk Management.	3	Chalk & Talk Lecture	Black Board

5.5	System Security: The Security Problem – Program Threats – System and Network Threats.	3	Blended Learning	Online/ E-Content/ Text Books /Materials

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

The levels of CIA Assessment based on Revised Bloom's Taxonomy are :

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

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

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level(According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Explain what operating systems are, what they do and how they are designed and constructed.	K1	PSO1& PSO2	PO1
CO 2	Describe the services an operating system provides to users, processes and other systems	K1 & K2	PSO3	PO1
CO 3	Outline the process concept and assess the methods for process scheduling, Inter-process communication and deadlock handling.	K2	PSO4	PO2
CO 4	Assess the management of various resources – Process, Memory, Information and Devices and the effective utilization.	K2 & K4	PSO5	PO3
CO 5	Describe the various security threats and attacks and the countermeasures to them.	K1 & K2	PSO6	PO4

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**3**	2	2	1	1
CO2	1	2	**3**	1	2	2
CO3	1	1	2	**3**	2	1
CO4	2	1	1	2	**3**	2
CO5	1	2	2	1	1	**3**

Mapping of C0s with POs

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

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

COURSE DESIGNER:
Dr. A.Vimala

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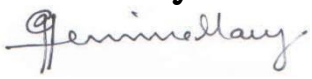

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III B.Sc. Computer Science

SEMESTER –V

For those who joined in 2018 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B5CC11	Lab V - Programming in Java	Major core	6	3

COURSE DESCRIPTION

Java Programming Lab course provides programming skill to develop Object Oriented Java application and interactive event driven Applets

COURSE OBJECTIVE/S

- To implement Object Oriented programs using Java
- To implement Applications using Packages, Interfaces and Multithreading
- To create event driven programs using Applet
- To explore advanced Java concepts and to develop user friendly GUI based web Applications

SYLLABUS

Programs to be written using the following concepts.

1. Simple Programs in java using Classes and Methods
2. Inheritance
3. Packages
4. Exception Handling
5. Multithreading
6. Applets
7. AWT Controls and Events
8. AWT layout managers/ menus

EVALUATION PATTERN

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

C1 – Average of Two Model Tests

C2 – Average of daily program completion and Record work

C3 – Non Scholastic

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Design, write, compile, execute, test, and debug object oriented programs in Java	K1,K2,K3	PSO1& PSO2	PO1
CO 2	Write packages, access specifiers and interfaces in a program	K2,K3	PSO4	PO3
CO 3	Write programs to handle exception and implement Multithreading	K2,K3	PSO5	PO4
CO 4	Develop simple graphical user interfaces for Java Applications and Applets using GUI components such as labels, buttons and Layout Manager	K2,K4	PSO3	PO2
CO 5	Create Java event-handling model to respond to events arisingfrom the GUI components	K2,K3	PSO6	PO2

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**3**	2	1	1	1
CO2	2	1	1	**3**	2	2
CO3	1	2	2	1	**3**	2
CO4	1	2	**3**	2	1	2
CO5	2	1	1	1	2	**3**

Mapping of COs with POs

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

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

COURSE DESIGNER:
Dr. G.Germine Mary

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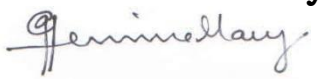

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III B.Sc. Computer Science

SEMESTER –V

For those who joined in 2018 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B5PR1	Project - I	Major core	4	3

COURSE DESCRIPTION

Through Project students are offered Career Training and Experiential Learning.

COURSE OBJECTIVES

- To understand Software Development Process
- To Analyze, Plan, Design and Implement a Software System

PROJECT PLAN

- ❖ Facilitates experiential learning
- ❖ Students are offered career training as part of the curriculum through this Project.
- ❖ This project work motivates them and also gives insights about Software Development.
- ❖ Real time projects are given to students.
- ❖ At the end of the semester the project is evaluated by conducting viva-voce with presentation of the report.

Mini project on Societal, Commercial and Environmental applications

Phase – I

- Team formation (Max Team size: 3)
- Problem identification in various IT, Academical, Societal, Commercial and Environmental applications
- Requirements gathering and analysis for selecting tool
- Separate modules individually

Phase – II

- Design UI
- Develop programs module level, test and debug individually

Phase – III

- Integrate the modules and show the demo in a team
- Test the app with the users, improve accordingly and conclude the results
- Document the above process as a report

EVALUATION PATTERN

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

C1 – Average of weekly presentation marks

C2 – Final result, Report and Presentation

C3- Non Scholastic

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level(According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Analyze. Plan and Design a software system	K2,K3	PSO1& PSO2	PO1
CO 2	Apply Project Management, Requirement analysis and other Software engineering concepts	K2,K3	PSO3	PO2
CO 3	Exhibit the skill of documenting	K2,K3	PSO4	PO3
CO 4	Simulate and test the project with real-time data.	K2,K4	PSO6	PO4
CO 5	Acquire presentation skills	K2,K3	PSO5	PO2

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**3**	2	1	1	1
CO2	2	1	**3**	1	2	2
CO3	1	2	2	2	**3**	2
CO4	1	1	1	1	2	**3**
CO5	2	2	1	2	**3**	2

Mapping of C0s with POs

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

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

COURSE DESIGNER:
Dr. G.Germine Mary

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HOD'S Signature& Name

III B.Sc. Computer Science

SEMESTER –VI

For those who joined in 2018 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B6CC12	J2EE Programming	Major Core	5	5

COURSE DESCRIPTION

J2ee Programming course provides programming experience with Advanced Java Concepts like RMI, Servlet, JDBC, JSP and JMS

COURSE OBJECTIVES

- To Understand J2EE as an architecture and platform for building and deploying web-based, n-tier enterprise applications
- To Understand the concept of Servlet and JSP as dynamic content generation technologies (Web-Server & support Technologies)
- To Understand RMI as Distributed-Objects Technology
- To Understand the use of Java Messaging Service
- To Acquire knowledge on how various J2EE technologies are used together to build enterprise applications

SYLLABUS

UNIT I: JAVA AND THE J2EE PLATFORM (15 Hrs)

Reviewing a brief history of Java – Understanding J2SE – Examining the Origin of (J2EE) – Working with the model-View Controller –Understanding J2EEAPIs – Discovering What's New in J2EE 1.4, Introducing Application Servers: - Implementing the J2EE Platform – Understanding the features of an Application Server - Examining Full J2EE Implementations – Examining partial J2EE Implementations.

UNIT II: RMI AND SERVLET PROGRAMMING (15 Hrs)

Providing an Overview of RMI – developing Applications with RMI – Pushing data from the RMI Server – RMI over Inter-ORB Protocol (IIOP). Creating a magazine Publisher Application Using Servlets – Using Servlet Context – Performing URlReDirection – Examining the web.xml Deployment Descriptor.

UNIT III: JSP (15 Hrs)

Introducing JSP – Examining MVC and JSP - JSP Scripting Elements and Directives –Working with Variable Scopes – Error pages – Using java Beans – Designing an online Store with JSP – Simple programs using JSP. Using JSP Tag Extensions– Why use Tag Extensions- Explaining custom tag concepts – Explaining taglib mapping – Understanding Tag Handlers – Exploring Dynamic Attributes.

UNIT IV: JDBC (15 Hrs)

Java Database Connectivity: Introducing JDBC Driver Types - Creating Your First First JDBC Program – Performing Batch Updates – Using Save points -

Configuring the JDBC-ODBC Bridge- Explaining Database Connection pools and data sources - Revisiting DBProcessor-Using the RowSet Interface.

UNIT V : JMS (15 Hrs)

Explaining Messaging – Introducing JMS – Examining Messaging Models – Understanding the major JMS Components – Configuring JMS- Explaining Reliable Messaging.

SELF STUDY :

Introducing Application Servers: - Implementing the J2EE Platform – Understanding the features of an Application Server - Examining Full J2EE Implementations – Examining partial J2EE Implementations

TEXT BOOK

J2EE 1.4 Bible, James McGovern, Rahim Adatia and others, 1st Edition, Wiley India (P) Ltd, Reprint 2008. Chapters: 1, 3 - 7, 9, 18

REFERENCE BOOKS

1. ***The J2EE Tutorial***, Stephanie Bodoff, Eric Armstrong and others, Pearson Education, 2nd Edition, 2004.
2. ***J2EE : The Complete Reference***, Jim Keogh, Tata McGraw-Hill Publishing Company Limited , New Delhi, 1st Edition, 18th Reprint 2008.
3.

COURSE CONTENTS & TEACHING/LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I: JAVA AND THE J2EE PLATFORM [15 Hrs]				
1.1	Reviewing a brief history of Java – Understanding J2SE – Examining the Origin of (J2EE) – Working with the model-View Controller –.	4	Chalk & Talk	Black Board, Computer & LCD Projector
1.2	Understanding J2EEAPIs – Discovering What's New in J2EE 1.4,	4	Lecture	Black Board, Computer & LCD Projector
1.3	Introducing Application Servers: - Implementing the J2EE Platform – Understanding the features of an Application Server -	4	Lecture	Black Board, Computer & LCD Projector
1.4	Examining Full J2EE Implementations – Examining partial J2EE Implementation	3	Lecture	Black Board, Computer & LCD Projector
UNIT II: RMI AND SERVLET PROGRAMMING [15 Hrs]				
2.1	Providing an Overview of RMI – developing Applications with RMI – Pushing data from the RMI Server – RMI over Inter-ORB Protocol (IIOP).	5	Chalk & Talk Participative Learning-making students try out programs and present using LCD	Black Board, Computer & LCD Projector
2.2	Creating a magazine Publisher Application Using Servlets – Using Servlet Context –.	5	Chalk and Talk, Problem Solving exercises, Interaction	Black Board, Computer & LCD Projector
2.3	Performing URlReDirection – Examining the web.xml Deployment Descriptor	5	Lecture, Explanation using sample program	Black Board, Computer & LCD Projector
UNIT III: JSP [15 Hrs]				

3.1	Introducing JSP – Examining MVC and JSP - JSP Scripting Elements and Directives –Working with Variable Scopes – Error pages –	5	Lecture, Programs explained by live demo-executing in the class	Black Board, Computer & LCD Projector
3.2	Using java Beans – Designing an online Store with JSP – Simple programs using JSP.	5	Chalk and Talk, Simple exercises, Interaction	Black Board, Computer & LCD Projector
3.3	Using JSP Tag Extensions– Why use Tag Extensions- Explaining custom tag concepts – Explaining taglib mapping – Understanding Tag Handlers – Exploring Dynamic Attributes.	5	Exercise given and discussed	Black Board, Computer & LCD Projector
UNIT IV: JDBC [15 Hrs]				
4.1	Java Database Connectivity: Introducing JDBC Driver Types - Creating Your First First JDBC Program – Performing Batch Updates –	4	Programs explained by live demo-executing in the class	Black Board, Computer & LCD Projector
4.2	Using Save points - Configuring the JDBC-ODBC Bridge- Explaining Database Connection	4	Chalk & Talk Lecture, Explanation using sample program	Black Board, Computer & LCD Projector
4.3	pools and data sources - Revisiting DBProcessor-	4	Lecture method, Program demonstration & discussion	Black Board, Computer & LCD Projector
4.4	Using the RowSet Interface.	3	Discussion	Black Board, Computer & LCD Projector
UNIT V: JMS [15 Hrs]				

5.1	Explaining Messaging – Introducing JMS – Examining Messaging Models	5	Chalk & Talk	Black Board, Computer & LCD Projector
5.2	Understanding the major JMS Components .	5	Chalk & Talk	Black Board, Computer & LCD Projector
5.3	Configuring JMS- Explaining Reliable Messaging	5	Chalk & Talk	Black Board, Computer & LCD Projector

EVALUATION PATTERN

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 %**

- **All the course outcomes are to be assessed in the various CIA components.**
- **The levels of CIA Assessment based on Revised Bloom's Taxonomy for UG are :**

K1- Remember**,** **K2-**Understand**,** **K3-**Apply**,** **K4-**Analyse

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

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level(According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Explain J2EE Architecture and Standard Services used	K1/K2/K3	PSO1	PO2
CO 2	Develop Server side Java Applications using Servlet and JSP	K1/K2/K3	PSO2 &PSO3	PO1
CO 3	Create Remote methods and apply it in J2EE applications using RMI	K1/K2/K3	PSO4	PO1
CO 4	Design programs with Data Base Connectivity using JDBC	K1/K2/K4	PSO6	PO3
CO 5	Identify the type of Java Messaging Service	K1/K2/K3	PSO5	PO2

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	2	2	1	2	2
CO2	2	**3**	**3**	2	1	1
CO3	1	1	2	**3**	2	2
CO4	2	2	1	1	2	**3**
CO5	2	1	1	2	**3**	2

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

Mapping COs Consistency with POs

CO/ PSO	PO 1	PO 2	PO 3	PO 4
CO1	2	**3**	1	2
CO2	**3**	2	2	1
CO3	**3**	1	2	2
CO4	1	2	**3**	2
CO5	2	**3**	1	2

COURSE DESIGNER:
Dr. G.Germine Mary

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(Dr.G.Germine Mary)
HOD'S Signature & Name

III B.Sc. Computer Science

SEMESTER –VI

For those who joined in 2018 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B6CC13	Data Communications and Networking	Major Core	5	5

COURSE DESCRIPTION

This course aims to impart knowledge about the basics and the structure of data communicating systems and the various algorithms and protocols used to accomplish data transmission through internet.

COURSE OBJECTIVE/S

- To understand the basics of data communicating systems.
- To provide knowledge about the concepts of internet.
- To learn the various protocols used in the internet

SYLLABUS

UNIT I: INTRODUCTION (15 Hrs)

Data Communications – Networks – The Internet – Protocols and Standards – Layered Tasks - The OSI Model - Layers in the OSI Model – TCP/IP Protocol Suite – Addressing – Key Terms.

UNIT II: TRANSMISSION MEDIA (15 Hrs)

Guided Media – Unguided Media: Wireless – Circuit-Switched Networks – Datagram Networks – Virtual-Circuit Networks – Structure of a Switch.

UNIT III: DATA LINK LAYER (15 Hrs)

Introduction – Block Coding - Linear Block Codes – Cyclic Codes – Checksum - Framing - Flow and Error Control – Protocols – Noiseless Channels – Noisy Channels.

UNIT IV: NETWORK & TRANSPORT LAYER (15 Hrs)

IPv4 Addresses – IPv6 Addresses –Process-To-Process Delivery - User Datagram Protocol (UDP) - Transmission Control Protocol(TCP).

UNIT V: NETWORK SECURITY (15 Hrs)

Cryptography: Introduction – Symmetric-key Cryptography - Asymmetric-key Cryptography – Security Services – Message Confidentiality – Message Integrity – Message Authentication – Digital Signature – Entity Authentication.

SELF STUDY :

Unit I : Network Categories
Unit II : Unguided Media
Unit IV : IPV6 Addresses
Unit V : Digital Signature

TEXT BOOK

Data Communications and Networking, ***Behrouz A. Forouzhan***, Tata McGraw-Hill Publishing Company Limited, New Delhi, 4th Edition, 2015.
Chapters:1, 2, 7, 8, 10, 11.1 – 11.5, 19, 23.1 – 23.3, 30, 31

REFERENCE BOOKS

1. ***Computer Networks***, ***Andrew S. Tanenbaum***, 3rd Edition, Prentice-Hall India Ltd, New Delhi, 2003.
2. ***Data and Computer Communication***, ***William E. Stallings***,7th Edition, Prentice-Hall India Ltd, New Delhi, 2007.
3. ***Data Communications and Networking***, ***Behrouz A. Forouzhan***, Tata McGraw-Hill Publishing Company Limited, New Delhi, 5th Edition, 2012.

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT-I INTRODUCTION				
1.1	Data Communications – Networks – The Internet – Protocols and Standards –	5	Chalk & Talk	Black Board
1.2	Layered Tasks - The OSI Model - Layers in the OSI Model –	5	Lecture	Smart Board
1.3	TCP/IP Protocol Suite – Addressing – Key Terms.	5	Lecture	Smart Board
UNIT II: TRANSMISSION MEDIA				
2.1	Guided Media – Unguided Media:–	5	Chalk & Talk	Black Board
2.2	Wireless – Circuit-Switched Networks	5	Chalk & Talk	Black Board
2.3	Datagram Networks – Virtual-Circuit Networks – Structure of a Switch.	5	Discussion	Google classroom
UNIT III: DATA LINK LAYER				
3.1	Introduction – Block Coding - Linear Block Codes – Cyclic Codes –	5	Chalk & Talk	Black Board
3.2	Checksum - Framing - Flow and	5	Chalk & Talk	Black Board
3.3	Error Control – Protocols – Noiseless Channels – Noisy Channels	5	Discussion	Google classroom
UNIT IV: NETWORK & TRANSPORT LAYER				
4.1	IPv4 Addresses – IPv6 Addresses –Process-To-Process Delivery -	5	Lecture	PPT & Smart Board
4.2	User Datagram Protocol (UDP) -	5	Chalk & Talk	Black Board
4.3	Transmission Control Protocol(TCP).	5	Lecture	PPT & Smart Board
UNIT V: NETWORK SECURITY				
5.1	Cryptography: Introduction – Symmetric-key Cryptography - Asymmetric-key Cryptography –.	5	Chalk & Talk	Black Board

5.2	Security Services – Message Confidentiality – Message Integrity – Message Authentication –	5	Chalk & Talk	Black Board
5.3	Digital Signature – Entity Authentication	5	Chalk & Talk	Black Board

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy for UG are :**
- **K1**- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

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

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level(According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Explain the structure of internet according to OSI model	K1	PSO1& PSO2	PO2
CO 2	Analyse the capacity, efficiency and the usage of different transmission medium	K1,K2	PSO3	PO1
CO 3	Outline the different switching techniques used for data transmission	K1,K2	PSO4	PO1
CO 4	Explain the various error and flow control algorithms used for effective communication	K1,K2	PSO4	PO3
CO 5	Outline the various addressing used for communication between source and destination through internet	K1,K2	PSO6	PO2
CO6	Compare the format of data transmission using TCP and UDP protocols	K2	PSO4	PO1
CO7	Explain the standard algorithms used for data security	K2,K4	PSO5	PO4

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**3**	2	2	1	2
CO2	2	1	**3**	2	2	2
CO3	2	2	1	**3**	1	2
CO4	2	2	2	**3**	1	1
CO5	2	1	2	1	2	**3**
CO6	2	2	1	**3**	2	1
CO7	2	2	2	1	**3**	1

Note: ♦ Strongly Correlated – **3**
♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

Mapping COs Consistency with POs

CO/ PSO	PO 1	PO 2	PO 3	PO 4
CO1	2	**3**	1	2
CO2	**3**	2	2	1
CO3	**3**	1	2	2
CO4	1	2	**3**	2
CO5	2	**3**	1	2
CO6	**3**	2	2	1
CO7	2	2	2	**3**

COURSE DESIGNER:
Dr. K.RosemaryEuphrasia

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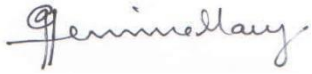

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III B.Sc. Computer Science

SEMESTER –VI

For those who joined in 2018 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B6CC14	LAB VI-J2EE Programming	Major Core	6	3

COURSE DESCRIPTION

J2ee Programming course provides programming skill to write programs using Advanced Java Concepts like RMI, Servlet, JDBC, JSP and JMS

COURSE OBJECTIVE

- To write Web based distributed enterprise Java Applications using RMI, JDBC, Servlets, JSP and JSM

SYLLABUS

List of Java Programs :

Programs to be written using the following concepts.

1. Network Programming using TCP/UDP & I/O streams
2. Simple Programs using Javabeans
3. RMI
4. JDBC
5. Java Servlets
6. JSP
7. JMS

EVALUATION PATTERN

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

C1 – Average of Two Model Tests

C2 – Average of daily program completion and Record work

C3 – Non Scholastic

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level(According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Write program for network chatting	K1/K2/K3	PSO1& PSO2	PO1
CO 2	Write programs to access Data Base using JDBC	K1/K2/K3/K4	PSO3	PO2
CO 3	Create remote methods in Remote Server and write Client program to access it	K1/K2/K3/K4	PSO4	PO3
CO 4	Develop Server side Java Applications using Servlet	K1/K2/K3/K4	PSO6	PO4
CO 5	Develop Server side Java Applications using JSP	K1/K2/K4	PSO5	PO5

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**1**	1	2	2	2
CO2	2	2	**3**	2	2	2
CO3	1	1	**3**	**2**	1	1
CO4	2	2	2	1	3	**2**
CO5	2	2	1	1	**3**	1

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

Mapping COs Consistency with POs

CO/ PSO	PO 1	PO 2	PO 3	PO 4	PO 5
CO1	**3**	**1**	1	2	2
CO2	2	3	2	1	2
CO3	2	2	**3**	1	1
CO4	1	1	2	3	2
CO5	2	2	2	1	**3**

COURSE DESIGNER:

Dr.G.Germine Mary

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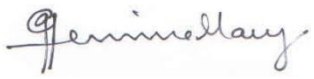

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III B.Sc. Computer Science

SEMESTER –VI

For those who joined in 2018 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	19B6PR2	Project – II (Outside)	Major Core	-	3

COURSE DESCRIPTION

Through Project students are offered Career Training and Experiential Learning.

COURSE OBJECTIVES

- To understand Software Development Process in real time Applications
- To Analyze, Plan, Design and Implement a Software System

SYLLABUS

PROJECT PLAN

- ❖ Facilitates experiential learning
- ❖ Students are offered career training as part of the curriculum through this Project.
- ❖ This project work motivates them and also gives insights about Software Development.
- ❖ Encouraged to do Real time projects.
- ❖ At the end of the semester the project is evaluated by conducting viva-voce with presentation of the report.

Phase – I

- Students get acceptance letter to do project in any IT company in and around Madurai
- Problem identification in various IT, Academical, Societal, Commercial and Environmental applications
- Requirements gathering and analysis for selecting tool
- Separate modules individually

Phase – II

- Design UI
- Develop programs module level, test and debug individually

Phase – III

- Integrate the modules and show individual DEMO
- Test the app with the users, improve accordingly and conclude the results
- Document the above process as a report

EVALUATION PATTERN

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

- **C1** – Average of weekly presentation marks

- **C2** – Final result, Report and Presentation
- **C3** – Non Scholastic

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level(According to Bloom's Taxonomy)	PSOs ADDRESSED
CO 1	Analyze. Plan and Design a software system	K1/K2/K3	PSO1& PSO2
CO 2	Apply Project Management, Requirement analysis and other Software engineering concepts	K1/K2/K3	PSO3
CO 3	Exhibit the skill of documenting	K1/K2/K3	PSO6
CO 4	Simulate and test the project with real-time data	K1/K2/K3	PSO4
CO 5	Acquire presentation skills	K1/K2/K3	PSO5

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**3**	1	2	2	2
CO2	2	2	**3**	2	1	1
CO3	1	1	2	2	2	**3**
CO4	2	2	1	**3**	1	2
CO5	2	1	1	1	**3**	2

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

COURSE DESIGNER:
Dr. G.Germine Mary

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I B.Sc. Computer Science

SEMESTER –II

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	19B2AC2	Computer System Architecture	ALLIED CORE	5	5

COURSE DESCRIPTION

This course aims to impart knowledge about internal architecture of a computer system and the techniques used to connect various input/output system with the computer.

COURSE OBJECTIVES

- To understand the organization and design of basic digital computer.
- To understand the procedure for implementing the arithmetic algorithm in digital hardware.
- To discuss the techniques that computers use to communicate with I/O devices and Memory.

SYLLABUS

UNIT I: BASIC COMPUTER ORGANIZATION AND DESIGN (15 Hrs)

Instruction Codes – Computer Registers – Computer Instructions – Timing and Control – Instruction Cycle – Memory-Reference Instructions – Input-Output and Interrupt - Complete Computer Description – Design of Basic Computer – Design of Accumulator Logic.

UNIT II: CENTRAL PROCESSING UNIT (15 Hrs)

Introduction – General Register Organization – Stack Organization – Instruction Formats - Addressing Modes – Data Transfer and Manipulation – Program Control

UNIT III: COMPUTER ARITHMETIC (15 Hrs)

Introduction – Addition and Subtraction - Multiplication Algorithms – Division Algorithms – Floating-point Arithmetic Operations

UNIT IV: INPUT-OUTPUT ORGANIZATION (15 Hrs)

Peripheral Devices – Input-Output Interfaces – Asynchronous Data Transfer – Modes of Transfer – priority Interrupt - Direct Memory Access (DMA)

UNIT V: MEMORY ORGANIZATION (15 Hrs)

Memory Hierarchy – Main Memory – Auxiliary memory – Associative Memory – Cache Memory – Virtual Memory – Memory Management Hardware

Self Study:

Unit-I: Complete Flow Chart of a basic computer system

Unit-II: Data Transfer and Manipulation Instructions

Unit-IV: Peripheral Devices

Unit-V: Auxiliary Memory

TEXT BOOK

Computer System Architecture, M.Morris Mano, Revised 3rdEdition, Pearson Publication , New Delhi, 2017. Chapters : 5, 8.1-8.7, 10.1-10.5, 11.1 – 11.6, 12

REFERENCE BOOKS

1. ***Computer Organization and Architecture,***Rajaraman.V and Radhakrishnan, 1st Edition,
Prentice Hall of India Private Limited, 2009

2. ***Computer Organization and Architecture*** – Designing for Performance, William Stallings,
5th Edition, Pearson Edition, 2010

3. ***Computer Organisation, V.CarlHamacher, Zvonko G.*** Uranesic.&SafwatZaky, 5thEdition, 2011

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
Unit -1				
1.1	Introduction- Instruction code- computer registers	2	Chalk & Talk	Black Board
1.2	Timing and control unit- instruction cycle	3	Chalk & Talk	Black Board
1.3	Memory & Register reference instructions	4	Chalk & Talk	Black Board
1.4	Input-Output instructions- computer design	4	Chalk & Talk	Black Board
1.5	Design of accumulator logic	2	Chalk & Talk	Black Board
Unit -2				
2.1	Introduction to CPU- General register organization – stack organization	4	Chalk & Talk	Black Board
2.2	Instruction formats, Addressing modes	3	Chalk & Talk	Black Board
2.3	Computer instructions: classification	3	Chalk & Talk	Black Board
2.4	Program control instructions	3	Chalk & Talk	Black Board
2.5	Interrupts	2	Chalk & Talk	Black Board
Unit -3				
3.1	Addition & subtraction algorithm	2	Chalk & Talk	Black Board
3.2	Fixed point & Booth Multiplication Division algorithm	4	Chalk & Talk	Black Board
3.3	Fixed point Division algorithm	3	Chalk & Talk	Black Board
3.4	Floating point : Addition & subtraction algorithm	3	Chalk & Talk	Black Board
3.5	Floating point: Multiplication & Division algorithm	3	Chalk & Talk	Black Board
Unit -4				
4.1	Peripheral devices	2	Chalk & Talk	Black Board
4.2	I/O interface	3	Chalk & Talk	Black Board
4.3	Asynchronous data transfer	3	Chalk & Talk	Black Board

4.4	Modes of data transfer-Programmed I/O	3	Chalk & Talk	Black Board
4.5	Interrupt I/O, DMA data transfer	4	Chalk & Talk	Black Board
Unit – 5				
5.1	Memory Hierarchy, main memory	3	Chalk & Talk	Black Board
5.2	Auxiliary memory, Associative memory	4	Chalk & Talk	Black Board
5.3	Cache memory	3	Chalk & Talk	Black Board
5.4	Virtual memory	3	Chalk & Talk	Black Board
5.5	Memory management hardware	2	Chalk & Talk	Black Board

EVALUATION PATTERN

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 %**

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

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy for I UG are :**
  - **K1-** Remember**,** **K2-**Understand**,** **K3-**Apply**,** **K4-**Analyse

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

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)	PSOs ADDRESED	POs ADDRESED
CO 1	Outline the structure of a basic computer system and explain the role of functional units	K1	PSO1	PO1
CO 2	Explain the instruction cycle according to the type and addressing mode of the instruction	K1,K2	PSO3	PO1
CO 3	Design the control logic circuit for various digital circuits such as registers, memory and adder - logic circuit of a basic computer system	K2,K3	PSO2 & PSO5	PO2
CO 4	Identify the memory requirement of a CPU, select the memory chips and design a mapping circuit	K1,K2	PSO4	PO4
CO 5	Explain the structure and the usage of various interfacing devices needed for connecting peripheral devices with the CPU	K1,K4	PSO5	PO3

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO1	**3**	2	2	2	2	2	1
CO2	2	2	**3**	2	2	2	1
CO3	2	**3**	2	2	**3**	2	1
CO4	2	2	2	**3**	2	2	1
CO5	2	2	2	2	**3**	2	1

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

Mapping COs Consistency with POs

CO/ PSO	PO 1	PO 2	PO 3	PO 4
CO1	**3**	2	2	1
CO2	**3**	2	2	1
CO3	2	**3**	2	1
CO4	2	2	2	**3**
CO5	2	**3**	2	1

COURSE DESIGNER:

Dr.K.Rosemary Euphrasia

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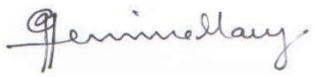

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HOD'S Signature & Name

III B.Sc. Computer Science

SEMESTER –V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B5ME1	Software Engineering	Major Elective	5	5

COURSE DESCRIPTION

This course covers the fundamentals of software engineering, including understanding and analyzing system requirements, finding appropriate engineering compromises. And also explains how to apply effective methods of design, coding and testing for software development.

COURSE OBJECTIVES

- To orient towards becoming best programmers
- To understand several SDLC models for software development that can be consistent to produce high quality software at low cost
- To obtain knowledge about the improvement in design specification and software testing

SYLLABUS

UNIT I : INTRODUCTION TO SOFTWARE ENGINEERING (15 Hrs)

Some Definitions – Some Size Factors – Quality and Productivity Factors – Managerial Issues. Defining the Problem – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure – Other Planning Activities.

UNIT II : SOFTWARE COST ESTIMATION (15 Hrs)

Software Cost Factors – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Maintenance Costs.

UNIT III : SOFTWARE REQUIREMENTS DEFINITION (15 Hrs)

Software Requirements Definition: The Software Requirements Specification – Formal Specification Techniques.

UNIT IV : SOFTWARE DESIGN AND IMPLEMENTATION (15 Hrs)

Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real-Time and Distributed System Design – Test

Plans. Implementation Issues: Structured Coding Techniques – Coding Style.

UNIT V: VERIFICATION AND VALIDATION TECHNIQUES & SOFTWARE MAINTENANCE (15 Hrs)

Quality Assurance – Walkthroughs and Inspections – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing. Software Maintenance – Enhancing Maintainability During development – Managerial aspects of Software maintenance – Configuration management – Source-code metrics – Other maintenance tools and techniques

SELF STUDY:

UNIT IV: Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations

TEXT BOOK

1. ***Software Engineering,*** Richard Fairley, Tata Mc-Graw Hill Publication, Reprint 2012.
Chapters: 1.1 - 1.4, 2.1 - 2.5, 3.1 - 3.4,4.1 - 4.2, 5.1 - 5.7, 6.1 - 6.2, 8.1 - 8.6, 9.1 - 9.5

REFERENCES:

1. ***Software Engineering,*** Ian Somerville, 10th Edition, Pearson publications, 2016.
2. ***Software Engineering: A Practitioner's Approach,*** Roger S. Pressman, McGraw Hill publications, 2017.
3. ***Software Engineering,*** 7th Edition, Stephen R.Schach, Tata McGraw Hill Education Private Limited, 2017.

DOER:

https://www.javatpoint.com/software-engineering-tutorial

https://www.tutorialspoint.com/software_engineering/index.html

https://www.guru99.com/software-engineering-tutorial.html

COURSE CONTENTS & TEACHING/LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I : [15 HRS]				
1.1	Some Definitions – Some Size Factors – Quality and Productivity Factors – Managerial Issues.	5	Lecture	PPT &Smart Board
1.2	Defining the Problem – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure –	5	Chalk & Talk Lecture	Black Board
1.3	Other Planning Activities.	5	Chalk & Talk Lecture	Black Board
UNIT II : [15 HRS]				
2.1	Software Cost Factors – Software Cost Estimation Techniques –	5	Lecture	PPT &Smart Board
2.2	Staffing-Level Estimation –	5	Chalk & Talk Lecture	Black Board
2.3	Estimating Software Maintenance Costs.	5	Chalk & Talk Lecture	Black Board
UNIT III : [15 HRS]				
3.1	Software Requirements Definition:	5	Lecture	PPT &Smart Board
3.2	The Software Requirements Specification	5	Lecture	PPT &Smart Board
3.3	– Formal Specification Techniques.	3	Chalk & Talk Lecture	Black Board
UNIT IV : [15 HRS]				
4.1	Fundamental Design Concepts – Modules and Modularization Criteria –	4	Lecture	PPT &Smart Board
4.2	Design Notations – Design Techniques – Detailed Design Considerations –	4	Chalk & Talk Lecture	Black Board
4.3	Real-Time and Distributed System Design – Test Plans.	4	Chalk & Talk Lecture	Black Board

4.4	Implementation Issues: Structured Coding Techniques – Coding Style.	3	Chalk & Talk Lecture	Black Board
UNIT V : [15 HRS]				
5.1	Quality Assurance – Walkthroughs and Inspections – Static Analysis – Symbolic Execution –	3	Lecture	PPT &Smart Board
5.2	Unit Testing and Debugging – System Testing. Software Maintenance – Enhancing Maintainability During development – Managerial aspects of Software	3	Lecture	PPT &Smart Board
5.3	maintenance – Configuration management – Source-code metrics –	3	Chalk & Talk Lecture	Black Board
5.4	Other maintenance tools and techniques	3	Chalk & Talk Lecture	Black Board

EVALUATION PATTERN

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 %**

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

The levels of CIA Assessment based on Revised Bloom's Taxonomy for I UG are :

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

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

COURSE OUTCOMES (CO)

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	POs ADDRESSED
CO 1	Explain the basic concepts and techniques	K1 & K2	PSO1& PSO2	PO2
CO 2	Plan for building efficient and reliable software	K3	PSO2	PO1& PO2
CO 3	Analyze the challenges of small to large scale software development	K3 & K4	PSO4	PO2
CO 4	Identify suitable model for various kind of projects	K2 & K3	PSO6	PO3
CO 5	Explain the concept of time management, managerial and technical skill required by human resources	K2 & K3	PSO5	PO4

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	3	3	2	1	2	1
CO2	2	3	2	2	1	1
CO3	2	2	1	3	2	2
CO4	2	2	1	2	2	3
CO5	1	1	2	2	3	2

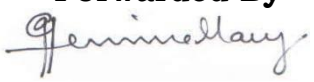
Mapping COs Consistency with POs

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

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

COURSE DESIGNER:
Ms.N.Muthulakshmi

Forwarded By



(Dr.G.Germine Mary)
HOD'S Signature & Name

III B.Sc. Computer Science

SEMESTER –V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B5ME2	Python Programming	Major Elective	5	5

COURSE DESCRIPTION

Python is an interpreted, high-level, general-purpose programming language. it provides constructs that enable clear programming on both small and large scales.

COURSE OBJECTIVES

OBJECTIVES :

- To understand why python is a useful scripting language for developers.
- To learn how to design and program python applications.
- To learn how to use lists, tuples, and dictionaries in python programs

UNITS

UNIT I: BASIC OF PYTHON PROGRAMMING (15 HRS)

Features of Python-History of Python-The Future of Python-Writing and Executing First Python Program-Literal Constants-Variables and Identifiers-Data Types- Input Operation-Comments-Reserved Words-Indentation- Operation and Expressions-Expression in Python –Operations on Strings-Other Data Types-Type Conversion.

UNIT II: DECISION CONTROL STATEMENTS (15 HRS)

Introduction to Decision Control Statements-Selection /Conditional Branching Statements-Basic Loop Structure /Iterative Statements-Nested Loops-The Break Statement-The Continue Statement-The Pass Statement-The Else Statement used with Loops. Functions and Modules: Introduction –Function Declaration and Definition-Function Call-Variables Scope and Lifetime-The Return Statement-More On Defining Function-Lambda Functions or Anonymous Functions-Documentation Strings.

UNIT III: PYTHON STRINGS REVISITED (15 HRS)

Concatenating ,Appending ,and Multiplying Strings-String Formatting Operator-Build in String Methods and Functions-Slice Operation-Ord()and Chr() Function-Comparing String-Iteration String –The String Module-Regular Expressions-Metacharacters in Regular Expression. File Handling: File Path-Types of Files-Opening and

Closing Files-Reading and Writing Files-File Positions-Renaming and Deleting Files-Directory Methods.

UNIT IV: DATA STRUCTURES (15 HRS)

Sequence-Lists-Functional Programming-Tuple-Sets-Dictionaries Classes and Objects:Classes and Objects-Class Methods and Self Arguments,Constructer-Class Variables and Object Variables-Other Special Methods-Public and Private Data Members-Private Methods-Built in Function-Built in Class Attributes-Garbage Collection-Class Methods-Static Methods

UNIT V: INHERITANCE (15 HRS)

Inheriting Classes in Python-Types of Inheritance-Composition-Abstract Classes and Interfaces-Metaclass. Operator overloading: Introduction-Implementing Operator Overloading-Reverse Adding-Overriding –Getitem-(),Setitem-(),Methods-Overriding the in Operator-Overloading Miscellaneous Function-Overriding the –Call-() Method. Error and Exception Handling: Introduction to Errors and Exceptions-Handling Exceptions-Multiple Except Blocks-Multiple Exceptions in A Single Block-Except Block without Exception –The else Clause-Raising Exception-Instantiating Exceptions-Handling Exception in Invoked Functions.

DYNAMISM :(For CIA Only) (

UNIT II: DECISION CONTROL STATEMENTS

Introduction to Decision Control Statements-Selection /Conditional Branching Statements-Basic Loop Structure /Iterative Statements-Nested Loops-The Break Statement-The Continue Statement-The Pass Statement-The Else Statement used with Loops.

TEXT BOOK:

1. ***Python Programming using Problem Solving Approach,*** ReemaThareja,Published By Oxford Higher Education, 2017.

REFERENCES:

1. ***Problem Solving and Python Programming,*** S.A. Kulkarni, Published By Yesdee,2017
2. ***Python for Software Design How to Think Like a computer scientist***, Allen B.Downey Cambridge University Press,2018
3. ***Introduction to Programming using Python*** **,**Y.DanielLiang,Published By Pearson,2018.

COURSE CONTENTS &LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I : [15 HRS]				
1.1	Features of Python-History of Python-The Future of Python-Writing and Executing First Python Program-Literal Constants-Variables and Identifiers-	5	Lecture	PPT &Smart Board
1.2	Data Types- Input Operation-Comments-Reserved Words-Indentation-	5	Chalk & Talk Lecture	Black Board
1.3	Operation and Expressions-Expression in Python –Operations on Strings-Other Data Types-Type Conversion.	5	Chalk & Talk Lecture	Black Board
UNIT II : [15 HRS]				
2.1	Introduction to Decision Control Statements-Selection /Conditional Branching Statements-Basic Loop Structure /Iterative Statements-Nested Loops-	5	Lecture	PPT &Smart Board
2.2	The Break Statement-The Continue Statement-The Pass Statement-The Else Statement used with Loops. Functions and Modules:.	5	Chalk & Talk Lecture	Black Board
2.3	Introduction –Function Declaration and Definition-Function Call-Variables Scope and Lifetime-The Return Statement-More On Defining Function-Lambda Functions or Anonymous Functions-Documentation Strings	5	Chalk & Talk Lecture	Black Board
UNIT III : [15 HRS]				
3.1	Concatenating ,Appending ,and Multiplying Strings-String Formatting Operator-Build in String Methods and Functions-Slice Operation-Ord()and Chr() Function-Comparing String-Iteration String –	5	Lecture	PPT &Smart Board
3.2	The String Module-Regular Expressions-Metacharacters in Regular Expression.	5	Lecture	PPT &Smart Board

3.3	File Handling: File Path-Types of Files-Opening and Closing Files-Reading and Writing Files-File Positions-Renaming and Deleting Files-Directory Methods	5	Chalk & Talk Lecture	Black Board
UNIT IV : [15 HRS]				
4.1	Sequence-Lists-Functional Programming-Tuple-Sets-Dictionaries Classes and Objects:Classes and Objects-Class Methods and Self Arguments,	5	Lecture	PPT &Smart Board
4.2	Constructer-Class Variables and Object Variables-Other Special Methods-Public and Private Data Members-Private Methods-	5	Chalk & Talk Lecture	Black Board
4.3	Built in Function-Built in Class Attributes-Garbage Collection-Class Methods-Static Methods	5	Chalk & Talk Lecture	Black Board
UNIT V : [15 HRS]				
5.1	Inheriting Classes in Python-Types of Inheritance-Composition-Abstract Classes and Interfaces-Metaclass.	5	Lecture	PPT &Smart Board
5.2	Operator overloading: Introduction-Implementing Operator Overloading-Reverse Adding-Overriding –Getitem-(),Setitem-(),Methods-Overriding the in Operator-Overloading	5	Lecture	PPT &Smart Board
5.3	Miscellaneous Function-Overriding the –Call-() Method. Error and Exception Handling: Introduction to Errors and Exceptions-Handling Exceptions-Multiple Except Blocks-Multiple Exceptions in A Single Block-Except Block without Exception –The else Clause- Raising Exception-Instantiating Exceptions-Handling Exception in Invoked Functions	5	Chalk & Talk Lecture	Black Board

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

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

COURSE OUTCOMES (CO)

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	POs ADDRESSED
CO 1	Understand python is a useful scripting language for developers.	K1	PSO1& PSO2	PO1
CO 2	Apply lists, tuples, and dictionaries in python programs	K2 & K3	PSO3	PO1
CO 3	Identify the structure and components of a python program.	K1 & K3	PSO4	PO2
CO 4	Analyze the design philosophy that emphasizes code readability, notably using significant whitespace.	K1, K2, K3	PSO5	PO2 & PO3
CO 5	Discuss the object orienting style or techniques of programming that encapsulates code within objects	K2 & K4	PSO6	PO4

Mapping COs Consistency with PSOs

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

Mapping COs Consistency with POs

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

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

COURSE DESIGNER:
Dr.P.Meenakshi Sundari

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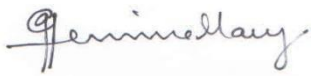

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HOD'S Signature& Name

III B.Sc. Computer Science

SEMESTER –V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B5ME3	Data Mining and Data Warehousing	Major Elective	5	5

COURSE DESCRIPTION

Data Mining and Data Warehousing course contains fundamental concepts of Data Mining and data pre-processing,Classification and Clustering algorithms and Data Warehousing concepts.

COURSE OBJECTIVES

- To understand the data pre-processing concepts
- To learn about Association Rule Mining, Mining Frequent Patterns and Classification.
- To understand Cluster Analysis
- To learn about data warehouse

SYLLABUS

UNIT I: INTRODUCTION (15 Hrs)

Introduction to Data Mining - its importance — Data Mining on what kind of Data- Data Mining Functionalities-What Kinds of Patterns Can Be Mined – Are All of the Patterns Interesting – Classification of Data Mining Systems – Data Mining Task Primitives.

UNIT II: DATA PREPROCESSING AND DATA WAREHOUSING (15 Hrs)

Need to Pre-process the Data - Descriptive Data Summarization – Data Cleaning – Data Integration and Transformation – Data Reduction. Data Warehouse and OLAP Technology : An Overview - What is a Data Warehouse – A Multidimensional Data Model – Data Warehouse Architecture.

UNIT III: MINING FREQUENT PATTERNS (15 Hrs)

Basic Concepts and Road Map - Efficient and Scalable Frequent Itemset Mining Methods: The Apriori Algorithm : Finding Frequent Itemsets Using Candidate Generation- Generating Association Rules from Frequent Itemsets- Improving the Efficiency of Apriori – Mining Frequent Itemsets without Candidate Generation- Mining Frequent

Itemsets Using Vertical Data Format – Mining Closed Frequent Itemsets.

UNIT IV : CLASSIFICATION (15 Hrs)

Classification - Prediction – Issues Regarding Classification and Prediction – Classification by Decision Tree Induction – Bayesian Classification – Rule-Based Classification.

UNIT V: CLUSTER ANALYSIS (15 Hrs)

What is Cluster Analysis – Types of Data in Cluster Analysis – A Categorization of Major Clustering Methods – Partitioning Methods – Hierarchical Methods.

SELF STUDY:

UNIT II: Data Integration and Transformation – Data Reduction. Data Warehouse and OLAP Technology

UNIT IV: Issues Regarding Classification and Prediction

TEXT BOOK :

Data Mining Concepts and Techniques, Jiawei Han and Micheline Kamber, 2nd Edition, Morgan Kaufmann Publishers An Imprint of Elsevier, 2009.

Chapters: 1.1 -1.7, 2.1- 2.5, 3.1- 3.3, 5.1-5.2, 6.1 - 6.5, 7.1 – 7.5

REFERENCE BOOKS :

1. ***Data Mining & Data Warehousing***, Udit Agarwal, 1st Edition, S.K.Kataria& sons
Publication, 2016.
2. ***Data Warehousing: Concepts, Techniques, Products and Applications***, 3rd Edition, PHI
Learning, Delhi, 2012.
3. ***Data Mining: Concepts and Techniques***, Jiawei Han, Micheline Kamber, 3rd Edition,
Morgan Kauffmann Publishers, 2011.
4. Data Mining Techniques and Applications: An Introduction, Hongbo DLL, Cengage
Lmg Business Press, 2010.

Digital Open Educational Resources (DOER)

1. https://www.tutorialspoint.com/data_mining/index.htm
2. https://data-flair.training/blogs/data-mining-tutorial/
3. https://www.youtube.com/watch?v=PT_D0mgFr-o

COURSE CONTENTS & TEACHING/LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I: INTRODUCTION (15 Hrs)				
1.1	Language- Architectures- Concept Description: Preprocessing Cleaning- Integration- Transformation- Reduction-	4	Lecture	PPT &Smart Board
1.2	Discretization- Concept Hierarchy Generation.	4	Chalk & Talk Lecture	Black Board
1.3	Data Mining Primitives- Query Language- Graphical User InterfacesArchitectures	4z	Chalk & Talk Lecture	Black Board
1.4	Concept Description- Data Generalization- Characterizations-Class Comparisons- Descriptive Statistical Measures	3	Chalk & Talk Lecture	Black Board
UNIT II: DATA PREPROCESSING AND DATA WAREHOUSING (15 Hrs)				
2.1	Need to Pre-process the Data - Descriptive Data Summarization –	4	Lecture	PPT &Smart Board
2.2	Data Cleaning – Data Integration and Transformation – Data Reduction.	3	Chalk & Talk Lecture	Black Board
2.3	Data Warehouse and OLAP Technology : An Overview - What is a Data Warehouse –	4	Chalk & Talk Lecture	Black Board
2.4	A Multidimensional Data Model – Data Warehouse Architecture.	4	Chalk & Talk Lecture	Black Board
UNIT III: MINING FREQUENT PATTERNS (15 Hrs)				
3.1	Basic Concepts and Road Map - Efficient and Scalable Frequent Itemset Mining Methods: The Apriori Algorithm : Finding Frequent Itemsets Using Candidate Generation-	4	Lecture	PPT &Smart Board

3.2	Generating Association Rules from Frequent Itemsets- Improving the Efficiency of Apriori –	4	Lecture	PPT &Smart Board
	Mining Frequent Itemsets without Candidate Generation- Mining Frequent Itemsets Using Vertical Data Format –	4	Flipped Learning	Online/ E-Content/ Text Books /Materials
3.3	Mining Closed Frequent Itemsets	3	Chalk & Talk Lecture	Black Board
UNIT IV : CLASSIFICATION				**(15 Hrs)**
4.1	Classification - Prediction –	4	Lecture	PPT &Smart Board
4.2	Issues Regarding Classification and Prediction –.	4	Chalk & Talk Lecture	Black Board
4.3	Classification by Decision Tree Induction – Bayesian Classification	4	Chalk & Talk Lecture	Black Board
4.4	– Rule-Based Classification	3	Chalk & Talk Lecture	Black Board
UNIT V: CLUSTER ANALYSIS				**(15 Hrs)**
5.1	What is Cluster Analysis – Types of Data in Cluster Analysis	5	Lecture	PPT &Smart Board
5.2	A Categorization of Major Clustering Methods –	5	Lecture	PPT &Smart Board
5.3	Partitioning Methods – Hierarchical Methods.	5	Flipped Learning	Online/ E-Content/ Text Books /Materials

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

The levels of CIA Assessment based on Revised Bloom's Taxonomy are :

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

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

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level(According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Explain the data extraction and transformation techniques.	K1	PSO1	PO1
CO 2	List the association rule mining techniques and understand association mining to correlation analysis, constraint based association mining.	K1,K2	PSO2& PSO3	PO2
CO 3	Describe operational database, warehousing and multidimensional need of data base to meet industrial needs.	K2,K3	PSO4	PO3
CO 4	Explain the components of warehousing, classification methods and clustering analysis.	K3,K4	PSO5	PO3 & PO4
CO 5	Identify and discuss the Business analysis, query tools and application, OLAP etc	K4	PSO6	PO4

Mapping of C0s with PSOs

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

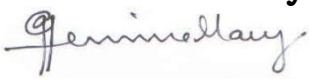
Mapping of C0s with POs

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

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

COURSE DESIGNER:
Dr. T.Vasantha

Forwarded By



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HOD'S Signature& Name

III B.Sc. Computer Science

SEMESTER –V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	19B5MEP1	Programming With C	Major Elective – Offered To Physics	5	5

COURSE DESCRIPTION

This course helps to provide the fundamental knowledge of a programming language and its features which enhances the user to write general purpose application programs.

COURSE OBJECTIVES

- To introduce and form a firm foundation in programming
- To stress the importance of clarity , simplicity and the efficiency in writing programs

UNITS

UNIT I : INTRODUCTION (15 Hrs)

Introduction to C Programming**:** The C character set – Identifiers and keywords - Data types – Constants – Variables and Arrays Declaration – Expressions – Statements – Symbolic Constants. Operators and Expressions**:** Arithmetic operators – Unary operators - Relational and logical operators – Assignment operators – The conditional operators – Library functions.

UNIT II : DATA INPUT AND OUTPUT (13 Hrs)

Data Input and Output:Preliminaries – Single character Input – The getchar function – Single character output – The putchar function – Entering Input data – The scanf function – more about the scanf function – The gets and puts function - interactive (Conversational) programming. Control Statements: Preliminaries. Branching if-else statement – Looping: The While Statement – More Looping the Do-While statement – Still more looping: the For statement- Nested Control Structures - The Switch statement- the Break statement – Continue statement - The comma operator – the Goto statement.

UNIT III: FUNCTIONS (13 Hrs)

Functions :A brief Overview – Defining a function – Accessing a function – Function prototypes - passing Arguments to a Function

UNIT IV: ARRAYS (13 Hrs)

Arrays:Defining an array – Processing an Array – Passing arrays to Functions - Multidimensional Arrays.*Pointers:* Fundamentals – Pointer

Declarations – operations on pointers.

UNIT V: STRUCTURES (13 Hrs)

Structures:Defining a structure – Processing a structure. Data Files:Why files **-** Opening and closing a data file – Reading and writing a data file - Processing a data file.

UNIT VI DYNAMISM (For CIA Only) : (8 Hrs)

Unit I: Library functions

Unit II: more about the scanf function - more about the printf() function - the Break statement – Continue statement - The comma operator – the Goto statement

TEXT BOOK

Programming with C, Byron S Gottfried &Jitender Kumar Chhabra, 3rd Edition, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2014.
Chapters: 2 - 4, 6, 7.1 – 7.5, 9, 11.1 - 11.2, 11.6, 12.1 - 12.2, 13.1 - 13.4

REFERENCES:

1. ***Programming in ANSI C***, E. Balagurusamy, 2nd Edition, Tata McGrawHill Publishing company Ltd, New Delhi, 2004.
2. ***Let Us C***, Yashwant P. Kanetkar, 8th Edition, BPB Publications, New Delhi, 2007.
3. ***C Programming Language***, B. W. Kernighan & D. M. Ritchie, Prantice Hall Publications, 2nd Edition, 2011.

DIGITAL OPEN EDUCATIONAL RESOURCES (DOER)

https://www.toptal.com/c/the-ultimate-list-of-resources-to-learn-c-and-c-plus-plus

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
	Unit -1 HEADING			
1.1	C character set- Identifiers - Key words – Data types	3	Chalk & Talk	Black Board& PPT
1.2	Constants and Variables – Declarations – Expressions – statements – Symbolic constants	3	Chalk & Talk	Black Board
1.3	Arithmetic Operators – Unary operators	3	Chalk & Talk Demonstration	Black Board & LCD

1.4	Relational and Logical operators	3	Chalk & Talk Demonstration	Black Board & LCD
1.5	Assignment and conditional operators, Library functions	3	Chalk & Talk Demonstration	Black Board & LCD
Unit -2				
2.1	Data Input functions	3	Chalk & Talk	Black Board
2.2	Data Output functions	3	Chalk & Talk	Black Board
2.3	If-else statement	3	Chalk & Talk	Black Board
2.4	Looping statements : while, do-while, for statements	3	Chalk & Talk Demonstration	Black Board& LCD
2.5	Switch, Break, Continue &goto statements	3	Chalk & Talk	Black Board
Unit -3				
3.1	Defining a function, function prototype	3	Chalk & Talk	Black Board
3.2	Accessing a function & Passing arguments	3	Chalk & Talk	Black Board
3.3	Recursive function	3	Chalk & Talk	Black Board
3.4	Storage class, Automatic variables	3	Chalk & Talk	Black Board
3.5	External & static variables	3	Chalk & Talk	Black Board
Unit -4				
4.1	Array Introduction - Defining an array	3	Chalk & Talk	Black Board
4.2	Processing an array – Passing an array to a function	3	Chalk & Talk	Black Board
4.3	Multidimensional arrays	3	Chalk & Talk	Black Board
4.4	Defining a String - reading and writing a string	3	Chalk & Talk	Black Board
4.5	String processing – String array, String sorting	3	Chalk & Talk	Black Board
4.6	Character arithmetic, Character array processing	3	Chalk & Talk	Black Board
Unit – 5				

5.1	Defining a structure, Processing a structure	4	Chalk & Talk	PPT & White board
5.2	User defines data types – passing structure to functions	4	Chalk & Talk	PPT & White board
5.3	Introduction to files, Opening and closing a file	4	Chalk & Talk	Black Board
5.4	Reading and writing data file	3	Chalk & Talk Demonstration	Black Board& LCD
5.5	Unformatted data files	3	Chalk & Talk	Black Board

EVALUATION PATTERN

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 %**

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

✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember**,** **K2-**Understand**,** **K3-**Apply**,** **K4-**Analyse

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

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level(According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Explain the Fundamentals of C programming language.	K1	PSO1& PSO2	PO1
CO 2	Write Programs using Control Statements and Loop Structures.	K2	PSO4	PO1
CO 3	Describe the concept of Array and String Functions.	K3	PSO5	PO2
CO 4	Explain the concepts of structure and File.	K3	PSO3	PO3
CO 5	Demonstrate the concept of pointers and solve the problem using pointers	K3	PSO6	PO4

Mapping COs Consistency with PSOs

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

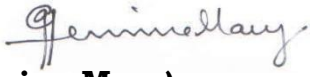
Mapping of C0s with POs

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

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

COURSE DESIGNER:
Dr. A.Vimala

Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature& Name

III B.Sc. Physics

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B5MEP2	WEB DEVELOPMENT	Major Elective – Offered To Physics	5	5

COURSE DESCRIPTION

This Course introduces basic web design using Hypertext Markup Language (HTML) and Cascading Style Sheets (CSS). And this course provides knowledge to plan and design effective web pages with different text formatting and images to create website.

COURSE OBJECTIVES

- To enhance the knowledge of the students in effective webpage designing.
- To provide skills to sharply focus on needed information to be presented in a website.
- To improve the quality of the students by giving strong base in fundamental and advanced concepts.
- To give courage to face the real-world scenarios as it is practical oriented
- To inculcate the ability to explain, analyze, identify and define the technology required to build and implement a web site.

UNITS

UNIT I: ESSENTIAL HTML (12 Hrs)

The history of HTML – HTML – Browser Wars – Creating a Web Page – Installing a Web Page – Viewing a Web Page – Checking Your Web Page.<!DOCTYPE> -<HTML> – Creating The structures of a Web page's: Head and Body – Setting Web Page Colors – Adding Text to a Web Page - basic Text formatting - <!..> Comments and server-Side includes - </Body>- </HTML>

UNIT II: WORKING WITH TEXT (12Hrs)

Formatting with HTML tags – Physical HTML styles – Logical HTML styles – Setting Fonts – Headings - some remove tags - Displaying Plain text - <H1> Through <H6>- Creating Web Page Headings - <B> - <I> - <TT> - <U> - <S> and <Strike> - <BIG> - -<SMALL> - <SUB> - <SUP> -<EM> - <Strong> - <CODE> - <SAMP> -<KBD> - <VAR> - <DFN> - <CITE> - <ABBR> - <Acronym> - <FONT> – setting font

point size directly- <BASEFONT> - <Q> - <Blink> - <INS> - <DEL> - <Address>- <BDO> – Displaying Special Characters: Character Entities

UNIT III: PRESENTING AND ARRANGING TEXT (12 Hrs)

Arranging text - Using <DIV> and <SPAN> - Using Layers – More Formatting Power – preformatting Text - Avoiding Plain text Wrapping -
 -<NOBR> - - <WBR> - <P> - <HR> - <CENTER><BlockQuote> - <PRE> - <MULTICOL> - <SPACER> - <MARQUEE> - <DIV> - <SPAN> - Formatting text with tables–- <Layer> - <NOLAYER> - <ILAYER> Positioning text with <DIV> - <Ruby>and <RT> Creating Ruby (Captioned) Text.

UNIT IV: CREATING LISTAND TABLES (14 Hrs)

Creating List - <LI> - <UL> - <OL>– Creating Customized Unordered lists - Creating Customized ordered lists - <DL>, <DT> and DD> - Creating Definition Lists – Nesting Lists - <DIR> and <Menu>- Deprecated Lists. The Parts of a table – Creating a Table – Adding Border – Padding Your Cells – Widening the cell spacing – Aligning your data Horizontally – Aligning your data vertically – Spanning Columns – Spanning Rows- Setting Colors.
<TABLE> - <TR>- <TH> - <TD> - <CAPTION> - setting table Border Widths – Setting Cell padding – Setting cell spacing – Setting table column and widths – Setting table Colors – Aligning table in Web Pages – Aligning Cell text – Using images in tables – Nesting tables - Spanning multiple columns - Spanning multiple rows - <THEAD>, <TBODY>, and <TFOOT> - Grouping and Formatting Rows – Formatting text with tables.

UNIT V: INTRODUCTION TO CSS (15 HRS)

CSS – External, Embedded and Inline Style sheets – CSS Selectors – CSS Properties (Font, Background, Border, Margin, Position, color) – CSS layout with tag

DYNAMISM (FOR CIA ONLY) (10Hrs)

UNIT II – Displaying special characters (2 hrs)
UNIT III – Attributes of Marquee tag, Creating Ruby text (2 hrs)
UNIT IV – Nested list creation (2hrs)
UNIT V – CSS Properties (4 hrs)

TEXT BOOK

1. HTML Black Book, Steven Holzner, Dreamtech Press, 2000
Chapters: 1, 2, 3, 5, 6,7

REFERENCE BOOKS

1. ***Mastering HTML, CSS &Javascript web Publishing,*** Laura Lemay, Rafe Colburn & Jennifer Kyrnin, BPB publications, 2016
2. ***HTML & CSS the complete reference,*** Thomas A Powell, 5th edition, McGrawHill, New Delhi, 2017.

3. **Official Website of Wordpress**

COURSE CONTENTS & LECTURE SCHEDULE				
Module No.	**Topic**	**No. of Lectures**	**Content Delivery Method**	**Teaching Aids**
Unit -1 ESSENTIAL HTML				
1.1	The history of HTML – HTML – Browser Wars – Creating a Web Page – Installing a Web Page – Viewing a Web Page – Checking Your Web Page	5	Chalk & Talk	Black Board
1.2	.<!DOCTYPE> -<HTML> – Creating The structures of a Web page's: Head and Body – Setting Web Page Colors	5	Chalk & Talk	Black Board
1.3	– Adding Text to a Web Page - basic Text formatting - <!..> Comments and server-Side includes - </Body>- </HTML>	5	Demonstration	LCD
UNIT II: WORKING WITH TEXT				
2.1	Formatting with HTML tags – Physical HTML styles – Logical HTML styles – Setting Fonts – Headings - some remove tags - Displaying Plain text - <H1> Through <H6>- Creating Web Page Headings - <B> -<I> - <TT> - <U> - <S> and <Strike> - <BIG> - -<SMALL> - <SUB> - <SUP> - <EM> - <Strong> - <CODE> -	7	Demonstration	LCD
2.2	<SAMP> -<KBD> - <VAR> - <DFN> - <CITE> - <ABBR> - <Acronym> - <FONT> – setting font point size directly- <BASEFONT> - <Q> - <Blink> - <INS> - <DEL> - <Address>- <BDO> – Displaying Special Characters: Character Entities.	8	Demonstration	LCD
UNIT III: PRESENTING AND ARRANGING TEXT				

3.1	Arranging text - Using <DIV> and <SPAN> - Using Layers – More Formatting Power – preformatting Text - Avoiding Plain text Wrapping - -<NOBR> - - <WBR> - <P> - <HR> - <CENTER><BlockQuote> - <PRE> - <MULTICOL> - <SPACER> - <MARQUEE> - <DIV> - <SPAN> - Formatting text with tables–-	8	PPT	LCD
3.2	<Layer> - <NOLAYER> - <ILAYER> Positioning text with <DIV> - <Ruby>and <RT> Creating Ruby (Captioned) Text.	7	Demonstration	LCD
UNIT IV: CREATING LISTAND TABLES				
4.1	Creating List - <LI> - <UL> - <OL>– Creating Customized Unordered lists - Creating Customized ordered lists - <DL>, <DT> and DD> - Creating Definition Lists – Nesting Lists - <DIR> and <Menu>- Deprecated Lists. The Parts of a table – Creating a Table – Adding Border – Padding Your Cells – Widening the cell spacing – Aligning your data Horizontally – Aligning your data vertically – Spanning Columns – Spanning Rows- Setting Colors.	8	Demonstration	LCD
4.2	<TABLE> - <TR>- <TH> - <TD> - <CAPTION> - setting table Border Widths – Setting Cell padding – Setting cell spacing – Setting table column and widths – Setting table Colors – Aligning table in Web Pages – Aligning Cell text – Using images in tables – Nesting tables - Spanning multiple columns - Spanning multiple rows - <THEAD>, <TBODY>, and <TFOOT> - Grouping and Formatting Rows – Formatting text with tables.	7	Demonstration	LCD
UNIT V: WORKING WITH FRAMES				

5.1	What are style sheets?-External style sheets - Internal style sheets - Inline styles- creating style classes- Background properties-	8	Demonstration	PPT &Smart Board
5.2	Position and block properties-Font properties-List properties-Text properties- Table properties.	7	Chalk & Talk Lecture	Black Board

EVALUATION PATTERN

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 %

CIA	
Scholastic	35

Non Scholastic	**5**
	40

✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

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

COURSE OUTCOMES (CO)

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

No.	**Course Outcome**	**Knowledge Level (According to Bloom's Taxonomy)**	**PSOs ADDRESSED**	**POs ADDRESSED**
CO 1	Create simple web page using physical tags	K1	PSO1	PO1
CO 2	Present the information in standard form in a web page using structure tags supported by the browsers	K2	PSO1	PO2
CO 3	Design the layout for a web page using browser support tags	K2&K3	PSO2& PSO4	PO2
CO 4	Develop a web site with Tables and list of items	K3	PSO3	PO3
CO 5	Website enhancement using CSS.	K2&K3	PSO5	PO4

Mapping COs Consistency with PSOs

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

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

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

Mapping of C0s with POs

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

COURSE DESIGNER:
Dr.K.RosemaryEuphrasia

Forwarded By

(Dr.G.Germine Mary)

HOD'S Signature& Name

III B.Sc. Computer Science

SEMESTER –VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B6ME4	Computer Graphics	Major Elective	5	5

COURSE DESCRIPTION

To provide comprehensive introduction about computer graphics system, design algorithms and two dimensional transformations.

COURSE OBJECTIVE/S

- To learn the basic principles of 2-dimensional computer graphics and the elementary mathematics techniques
- To focus on rendering of complex models by accurately drawing illustrations of complex objects with arbitrary camera and light sources.

UNITS

UNIT I: A Survey Of Computer Graphics & Attributes Of Output Primitives (15 Hrs)

Computer-Aided Design – Presentation Graphics – Computer Art – Entertainment – Education and Training – Visualization – Image Processing – Graphical User Interfaces – Line Attributes – Curve Attributes – Color and Grayscale Levels – Area Fill Attributes – Character Attributes - Bundled Attributes – Inquiry Functions – Anti-aliasing.

UNIT II : Output Primitives (15 Hrs)

Points and Lines – Line-Drawing Algorithms – Loading the Frame Buffer – Line Function – Circle-Generating Algorithms – Ellipse-Generating Algorithms – Pixel Addressing and Object Geometry - Filled-Area Primitives – Fill-Area Functions – Cell Array – Character Generation.

UNIT III :2D Geometric Transformations &3D Concepts (15 Hrs)

Basic Transformations – Matrix Representations – Composite Transformations - Other Transformations - Transformations between Coordinate Systems – Affine Transformations – Transformation Functions – Raster Methods for Transformations – Three-Dimensional Concepts – Three-Dimensional Display Methods – Three-Dimensional Graphics.

UNIT IV : Two-Dimensional Viewing (15 Hrs)

The Viewing Pipeline – Viewing Coordinate Reference Frame –

Window-to-View port Coordinate Transformation – Two Dimensional viewing Functions - Clipping Operations – Point Clipping – Line Clipping – Cohen-Sutherland Line Clipping – Polygon Clipping – Sutherland-Hodgeman Polygon Clipping - Curve Clipping – Text Clipping – Exterior Clipping.

UNIT V: Visible–Surface Detection Methods &Animation (15 Hrs)
Classification of Visible–Surface Detection Algorithms – Back–Face Detection – Depth Buffer Method – A- Buffer Method – Scan–Line Method – Design of Animation Sequences – General Computer–Animation Functions Raster Animations – Computer Animation languages – Key Frame Systems – Motion Specifications.

DYNAMISM: For CIA Only

UNIT I: Computer-Aided Design – Presentation Graphics – Computer Art – Entertainment – Education and Training – Visualization – Image Processing – Graphical User Interfaces

TEXT BOOK

Computer Graphics C Version, Donald Hearn & M. Pauline Baker, 2nd Edition, Pearson India Education
Services Private Limited, 2016.
Chapters : 1, 3.1 – 3.6, 3.10 - 3.14, 4, 5, 6, 9, 13.1-13.5, 16

REFERENCE BOOKS

1. ***Interactive Computer Graphics: A top-down approach with OpenGL***, Edward Angel and Dave Shreiner, 6th Edition, Addison Wesley, 2012.
2. ***Computer Graphics Principles and Practice***, Foley, Van Dam, Feiner, Hughes, 3rd Edition, C. Addison Wesley, 2014.

COURSE CONTENTS & TEACHING/LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT A Survey Of Computer Graphics & Attributes Of Output Primitives				
1.1	Computer-Aided Design – Presentation Graphics – Computer Art – Entertainment – Education and Training – Visualization –	4	Chalk & Talk	Black Board
1.2	Image Processing – Graphical User Interfaces – Line Attributes – Curve Attributes –	4	Lecture	Smart Board
1.3	Color and Grayscale Levels – Area Fill Attributes – Character Attributes - Bundled Attributes –	4	Lecture	Smart Board
1.4	Inquiry Functions – Anti-aliasing.	3	Lecture	Black Board
UNIT II: Output Primitives				

2.1	Points and Lines – Line-Drawing Algorithms –	5	Chalk & Talk	Black Board
2.2	Loading the Frame Buffer – Line Function – Circle-Generating Algorithms – Ellipse-Generating Algorithms –	5	Chalk & Talk	Black Board
2.3	Pixel Addressing and Object Geometry - Filled-Area Primitives – Fill-Area Functions –	5	Discussio n	Google classroom
	Cell Array – Character Generation.			
UNIT III: 2D Geometric Transformations &3D Concepts				
3.1	Basic Transformations – Matrix Representations – Composite Transformations - Other Transformations .	5	Chalk & Talk	Black Board
3.2	Transformations between Coordinate Systems – Affine Transformations – Transformation Functions – Raster Methods for Transformations	5	Chalk & Talk	Black Board
3.3	– Three-Dimensional Concepts – Three-Dimensional Display Methods – Three-Dimensional Graphics	5	Discussio n	Google classroom
UNIT IV: Two-Dimensional Viewing				
4.1	The Viewing Pipeline – Viewing Coordinate Reference Frame – Window-to-View port Coordinate	4	Lecture	PPT & Smart Board
4.2	Transformation – Two Dimensional viewing Functions -	4	Chalk & Talk	Black Board
4.3	Clipping Operations – Point Clipping – Line Clipping – Cohen-Sutherland Line Clipping – Polygon Clipping – Sutherland-Hodgeman Polygon Clipping - Curve Clipping –	4	Lecture	PPT & Smart Board
4.4	Text Clipping – Exterior Clipping.	3	Discussio n	Black Board
UNIT V: Visible–Surface Detection Methods &Animation				
5.1	Classification of Visible–Surface Detection Algorithms – Back–Face Detection – Depth Buffer Method – A- Buffer Method – Scan–Line Method –	5	Chalk & Talk	Black Board

5.2	Design of Animation Sequences – General Computer–Animation Functions Raster Animations – Computer Animation languages –	5	Chalk & Talk	Black Board
5.3	Key Frame Systems – Motion Specifications.	5	Chalk & Talk	Black Board

EVALUATION PATTERN

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 %**

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

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

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

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	POs ADDRESSED
CO 1	Identify the basic concepts used in computer graphics.	K1	PSO1& PSO2	PO1
CO 2	Analyze different output primitives.	K1& K2	PSO3	PO3
CO 3	Explain the techniques of transformations and three dimensional graphics with display methods.	K1 & K3	PSO5	PO1
CO 4	Discuss the importance of viewing and clipping.	K2& K3	PSO4	PO4
CO 5	Explain the fundamentals of animation and virtual reality	K4	PSO6	PO2

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	3	3	2	2	1	1
CO2	2	1	3	1	2	1
CO3	2	2	1	1	3	1
CO4	2	1	1	3	2	1
CO5	1	2	1	1	1	3

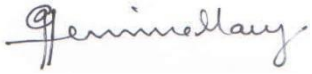
Mapping COs Consistency with POs

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

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

COURSE DESIGNER:
Dr. S.Arul Jothi

Forwarded By



(Dr.G.Germine Mary)
HOD'S Signature & Name

III B.Sc. Computer Science

SEMESTER –VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B6ME5	Software Testing	Major Elective	5	5

COURSE DESCRIPTION

To study fundamental concepts in software testing including software testing objectives, process, criteria, strategies, and methods.

COURSE OBJECTIVE/S

- To examine fundamental software testing and program analysis techniques.
- To understand the important phases of testing
- To emphasize the significance of each phase when testing different types of software.

UNITS

UNIT I : PRINCIPLES OF TESTING (15 Hrs)

Principles of Testing: Context of Testing in Producing Software – About this Chapter – The Complete Car – Dijkstra's Doctrine – A test In Time! – The Cast and Saint – Test the Tests First! – The Pesticide Paradox – The Convoy and the Rags – The Policemen on the Bridge- The Ends of the Pendulum – Men in Black – Automation Syndrome. *Software Development Life Cycle Models*: Phases of Software Project – Quality, Quality Assurance and Quality Control - Testing, Verification, and Validation – Process Model to Represent Different Phases – Life Cycle models.

UNIT II :WHITE BOX TESTING (15 Hrs)

White Box Testing: What is White Box Testing – Static Testing – Structural Testing – Challenges in White Box Testing.*Black Box Testing*: What is Black Box Testing- Why Black Box Testing – When to do Black Box Testing - How to do Black Box Testing – Conclusion.

UNIT III :INTEGRATION TESTING (15 Hrs)

*Integration Testing:*What is Integration Testing - Integration Testing as a Type of Testing – Integration Testing as a Phase of Testing – Scenario Testing – Defect Bash - Conclusion. *System and Acceptance Testing:*System Testing Overview – Why is System Testing Done – Functional Versus Non- Functional Testing – Functional System Testing – Non Functional Testing -Acceptance testing – Summary of

Testing Phases.

UNIT IV : PERFORMANCE TESTING (15 Hrs)

Performance Testing: Introduction – Factors Governing Performance testing – Methodology for Performance Testing- Tools for Performance Testing – Process for Performance Testing. *Regression Testing:* What is Regression Testing – Types of Regression Testing – When to Regression Testing – How to Regression Testing – Best Practices in Regression Testing.

UNIT V : TESTING TOOLS (15 Hrs)

WinRunner – Overview of WinRunner – Testing an application using WinRunner – Test Script Language – GUI Map File – Synchronization of Test Cases – Data Driven Testing – Rapid Test Script Wizard – Mapping Custom Object to a Standard Class - Checking GUI Objects.

DYNAMISM: (For CIA Only) (

UNIT V: Data Driven Testing – Rapid Test Script Wizard – Mapping Custom Object to a Standard Class - Checking GUI Objects.

TEXT BOOKS

1. ***Software Testing Principles and Practices,*** Srinivasan Desikan, Gopalaswamy, Ramesh, 1st Edition, 6th Reprint, Pearson Education, 2014.
Chapters : 1- 8.
2. ***Software Testing Tools,*** Dr.K.V.K.K.Prasad, Published by Dreamtech Press, Edition, 2012.Chapters : 4

REFERENCE BOOKS

1. ***Software Quality and Testing: A Concise Study,*** S. A. Kelkar, 3rd Edition, PHI Learning, 2012.
2. ***Software Testing, Principles and Practices,*** Srinivasan Desikan, Gopalaswamy Ramesh, Pearson Education Inc., 2015
3. ***Software Testing- Principles, Techniques and Tools,*** M.G. Limaye, Tata McGraw-Hill Pvt. Ltd. 2017.

COURSE CONTENTS & TEACHING/LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I - PRINCIPLES OF TESTING				
1.1	*Principles of Testing*: Context of Testing in Producing Software – About this Chapter – The Complete Car – Dijkstra's Doctrine – A test In Time! – The Cast and Saint – Test the Tests First! – The Pesticide Paradox – The Convoy and the Rags – The Policemen on the Bridge- The Ends of the Pendulum – Men in Black – Automation Syndrome.	5	Chalk & Talk	Black Board
1.2	*Software Development Life Cycle Models*: Phases of Software Project – Quality, Quality Assurance and Quality Control - Testing, Verification, and Validation	5	Lecture	Smart Board
1.3	Process Model to Represent Different Phases – Life Cycle models.	5	Lecture	Smart Board
UNIT II: WHITE BOX TESTING				
2.1	*White Box Testing*: What is White Box Testing – Static Testing – Structural Testing –	5	Chalk & Talk	Black Board
2.2	Challenges in White Box Testing.	5	Discussion	Google classroom
2.3	*Black Box Testing*: What is Black Box Testing- Why Black Box Testing – When to do Black Box Testing - How to do Black Box Testing – Conclusion.	5	Chalk & Talk	Black Board
UNIT III: INTEGRATION TESTING				**(15 Hrs)**
3.1	*Integration Testing:*What is Integration Testing - Integration Testing as a Type of Testing – Integration Testing as a Phase of Testing –	5	Chalk & Talk	Black Board
3.2	Scenario Testing – Defect Bash - Conclusion.	5	Chalk & Talk	Black Board

3.3	*System and Acceptance Testing:*System Testing Overview – Why is System Testing Done – Functional Versus Non- Functional Testing – Functional System Testing – Non Functional Testing - Acceptance testing – Summary of Testing Phases.	5	Discussion	Google classroom
UNIT IV: PERFORMANCE TESTING				
4.1	*Performance Testing***:** Introduction – Factors Governing Performance testing – Methodology for Performance Testing-	5	Lecture	PPT & Smart Board
4.2	Tools for Performance Testing – Process for Performance Testing.	5	Chalk & Talk	Black Board
4.3	*Regression Testing:* What is Regression Testing – Types of Regression Testing – When to Regression Testing – How to Regression Testing – Best Practices in Regression Testing.	5	Lecture	PPT & Smart Board
UNIT V: TESTING TOOLS				
5.1	WinRunner – Overview of WinRunner – Testing an application using WinRunner –	5	Chalk & Talk	Black Board
5.2	Test Script Language – GUI Map File – Synchronization of Test Cases – Data Driven Testing – Rapid Test Script Wizard –	5	Chalk & Talk	Black Board
5.3	Mapping Custom Object to a Standard Class - Checking GUI Objects.	5	Chalk & Talk	Black Board

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

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

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	POs ADDRESSED
CO 1	Explain various testing processes and continuous quality improvement	K1 & K2	PSO1& PSO3	PO1
CO 2	Describe White box testing and Black box testing	K1, K2,	PSO2	PO2
CO 3	Discuss integration testing and its types	K2 & K3	PSO4	PO3
CO 4	Explain Performance and Regression testing	K1, K2, K3	PSO5	PO2
CO 5	Explain high performance testing using WinRunner.	K2 & K4	PSO6	PO3

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**2**	**3**	**1**	**2**	**1**
CO2	**3**	**3**	**2**	**2**	**1**	**1**
CO3	**2**	**2**	**1**	**3**	**1**	**2**
CO4	**2**	**2**	**2**	**2**	**3**	**1**
CO5	**2**	**1**	**1**	**2**	**1**	**3**

Mapping COs Consistency with POs

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

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

COURSE DESIGNER:
Dr. S.Arul Jothi

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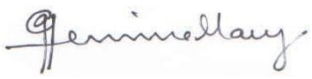


(Dr.G.Germine Mary)
HOD'S Signature & Name

III B.Sc. Computer Science

SEMESTER –VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B6ME6	Cloud Computing	Major Elective	5	5

COURSE DESCRIPTION

This course presents a top-down view of cloud computing, from applications and administration to programming and infrastructure.

COURSE OBJECTIVES

- To learn distributed communication
- To understand distributed resource management
- To study the basics of cloud computing
- To study about virtualization and cloud resource management

UNITS

UNIT I :Defining Cloud Computing (15 Hrs)

Defining Cloud Computing - Cloud Types – Examining the Characteristics of Cloud Computing – Assessing th Role of Open standards – Understanding Cloud Architecture: Exploring the Cloud Computing Stack. Composability, Infrastructure - Platforms - Virtual Appliances - Communication protocols - Applications - Connecting to the cloud

UNIT II :Understanding Services and Applications by type (15 Hrs)

Defining Infrastructure as a Service - Defining Platform as a Service - Defining Software as a Service - Defining Identity as a Service - Defining Compliance as a Service

UNIT III :Understanding Abstraction and Virtualization (15 Hrs)

Using Virtualization Technologies, Load balancing and Virtualization, Understanding Hypervisors, Understanding Machine Learning, Porting Applications

NIT IV : Understanding Cloud Securituy (15 Hrs)

Securing the Cloud -Securing the data - Moving applications to the cloud - Cloud Storage: Definition – Provisioning –Cloud storage - Cloud Backup solutions - Cloud storage Interoperability

UNIT V :Moving applications to the Cloud (15 Hrs)

Applications to the Cloud – Applications and Cloud API Case Study: Google Web Services- Amazon Web Services - Microsoft Cloud Services.

SELF STUDY:

UNIT V: Amazon Web Services - Microsoft Cloud Services.

TEXT BOOK

***Cloud Computing Bible*,** BarrieSosinsky, Wiley India Pvt. Ltd.- 2011
Chapters: 1,3,4,5,12,14

REFERENCE BOOKS

1. ***Cloud Computing with Windows Azure Platform***, Roger Jennings, Wiley India Pvt. Ltd2009.
2. ***Cloud Computing*,** Bloor R., Kanfman M., Halper F. Judith Hurwitz, " Wiley India Edition, 2010
3. ***Cloud Computing Implementation Management and Strategy***, JohnRittinghouse& James Ransome, CRC Press, 2010
4. **Cloud Computing: Concepts and Practice**, Naresh Kumar Sehgal and Pramod Chandra P.Bhatt, Springer, 2018

COURSE CONTENTS & TEACHING/LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I - Defining Cloud Computing				
1.1	Defining Cloud Computing - Cloud Types – Examining the Characteristics of Cloud Computing	5	Chalk & Talk	Black Board
1.2	Assessing the Role of Open standards – Understanding Cloud Architecture: Exploring the Cloud Computing Stack.	5	Lecture	Smart Board
1.3	Composability, Infrastructure - Platforms - Virtual Appliances - Communication protocols - Applications - Connecting to the cloud	5	Lecture	Smart Board
UNIT II: Understanding Services and Applications by type				
2.1	Defining Infrastructure as a Service - Defining Platform as a Service -	5	Chalk & Talk	Black Board
2.2	Defining Software as a Service - Defining Identity as a Service -	5	Chalk & Talk	Black Board
2.3	Defining Compliance as a Service	5	Discussion	Google classroom
UNIT III: Understanding Abstraction and Virtualization				

3.1	Using Virtualization Technologies, Load balancing and Virtualization,	6	Chalk & Talk	Black Board
3.2	Understanding Hypervisors, Understanding Machine Learning,	6	Chalk & Talk	Black Board
3.3	Porting Applications	3	Discussion	Google classroom
UNIT IV: Understanding Cloud Security				
4.1	Securing the Cloud -Securing the data - Moving applications to the cloud -	5	Lecture	PPT & Smart Board
4.2	Cloud Storage: Definition – Provisioning –Cloud storage -	5	Chalk & Talk	Black Board
4.3	Cloud Backup solutions - Cloud storage Interoperability	4	Lecture	PPT & Smart Board
UNIT V: Moving applications to the Cloud				
5.1	Applications to the Cloud – Applications and Cloud API	6	Chalk & Talk	Black Board
5.2	Case Study: Google Web Services- Amazon Web Services -	6	Chalk & Talk	Black Board
5.3	Microsoft Cloud Services.	3	Chalk & Talk	Black Board

EVALUATION PATTERN

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 %**

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

The levels of CIA Assessment based on Revised Bloom's Taxonomy for I UG are :

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

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

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	POs ADDRESSED
CO 1	Define cloud computing and related concepts	K1	PSO2& PSO3	PO1
CO 2	Explain the key dimensions of the challenges of Cloud Computing	K1& K2	PSO1	PO1
CO 3	Discuss the assessment of the economics , financial, and technological implications for selecting cloud computing for an organization	K1 & K3	PSO5	PO2

CO 4	Describe the benefits of cloud computing and to understand different layers of the cloud technologies, practical solutions	K1, K2&K3	PSO4	PO3
CO 5	Explain the challenges of cloud computing and determine the suitability of in-house v/s hosted solutions	K2 & K4	PSO6	PO4

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	2	3	3	2	1	2
CO2	3	2	2	2	2	2
CO3	2	2	2	1	3	2
CO4	2	2	2	3	2	2
CO5	1	2	2	2	1	3

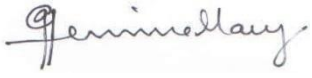
Mapping COs Consistency with POs

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

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

COURSE DESIGNER:
Dr. S.Arul Jothi

Forwarded By



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HOD'S Signature & Name

III B.Sc. Computer Science

SEMESTER –VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B6ME7	Introduction to Artificial Intelligence	Major Elective	5	5

COURSE DESCRIPTION

The course aims to orient the students to develop interest towards Artificial Intelligence(AI) the latest technology.

COURSE OBJECTIVES

- To provide the basic ideas on AI
- To impart knowledge on the various search techniques and the basic functioning of AI
- To impart the basics of NLP, Game Playing and Neural Networks
- To instil the research acumen by providing the fundamentals of AI

SYLLABUS

UNIT I: INTRODUCTION TO AI [15 HRS]

Artificial Intelligence: The AI Problems – The Underlying Assumption – AI Technique – The level of the Model – Criteria for Success. Problems, Problem Spaces and Search: Defining the Problem as a State Space Search – Production Systems – Problems Characteristics – Production System Characteristics – Issues in the Design of Search Programs – Additional Problems.

UNIT II: HEURISTIC SEARCH TECHNIQUES [15 HRS]

Generate-and-Test – Hill Climbing – Best-First Search – Problem Reduction – Constraint Satisfaction – Means-Ends Analysis.

UNIT III: KNOWLEDGE REPRESENTATION [15 HRS]

Representing Knowledge using Rules: Procedural versus Declarative knowledge – Logic Programming – Forward versus Backward Reasoning – Matching – Control Knowledge. Knowledge Representation issues: Representations and Mappings – Approaches to Knowledge Representation – Issues in Knowledge representation - The Frame Problem.

UNIT IV: PREDICATE LOGIC [15 HRS]

Using Predicate Logic: Representing Simple Facts in Logic – Representing instance and isa Relationships – Computable Functions and Predicates – Resolution – Natural Deduction.

UNIT V: INTRODUCTION TO NLP, NEURAL NETS, GAME PLAYING [15 HRS]

Game Playing: Overview – The Minimax Search Procedure. Natural Language Processing: Introduction. Connectionist Models: Introduction - Hopfield Networks – Learning in Neural Networks: Perceptrons.

UNIT VI: (INTERNAL ONLY)
Latest developments in Artificial Intelligence

SELF STUDY :
UNIT I : Issues in the Design of Search Programs – Additional Problems.
UNIT III: Approaches to Knowledge Representation – Issues in Knowledge representation - The Frame Problem

TEXT BOOK
Artificial Intelligence, Elaine Rich, Kevin Knight andShivashankar B Nair, 3rd Edition, Tata McGraw-Hill publications, 2014 Reprint.
Chapters : 1 - 6 , 12.1, 12.2, 15.1, 18.1, 18.2.1

REFERENCE BOOKS

1. ***Artificial Intelligence,*** Elaine Rich, Tata McGraw-Hill publications, 2008.
2. ***Foundations of Artificial Intelligence and Expert System***, V.S.Janakiraman K. Sarukesi, P.Gopalakrishnan, Infinity Press, 1st Edition, 2016.

COURSE CONTENTS & TEACHING/LEARNING SCHEDULE				
Module No.	**Topic**	**No. of Lectures**	**Content Delivery Method**	**Teaching Aids**
UNIT i- INTRODUCTION TO AI				
1.1	Artificial Intelligence: The AI Problems – The Underlying Assumption – AI Technique – The level of the Model – Criteria for Success.	6	Chalk & Talk	Black Board
1.2	Problems, Problem Spaces and Search: Defining the Problem as a State Space Search – Production Systems – Problems Characteristics – Production System Characteristics –.	5	Lecture	Smart Board
1.3	Issues in the Design of Search Programs – Additional Problems	4	Lecture	Smart Board
UNIT II: HEURISTIC SEARCH TECHNIQUES				
2.1	Generate-and-Test – Hill Climbing – Best-First Search –	6	Chalk & Talk	Black Board
2.2	Problem Reduction – Constraint Satisfaction –	5	Chalk & Talk	Black Board
2.3	Means-Ends Analysis	4	Discussion	Google classroom
UNIT III:KNOWLEDGE REPRESENTATION				
3.1	Representing Knowledge using Rules: Procedural versus Declarative knowledge – Logic Programming – Forward versus Backward Reasoning – Matching – Control Knowledge.	5	Chalk & Talk	Black Board
3.2	Knowledge Representation issues: Representations and Mappings – Approaches to Knowledge Representation –	5	Chalk & Talk	Black Board
3.3	Issues in Knowledge representation - The Frame Problem.	5	Discussion	Google classroom
UNIT IV: PREDICATE LOGIC				

4.1	Using Predicate Logic: Representing Simple Facts in Logic –	5	Lecture	PPT & Smart Board
4.2	Representing instance and isa Relationships – Computable.	5	Chalk & Talk	Black Board
4.3	Functions and Predicates – Resolution – Natural Deduction	5	Lecture	PPT & Smart Board
UNIT V: INTRODUCTION TO NLP, NEURAL NETS, GAME PLAYING				
5.1	Game Playing: Overview – The Minimax Search Procedure.	4	Chalk & Talk	Black Board
5.2	Natural Language Processing: Introduction.	4	Chalk & Talk	Black Board
5.3	Connectionist Models: Introduction - Hopfield Networks – Learning in	4	Chalk & Talk	Black Board
5.4	Neural Networks: Perceptrons.	3		

EVALUATION PATTERN

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 %**

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

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember**,** **K2-**Understand**,** **K3-**Apply**,** **K4-**Analyse

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

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	POs ADDRESSED
CO 1	Explain basic ideas on AI	K1	PSO1& PSO2	PO1
CO 2	Discuss knowledge on the various search techniques and the basic functioning of AI	K1& K2,	PSO3	PO1
CO 3	Discuss basics of NLP, Game Playing	K1 & K3	PSO4	PO2
CO 4	Explain basics of Neural Networks	K1& K2	PSO5	PO3
CO 5	Research acumen by providing the fundamentals	K2 & K4	PSO6	PO4

Mapping COs Consistency with PSOs

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

Mapping of C0s with POs

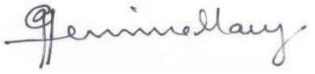
CO/ PSO	PO1	PO2	PO3	PO4
CO1	**3**	2	1	2
CO2	**3**	2	2	1
CO3	2	**3**	1	1
CO4	1	2	**3**	2
CO5	1	2	2	**3**

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2** ♦ WeaklyCorrelated -**1**

COURSE DESIGNER:

Dr. S.Vidya

Forwarded By



(Dr.G.Germine Mary)
HOD'S Signature & Name

III B.Sc. Computer Science

SEMESTER –VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	19B6ME8	Mobile Computing using Android	Major Elective	5	5

COURSE DESCRIPTION

This Course provides overview of coverage of various wireless networks and explains how different stations work with agents to connect mobile world.

COURSE OBJECTIVES

- To enable the students to understand the OS, protocols and security used in mobile technology
- To introduce the concept of mobile computing and provide a foundation for research

SYLLABUS

UNIT I: MOBILE COMMUNICATIONS AN OVERVIEW [15 HRS]

Mobile Communication –Mobile Computing-Mobile Computing Architecture-Mobile Devices-Mobile System Networks-Data Dissemination –Mobile Management-Security.

UNIT II: MOBILE DEVICES AND SYSTEM [15 HRS]

Cellular Network and Frequency Reuse-Mobile Smart Phones, Smart Mobiles, and Systems-Handled Pocket Computers-Handled Devices.GSM and Other 2G Architectures:
GSM-Services and System Architecture-Radio Interfaces of GSM-Protocols of GSM-Localization –Call Handling.

UNIT III:INTRODUCTION TO ANDROID OPERATING SYSTEM [15 HRS]

Android-open handset alliance-android ecosystem-android version –android activity-features of android-android architecture-stack linux kernel.

UNIT IV: CONFIGURATION OF ANDROID ENVIRONMENT [15 HRS]

Operating System-Java JDK-Android SDK-Android Development Tools(AVD)-Emulators-Dalvik Virtual Machine-Difference Between Java Virtual Machine and Dalvik Virtual Machine.

UNIT V: ANDROID USER INTERFACE [15 HRS]

Linear Layout-Absolute Layout-Frame Layout-Relative Layout-Table Layout.
Designing Your User Interface with View:
Text View-Button-Image Button-Edit Text-Check Box-Toggle Button-Radio Button and Radio Group-Progress Bar-Autocomplete Text View-Spinner-List View-Grid View-Image View-Scroll View-Custom Toast Alert-Time And Date Picker.

SELF STUDY :
UNIT IV : Operating System-Java JDK-Android SDK, Difference Between Java Virtual Machine and Dalvik Virtual Machine

TEXT BOOK

1. ***MOBILE COMPUTING*** –Raj Kamal ,Second Edition,2014, Oxford University Press, 2014
2. ***ANDROID***-Prasanna Kumar Dixit,Vikas Publishing House Pvt Ltd, 2014

REFERENCE BOOKS

1. MOBILE COMPUTING Technology ,Application and Service Creation –Asoke K Talukder, Ph.D. ,Second Edition ,Tata Mc Graw Hill Education Private Limited, 2011
2. ANDROID APPLICATION DEVELOPMENT(with kitkat support)Black Book, Pradeep Kothari, Published By Dreanlech, 2017
3. ***BEGINNING ANDROID 4 APPLICATION DEVELOPMENT ,***Wei-Meng Lee Published By WileY, 2016

COURSE CONTENTS & TEACHING/LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I - MOBILE COMMUNICATIONS AN OVERVIEW				
1.1	Mobile Communication –Mobile Computing-	4	Chalk & Talk	Black Board
1.2	Mobile Computing Architecture-Mobile Devices-	4	Lecture	Smart Board
1.3	Mobile System Networks-Data Dissemination –	4	Lecture	Smart Board
1.4	Mobile Management-Security	3	Lecture	Black Board
UNIT II: MOBILE DEVICES AND SYSTEM				

2.1	Cellular Network and Frequency Reuse-Mobile Smart Phones, Smart Mobiles, and Systems-Handled Pocket Computers-Handled Devices.	5	Chalk & Talk	Black Board
2.2	GSM and Other 2G Architectures: GSM-Services and System Architecture-	5	Chalk & Talk	Black Board
2.3	Radio Interfaces of GSM-Protocols of GSM-Localization –Call Handling.	5	Discussio n	Google classroom
UNIT III: INTRODUCTION TO ANDROID OPERATING SYSTEM				
3.1	Android-open handset alliance-android ecosystem-android version –	6	Chalk & Talk	Black Board
3.2	android activity-features of android-android architecture-	6	Chalk & Talk	Black Board
3.3	stack linux kernel	3	Discussio n	Google classroom
UNIT IV: CONFIGURATION OF ANDROID ENVIRONMENT				
4.1	Operating System-Java JDK-Android SDK-	5	Lecture	PPT & Smart Board
4.2	Android Development Tools(AVD)-Emulators-Dalvik Virtual Machine-.	5	Chalk & Talk	Black Board
4.3	Difference Between Java Virtual Machine and Dalvik Virtual Machine	5	Lecture	PPT & Smart Board
UNIT V: ANDROID USER INTERFACE				
5.1	Linear Layout-Absolute Layout-Frame Layout-Relative Layout-Table Layout. .	5	Chalk & Talk	Black Board
5.2	Designing Your User Interface with View: Text View-Button-Image Button-Edit Text-Check Box-Toggle Button-Radio Button and Radio Group-Progress Bar-Autocomplete Text View-	5	Chalk & Talk	Black Board
5.3	Spinner-List View-Grid View-Image View-Scroll View-Custom Toast Alert-Time And Date Picker	5	Chalk & Talk	Black Board

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

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

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	POs ADDRESSED
CO 1	Explain Pervasive Computing	K1	PSO1& PSO2	PO1
CO 2	Identify different operating systems	K1& K2,	PSO3	PO1
CO 3	Discuss the importance of Security	K1 & K3	PSO4	PO2
CO 4	Explain Internet Protocols deduction mechanisms	K1& K2	PSO5	PO3
CO 5	Describe different Gateways	K2 & K4	PSO6	PO4

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	**3**	2	2	2	2
CO2	2	2	**3**	1	2	1
CO3	2	2	1	**3**	2	2
CO4	2	2	2	2	**3**	1
CO5	2	2	1	1	1	**3**

Mapping COs Consistency with POs

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

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

COURSE DESIGNER:
Dr. P.Meenakshi Sundari

Forwarded by

(Dr.G.Germine Mary)
HOD'S Signature& Name

III B.Sc. Computer Science

SEMESTER –VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	19B6ME9	Big Data Fundamentals	Major Elective	5	5

COURSE DESCRIPTION

Big Data Fundamentals consists of Big Data: Concepts and Terminology, Big data Adoption and Planning, Enterprise Technologies and Big Data Business Intelligence and its Storage Technology.

COURSE OBJECTIVES

- To Understand the fundamental concepts of Big data
- To interpret Big data Adoption and Planning and Big data Storage Concept
- To Understand Big data and Processing Concepts and Big Data Analysis Techniques

SYLLABUS

UNIT I : INTRODUCTION (15 Hrs)

Understanding Big Data: Concepts and Terminology - Big Data Characteristics - Different types of data.Business Motivations and Drivers for Big data Adoption: Marketplace Dynamics - Business Architecture - Business Process Management - Information and Communications Technology - Internet of Everything - Case Study Example.

UNIT II : ADOPTION AND PLANNING (15 Hrs)

Big data Adoption and Planning Considerations: Organization Prerequisites - Data Procurement – Privacy – Security – Provenance - Limited Realtime Support - Distinct Performance Challenges - Distinct Governance Requirements - Distinct Methodology – Clouds - Big Data Analytics Lifecycle - Case Study Example.

UNIT III : BIG DATA BUSINESS INTELLIGENCE (15 Hrs)

Enterprise Technologies and Big Data Business Intelligence: Online Transaction Processing(OLTP) - Online Analytical Processing(OLAP) - Extract Transform Load(ETL) - Data Warehouses - Data Marts- Traditional BI- Big Data BI- Case Study Example. Big Data Storage Concepts: Clusters - File Systems and Distributed File Systems - NoSQL – Sharding – Replication - Sharding and Replication - CAP Theorem – ACID – BASE - Case Study Example.

UNIT IV : BIG DATA PROCESSING CONCEPTS (15 Hrs)

Big Data Processing Concepts: Parallel Data Processing - Distributed Data Processing – Hadoop - Processing Workloads – Cluster -

Processing in Batch Mode - Processing in Realtime Mode - Case Study Example.

UNIT V: STORAGE TECHNOLOGY (15 Hrs)

Big Data Storage Technology: On-Disk Storage Devices – NoSQL Databases - In-Memory Storage Devices -Case Study Example. Big Data Analysis Techniques: Quantitative Analysis - Qualitative Analysis - Data Mining - Statistical Analysis - Machine Learning - Semantic Analysis - Visual Analysis - Case Study Example.

SELF STUDY

UNIT I : Information and Communications Technology - Internet of Everything - Case Study Example.

UNIT III :- Data Warehouses - Data Marts- Traditional BI- Big Data BI- Case Study Example.

TEXT BOOK

Big Data Fundamentals Concepts, Driver & Techniques, Thomas Erl,WajidKhattak and Paul Buhler, 3rd Edition, Pearson publication, 2018. Chapters : 1-8

REFERENCE BOOKS

1. ***Big Data Strategies*** , Pam Baker ,1st edition , Cengage Learning India Private Limited, 2016.
2. ***Big Data,*** Dr. Anil Maheshwari, 1stedition , Published by McGraw Hill Education (India) Private Limited, 2017.
3. ***Big Data and Analytics***, Seema Acharya andSubhashiniChellappan, 2nd edition, Wiley India Private Limited, 2017.

Digital Open Educational Resources (DOER)

1. https://www.tutorialspoint.com/big_data_analytics/index.htm
2. https://www.guru99.com/bigdata-tutorials.html
3. https://www.youtube.com/watch?v=KcecJfxbd-4

COURSE CONTENTS & TEACHING/LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I : INTRODUCTION				**(15 Hrs)**
1.1	**INTRODUCTION (15 Hrs)** Understanding Big Data: Concepts and Terminology - Big Data Characteristics - Different types of data.	4	Chalk & Talk	Black Board
1.2	Business Motivations and Drivers for Big data Adoption: Marketplace Dynamics - Business Architecture -.	4	Lecture	Smart Board

1.3	Business Process Management - Information and Communications Technology - Internet of Everything -	4	Lecture	Smart Board
1.4	Case Study Example	3	Discussion	Google class room
UNIT II: ADOPTION AND PLANNING		**(15 Hrs)**		
2.1	Big data Adoption and Planning Considerations: Organization Prerequisites - Data Procurement – Privacy –	4	Chalk & Talk	Black Board
2.2	Security – Provenance - Limited Realtime Support - Distinct Performance Challenges -	4	Chalk & Talk	Black Board
2.3	Distinct Governance Requirements - Distinct Methodology – Clouds -	4	Discussion	Google classroom
2.4	Big Data Analytics Lifecycle - Case Study Example.	3		
UNIT III : BIG DATA BUSINESS INTELLIGENCE				**(15 Hrs)**
3.1	Enterprise Technologies and Big Data Business Intelligence: Online Transaction Processing(OLTP) - Online Analytical Processing(OLAP) -	4	Chalk & Talk	Black Board
3.2	Extract Transform Load(ETL) - Data Warehouses - Data Marts- Traditional BI- Big Data BI- Case Study Example.	4	Chalk & Talk	Black Board
3.3	Big Data Storage Concepts: Clusters - File Systems and Distributed File Systems - NoSQL – Sharding – Replication - Sharding and Replication - CAP Theorem – ACID – BASE -	4	Discussion	Google classroom
3.4	Case Study Example.	3	Discussion	Google classroom
UNIT IV: BIG DATA PROCESSING CONCEPTS				**(15Hrs)**
4.1	Big Data Processing Concepts: Parallel Data Processing - Distributed Data Processing –	4	Lecture	PPT & Smart Board

4.2	Hadoop -	4	Chalk & Talk	Black Board
4.3	Processing Workloads – Cluster - Processing in Batch Mode - Processing in Realtime Mode -	4	Lecture	PPT & Smart Board
4.4	Case Study Example.	3	Discussion	Black Board
UNIT V: UNIT V: STORAGE TECHNOLOGY				**(15 Hrs)**
5.1	Big Data Storage Technology: On-Disk Storage Devices – NoSQL Databases - In-Memory Storage Devices - Case Study Example.	4	Chalk & Talk	Black Board
5.2	Big Data Analysis Techniques: Quantitative Analysis - Qualitative Analysis -	4	Chalk & Talk	Black Board
5.3	Data Mining - Statistical Analysis - Machine Learning - Semantic Analysis - Visual Analysis -	4	Chalk & Talk	Black Board
5.4	Case Study Example.	3	Discussion	PPT & Smart Board

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

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

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Explain the fundamental concepts of Big data	K1	PSO1	PO1
CO 2	Describe Big data Adoption and Planning	K2	PSO2	PO2
CO 3	Explain Big data Storage Concept	K2	PSO3	PO3
CO 4	Utilize Big data and Processing Concepts	K3	PSO4& PSO5	PO4
CO 5	Demonstrate Big Data Analysis Techniques.	K4	PSO6	PO4

Mapping of COs with PSOs

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

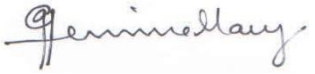
Mapping of COs with POs

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

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

COURSE DESIGNER:
Dr. T.Vasantha

Forwarded By



(Dr.G.Germine Mary)
HOD'S Signature& Name

I B.Sc. Computer Science

SEMESTER –I

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	19B1NME/ 19B2NME	ANIMATION TECHNIQUES	NON MAJOR ELECTIVES	2	2

COURSE DESCRIPTION

This course aims to impart skills to develop animated cartoons and movies using animation techniques.

COURSE OBJECTIVES

- To learn the basics drawing and animation techniques
- To offer a job oriented course and teach them to design animated applications.

SYLLABUS

UNIT I : WORK ENVIRONMENT (6 Hrs)

Fundamentals – interface – contextual menus – menu bar.

UNIT II : TOOLS (6 Hrs)

Tool box – Tools for Navigation & Viewing - Selection tools - Drawing and Painting tools.

UNIT III : EXPLORING THE TIMELINE (6 Hrs)

Parts of a Time line – Timeline Specifics – Layer properties – Scenes – Editing on the Timeline.

UNIT IV : SYMBOLS AND INSTANCES (6 Hrs)

Library and its features – symbol types – Graphic symbols – movie clips – Buttons

UNIT V: DRAWING AND ANIMATION (6 Hrs)

Creating shapes – masking – Frame by Frame Animation – Tweening - Guide layers - Masking Animations

TEXT BOOKS

1. The Book of GIMP – A complete guide to everything – Oliver Lecarme, KarineDelvare, 2013

REFERENCE BOOKS

1. Flash 5, Robert Reinhardt & Jan Warren Lentz
2. Flash MX 2004: Bible, Robert Reinhardt & Snow Dowd, Willey India Pvt.Ltd, New Delhi
3. Flash 5 in easy steps, Nick Vandome, Dreamtech Press, Reprint 2003, New Delhi.
4. Open Source Flash

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

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

COURSE OUTCOMES (CO)

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	POs ADDRESSED
CO 1	Create a movie with simple animation using built-in animation techniques.	K1	PSO1	PO2
CO 2	Create a movie with improved animation and background using Frame by frame animation	K1, K2,	PSO3	PO1
CO 3	Design a movie with many scenes using motion tween technique and multilayer concept.	K3	PSO2	PO2
CO 4	Design a complex movie with more objects and enhanced animation using symbols.	K2	PSO1	PO4
CO 5	Design a interactive animation using buttons and movie clip symbols.	K3	PSO4	PO3

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	2	2	2	2	1
CO2	2	2	**3**	2	1	2
CO3	2	**3**	2	2	2	1
CO4	**3**	2	2	2	2	1
CO5	2	2	2	**3**	2	1

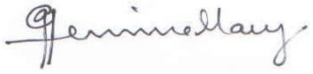
Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

Mapping of COs with POs

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

COURSE DESIGNER:
Dr.K.Rosemary Euphrasia

Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature& Name

II B.Sc. Computer Science
SEMESTER –III
For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	22B3SB1	Internet Programming : Paper I Web Designing using HTML and CSS	Skill Based Elective	2	2

COURSE DESCRIPTION

This course aims to impart skills to design and develop web pages using HTML and to design website using open source package.

COURSE OBJECTIVES

- **To prepare the students to design their own web pages.**
- To use and to customize the templates as per the requirement.
- To enable the students to enhance the web page with CSS

UNITS

UNIT I: ESSENTIAL HTML (6 Hrs)

The history of HTML – HTML –Creating a Web Page – Installing a Web Page – Viewing a Web Page – Checking Your Web Page.<!DOCTYPE> -<HTML> – Creating The structures of a Web page's: Head and Body – Setting Web Page Colors – Adding Text to a Web Page - basic Text formatting - <!..> Comments

UNIT II: WORKING WITH TEXT (6 Hrs)

Formatting with HTML tags – Physical HTML styles – Logical HTML styles – Setting Fonts – Headings - some remove tags - Displaying Plain text - <H1> Through <H6>- Creating Web Page Headings - <B> -<I> - <TT> - <U> - <S> and <Strike> - <BIG> - -<SMALL> - <SUB> - <SUP> -<EM> - <Strong> - <CODE> - <SAMP> -<KBD> - <VAR> - <DFN> - <CITE> - <ABBR> - <Acronym> - <FONT> – setting font point size directly- <BASEFONT> - <Q> - <Blink> - <INS> - <DEL> - <Address>- <BDO> – <IMG> Tag – Attributes of IMG tag.

UNIT III: PRESENTING AND ARRANGING TEXT (6 Hrs)

Arranging text - Using <DIV> and <SPAN> - Using Layers – More Formatting Power – pre formatting Text - Avoiding Plain text Wrapping -
 -<NOBR> - - <WBR> - <P> - <HR> - <CENTER><Block Quote> - <PRE> - <MULTICOL> - <SPACER> - <MARQUEE> - <DIV> - <SPAN> - Formatting text with tables–- <Layer> - <NOLAYER> - <ILAYER> Positioning text with <DIV> - <Ruby>and <RT> Creating Ruby (Captioned) Text.

UNIT IV: CREATING LISTAND TABLES (6 Hrs)

Creating List - <LI> - <UL> - <OL>– Creating Customized Unordered lists - Creating Customized ordered lists - <DL>, <DT> and DD> - Creating Definition Lists – Nesting Lists - The Parts of a table – Creating a Table – Adding Border –

Padding Your Cells – Widening the cell spacing – Aligning your data Horizontally – Aligning your data vertically – Spanning Columns – Spanning Rows- Setting Colors.
<TABLE> - <TR>- <TH> - <TD> - <CAPTION> - setting table Border Widths – Setting Cell padding – Setting cell spacing – Setting table column and widths – Setting table Colors – Aligning table in Web Pages – Aligning Cell text – Using images in tables - Spanning multiple columns - Spanning multiple rows - <THEAD>, <TBODY>, and <TFOOT> - Grouping and Formatting Rows – Formatting text with tables.

UNIT V: CASCADING STYLE SHEET (6Hrs)
What are style sheets?-External style sheets - Internal style sheets - Inline styles-creating style classes- Background properties- Position and block properties-Font properties-List properties-Text properties- Table properties.

TEXT BOOK
1 .HTML Black Book, Steven Holzner, Dreamtech Press, 2000
Chapters: 1, 2, 3, 5, 6,7

REFERENCE BOOKS
1. Mastering HTML, CSS &Javascript web Publishing, Laura Lemay, Rafe Colburn & Jennifer Kyrnin, BPB publications, 2016
2. HTML & CSS the complete reference, Thomas A Powell, 5th edition, McGrawHill, New Delhi, 2017.

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
Unit -1 ESSENTIAL HTML				
1.1	The history of HTML – HTML – Browser Wars – Creating a Web Page – Installing a Web Page – Viewing a Web Page – Checking Your Web Page	2	Chalk & Talk	Black Board
1.2	.<!DOCTYPE> -<HTML> – Creating The structures of a Web page's: Head and Body – Setting Web Page Colors	2	Chalk & Talk	Black Board
1.3	– Adding Text to a Web Page - basic Text formatting - <!..> Comments and server-Side includes - </Body>- </HTML>	2	Demonstration	LCD
UNIT II: WORKING WITH TEXT				
2.1	Formatting with HTML tags – Physical HTML styles – Logical HTML styles – Setting Fonts – Headings - some remove tags - Displaying Plain text - <H1> Through <H6>- Creating Web Page Headings - <B> -<I> - <TT> - <U> - <S> and <Strike> - <BIG> - - <SMALL> - <SUB> - <SUP> -<EM> - <Strong> - <CODE> -	3	Demonstration	LCD
2.2	<SAMP> -<KBD> - <VAR> - <DFN> - <CITE> - <ABBR> - <Acronym> - <FONT> – setting font point size directly- <BASEFONT> - <Q> - <Blink> - <INS> - <DEL> - <Address>- <BDO> – Displaying Special Characters: Character Entities.	3	Demonstration	LCD
UNIT III: PRESENTING AND ARRANGING TEXT				
3.1	Arranging text - Using <DIV> and <SPAN> - Using Layers – More Formatting Power – preformatting Text - Avoiding Plain text Wrapping - -<NOBR> - - <WBR> - <P> - <HR> - <CENTER><BlockQuote> - <PRE> - <MULTICOL> - <SPACER> - <MARQUEE> - <DIV> - <SPAN> - Formatting text with tables–-	3	PPT	LCD
3.2	<Layer> - <NOLAYER> - <ILAYER>Positioning text with <DIV> - <Ruby>and <RT> Creating Ruby (Captioned) Text.	3	Demonstration	LCD

UNIT IV: CREATING LISTAND TABLES				
4.1	Creating List - <LI> - <UL> - <OL>– Creating Customized Unordered lists - Creating Customized ordered lists - <DL>, <DT> and DD> - Creating Definition Lists – Nesting Lists - <DIR> and <Menu>- Deprecated Lists. The Parts of a table – Creating a Table – Adding Border – Padding Your Cells – Widening the cell spacing – Aligning your data Horizontally – Aligning your data vertically – Spanning Columns – Spanning Rows- Setting Colors.	3	Demonstration	LCD
4.2	<TABLE> - <TR>- <TH> - <TD> - <CAPTION> - setting table Border Widths – Setting Cell padding – Setting cell spacing – Setting table column and widths – Setting table Colors – Aligning table in Web Pages – Aligning Cell text – Using images in tables – Nesting tables - Spanning multiple columns - Spanning multiple rows - <THEAD>, <TBODY>, and <TFOOT> - Grouping and Formatting Rows – Formatting text with tables.	3	Demonstration	LCD
UNIT V: Cascading Style Sheet				
5.1	What are style sheets?-External style sheets - Internal style sheets - Inline styles- creating style classes- Background properties-	3	Lecture	PPT &Smart Board
5.2	Position and block properties-Font properties-List properties-Text properties- Table properties.	3	Chalk & Talk Lecture	Black Board

EVALUATION PATTERN

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	Quiz (Best one out of 2) 5 Mks.	PPT / Open Book Test (Best one out of 2) 5 Mks	Assignment 5 Mks.	Test 1 10Mks	Test 2 10 Marks	35 Mks.	5 Mks.	40Mks.	
K1	5	-	-	1½	1	7.5	-	7.5	18.75 %
K2	-	5	2	2	2½	11.5	-	11.5	28.75 %
K3	-	-	1½	3	3½	8	-	8	20 %
K4	-	-	1½	3½	3	8	-	8	20 %
Non Scholastic	-	-	-	-			5	5	12.5 %
Total	5	5	5	10	10	35	5	40	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

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

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Create simple web page using physical tags	K1&K2	PSO1 PSO3	PO1
CO 2	Present the information in standard form in a web page using structure tags supported by the browsers	K2	PSO4	PO2
CO 3	Design the layout for a web page using browser support tags	K2&K3	PSO2	PO2
CO 4	Develop a web site with tables and lists	K3	PSO6	PO4
CO 5	Enhance the webpage style through style sheets.	K2&K3	PSO5	PO3&PO4

Mapping COs Consistency with PSOs

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

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

Mapping of C0s with POs

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

COURSE DESIGNER:
Dr.K.Rosemary Euphrasia

Forwarded By

(Dr.G.Germine Mary)

HOD'S Signature& Name

IIIB.Sc. Computer Science
SEMESTER –IV
For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	22B4SB2	Internet Programming - Paper II Client Side Programming using Java Script	Skill Based Elective	2	2

COURSE DESCRIPTION

This course aims to impart skills to design web sites and to develop web applications through scripting languages.

COURSE OBJECTIVES

- To prepare the students to design interactive web pages
- To Enable the students to examine the flexibility of JavaScript, create scripts, dialog boxes and design web pages using javascript.
- To create dynamic web pages using Javascript

SYLLABUS

UNIT I: BASICS OF JAVA SCRIPT (6Hrs)

Introduction to JavaScript – Adding JavaScript to HTML documents - the<script> element – using the <script> element- JavaScript core features – basic definitions – Language characteristics – variables- basic data types – composite types – Flow control statements.

UNIT II: USING JAVA SCRIPT (6Hrs)

Introduction to Window – Dialogs – Opening and closing generic windows – controlling windows – Window events –Document object – Properties and methods of document object –Events - Event handlers

UNIT III: HTML FORM VALIDATION (6Hrs)

Creating HTML forms – Buttons – Checkboxes – File input - For a From – Hidden data - Image Submit Buttons – Password Controls – Radio Buttons – Reset Buttons – Customizable Button – Select Control — Form validation.

UNIT IV: JAVA SCRIPT OBJECT MODELS (6Hrs)

Object Model Overview – the initial JavaScript Object model – The Document Object –The DOM and HTML elements – The DOM and CSS.

UNIT V: ACCESSING HTML ELEMENTS (6Hrs)

Accessing Document Elements by Position - Accessing Document Elements by Name – Accessing Document Elements by id - Accessing Document Elements by class - Accessing Document Elements by selector

SELF STUDY:

Unit-I: Basic programming concepts of JavaScript
Unit II: Events of JavaScript
Unit-III: Form Controls and their properties

TEXT BOOKS

1. ***HTML Black Book, Steven Holzner*** – Dreamtech Press, 2000 Chapters : 9, 12
2. ***JavaScript: The complete reference , Thomas Powell & Fritz Schneider*** ,2nd edition, Tata McGraw Hill Education Private Limited, New Delhi, 2014 Chapters : 1,2,,9,10,12,14

REFERENCES:

1. HTML Complete, BPB Publications, 2nd Edition, New Delhi, 2003.
2. Mastering HTML, CSS &Javascript web Publishing, Laura Lemay, Rafe Colburn & Jennifer Kyrnin, BPB publications, 2016
3. HTML & CSS the complete reference, Thomas A Powell, 5th edition, McGrawHill, New Delhi, 2017

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I - **BASICS OF JAVASCRIPT** (6Hrs)				
1.1	Introduction to Javascript – Adding JavaScript to HTML documents - the<script> element – using the <script> element- event handlers – Javascript core features – basic definitions –	3	Lecture	PPT &Smart Board
1.2	Language characteristics – variab basic data types – composite types – l control statements.	3	Lecture	PPT
UNIT II- **USING JAVASCRIPT** (6Hrs)				
2.1	Introduction to Window – Dialogs – Opening and closing generic windows – controlling windows –	3	Lecture	PPT &Smart Board
2.2	Window events –Document objects – Properties and methods of document object – events – event handler .	3	Chalk & Talk Lecture	Black Board
UNIT III: HTML FORM VALIDATION (6 Hrs)				
3.1	Form basics – form fields – form controls - properties	3	Chalk & Talk Lecture	Black Board
3.2	Form validation – form usability and javascript.	3	Lecture	LCD
UNIT IV: JAVA SCRIPT OBJECT MODELS (6 Hrs)				
4.1	Object Model Overview – the initial JavaScript Object model	3	Lecture	PPT &Smart Board
4.2	DOM– DOM and HTML elements – DOM and CSS	3	Lecture	PPT &Smart Board
	UNIT V: ACCESSING HTML ELEMENTS (6 Hrs)			

5.1	Accessing Document Elements by Position - Accessing Document Elements by Name –	2	Lecture	PPT &Smart Board
5.2	Accessing Document Elements by selectorName –Accessing Document Elements by id –Accessing Document Elements by class	2	Demo	LCD

EVALUATION PATTERN

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	Quiz (Best one out of 2) 5 Mks.	PPT / Open Book Test (Best one out of 2) 5 Mks	Assignment 5 Mks.	Test 1 10Mks	Test 2 10 Marks	35 Mks.	5 Mks.	40Mks.	
K1	5	-	-	1½	1	7.5	-	7.5	18.75 %
K2	-	5	2	2	2½	11.5	-	11.5	28.75 %
K3	-	-	1½	3	3½	8	-	8	20 %
K4	-	-	1½	3½	3	8	-	8	20 %
Non Scholastic	-	-	-	-			5	5	12.5 %
Total	5	5	5	10	10	35	5	40	100 %

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

✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember**, K2-**Understand**, K3-**Apply**, K4-**Analyse

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

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**	**POs ADDRESSED**
CO 1	Design a dynamic web page using JavaScript	K1	PSO1& PSO2	PO1
CO 2	Design uniform layout for all pages using JavaScript	K1, K2, K3	PSO2	PO2
CO 3	Create a webpage with menu bar to navigate through different pages of a website.	K1 & K3	PSO4	PO1
CO 4	Create a dynamic webpage using java script	K2 & K3	PSO3	PO3
CO 5	Create a dynamic webpage using DOM	K2 & K4	PSO6	PO4

Mapping COs Consistency with PSOs

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

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

Mapping of C0s with POs

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

COURSE DESIGNER:
Dr. K.Rosemary Euphrasia

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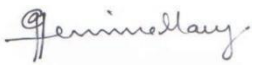

(Dr.G.Germine Mary)

HOD'S Signature& Name

III B.Sc. Computer Science

SEMESTER –V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	19B5SB3	Internet Programming - Paper III Client Side Programming using Java Script & CSS	Skill Based Elective	2	2

COURSE DESCRIPTION

This course aims to impart skills to design web sites and to develop web applications through scripting languages.

COURSE OBJECTIVES

- To prepare the students to design and upload their own web pages.
- To use CSS to control the style and layout of multiple Web pages all at once.
- To Enable the students to examine the flexibility of JavaScript, create scripts, dialog boxes and design web pages using javascript.

SYLLABUS

UNIT I: CASCADING STYLE SHEET (6 Hrs)

What are style sheets?-External style sheets - Internal style sheets - Inline styles-creating style classes- Background properties- Position and block properties-Font properties-List properties-Text properties- Table properties.

UNIT II: HTML FORMS AND CONTROLS (6 Hrs)

Creating HTML forms – Buttons – Checkboxes – File input - For a From – Hidden data - Image Submit Buttons – Password Controls – Radio Buttons – Reset Buttons – Customizable Button – Select Control – Grouping and Labeling – An Index – Processing Secure Transactions - Events

UNIT III: JAVA SCRIPT (6 Hrs)

Introduction to Javascript – Adding JavaScript to XHTML documents - the<script> element – using the <script> element- event handlers – Javascript core features – basic definitions – Language characteristics – variables- basic data types – composite types – Flow control statements.

UNIT IV: USING JAVA SCRIPT (6 Hrs)

Introduction to Window – Dialogs – Opening and closing generic windows – controlling windows – Window events – Form basics – form fields – Form validation – form usability and javascript.

UNIT V: JAVA SCRIPT OBJECT MODELS (6 Hrs)

Object Model Overview – the initial JavaScript Object model – The Document Object – Accessing Document Elements by Position - Accessing Document Elements by Name – Event handlers – The DOM and HTML elements – The DOM and CSS.

SELF STUDY:

Unit-I: Properties and the values of HTML elements
Unit-III: Basic programming concepts of Javascript
Unit-V: Methods of Document object

TEXT BOOKS

1. ***HTML Black Book, Steven Holzner*** – Dreamtech Press, 2000 Chapters : 9, 12
2. ***JavaScript: The complete reference , Thomas Powell & Fritz Schneider*** ,2nd edition, Tata McGraw Hill Education Private Limited, New Delhi, 2014 Chapters : 1,2,,9,10,12,14

REFERENCES:

1. ***HTML Complete,*** BPB Publications, 2nd Edition, New Delhi, 2003.
2. ***Mastering HTML, CSS &Javascript web Publishing,*** Laura Lemay, Rafe Colburn & Jennifer Kyrnin, BPB publications, 2016
3. ***HTML & CSS the complete reference,*** Thomas A Powell, 5th edition, McGrawHill, New Delhi, 2017

COURSE CONTENTS &LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I - **CASCADING STYLE SHEET** (6 Hrs)				
1.1	What are style sheets?-External style sheets - Internal style sheets - Inline styles- creating style classes- Background properties-	3	Lecture	PPT &Smart Board
1.2	Position and block properties-Font properties-List properties-Text properties- Table properties.	3	Chalk & Talk Lecture	Black Board
UNIT II- **HTML FORMS AND CONTROLS** (6 Hrs)				
2.1	Creating HTML forms – Buttons – Checkboxes – File input - For a From – Hidden data -	2	Lecture	PPT &Smart Board
2.2	Image Submit Buttons – Password Controls – Radio Buttons – Reset Buttons – Customizable Button – Select Control	2	Chalk & Talk Lecture	Black Board
2.3	– Grouping and Labeling – An Index – Processing Secure Transactions - Events	2	Chalk & Talk Lecture	Black Board
UNIT III: JAVA SCRIPT (6 hours)				
3.1	Introduction to Javascript – Adding JavaScript to XHTML documents - the<script> element – using the <script> element- event handlers – Javascript core features – basic definitions –	3	Lecture	PPT &Smart Board
3.2	Language characteristics – variables- basic data types – composite types – Flow control statements.	3	Lecture	PPT &Smart Board
UNIT IV: USING JAVA SCRIPT				**(6 Hrs)**
4.1	Introduction to Window – Dialogs – Opening and closing generic windows – controlling windows –	3	Lecture	PPT &Smart Board
4.2	Window events – Form basics – form fields – Form validation – form usability and javascript.	3	Chalk & Talk Lecture	Black Board

UNIT V: JAVA SCRIPT OBJECT MODELS (6 Hrs)				
5.1	Object Model Overview – the initial JavaScript Object model –	2	Lecture	PPT &Smart Board
5.2	The Document Object – Accessing Document Elements by Position - Accessing Document Elements by Name – Event handlers –	2	Lecture	PPT &Smart Board
	The DOM and HTML elements – The DOM and CSS.	2	Flipped Learning	Online/ E-Content/ Text Books /Materials

EVALUATION PATTERN

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 %

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

✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember**,** **K2-**Understand**,** **K3-**Apply**,** **K4-**Analyse

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

COURSE OUTCOMES (CO)

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	POs ADDRESSED
CO 1	Design a website with boosted styles using style sheets	K1	PSO1& PSO2	PO1
CO 2	Design uniform layout for all pages of a website through tags and style sheets	K1, K2, K3	PSO2	PO2
CO 3	Create a webpage with menu bar to navigate through different pages of a website.	K1 & K3	PSO4	PO1
CO 4	Create a dynamic webpage using java script	K2 & K3	PSO3	PO3
CO 5	Create a webpage with a facility to collect and validate data	K2 & K4	PSO6	PO4

Mapping COs Consistency with PSOs

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

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

Mapping of COs with POs

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

COURSE DESIGNER:
Dr. K.RosemaryEuphrasia

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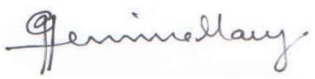

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HOD'S Signature& Name

III B.Sc. Computer Science
SEMESTER –V
For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	22B5SB3	Skill Based Elective Internet Programming – Paper III Web App design using Angular	Skill Based Elective	2	2

COURSE DESCRIPTION

This course aims to impart knowledge on Angular Framework and to develop single page apps across all platforms.

COURSE OBJECTIVES

- To prepare the students to learn Angular Framework.
- To Enable the students to develop dynamic web apps.
- To enable the students to develop single page applications for Desktop and Mobile.

Unit 1: Introduction

What is Angular? – Prerequisites of Angular – Type Script – JavaScript Vs TypeScript - CLI Deep Drive - Project Setup – building & execution of angular app

Unit 2: Components and Data binding

Introduction to component – Creating a new component - working with component template and component Style – Component Selector

Introduction to Data Binding – Binding Types - String Interpolation – Property binding – Event Binding – Two way binding

Unit 3: Directives

Understanding Directives – Component directive – Attribute Directive – Structural directive – Project Creation

Unit 4: Services and Dependency injection

Need for angular service – features of angular service – what is dependency injection – Types of dependency – Advantages of dependency - working with service and dependency injection

Unit 5: Angular forms and Pipes

Introduction to angular forms – template driven approach – reactive approach - form control - form group - Angular pipes – Built-in Pipes – creating custom pipes

Text book:

1. Angular Essentials: The Essential Guide to learn Angular – Dhananjay Kumar – BPB publications 2019.

Chapters: 1,2,4,6,7,11

Reference Books:

1. ng-book: The Complete Guide to Angular Paperback –- Felipe Coury , Ari Lerner, Carlos Taborda - February 2018

2. Beginning Angular with Typescript (updated to Angular 9) – Greg Lim - April 2020
3. A Journey to Angular Development Paperback – by Sukesh Marla – July 2021

Digital Open Educational Resources (DOER)

1. https://angular.io/start
2. https://www.javatpoint.com/angular-7-tutorial

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
Unit -1 INTRODUCTION				
1.1	Prerequisites of Angular – Type Script	2	Chalk & Talk	Black Board
1.2	CLI Deep Drive - Project Setup	2	Chalk & TalkDemonstration	LCD
1.3	CLI Deep Drive - Project Setup	2	Demonstration	LCD
UNIT II: COMPONENTS AND DATA BINDING				
2.1	Introduction to component – Creating a new component - working with component template and component Style – Component Selector	3	Demonstration	LCD
2.2	Introduction to Data Binding – Binding Types - String Interpolation – Property binding – Event Binding – Two way binding	3	Demonstration	LCD
UNIT III: DIRECTIVES				
3.1	Understanding Directives – Component directive – Attribute Directive – Structural directive – Project Creation	3	Demonstration	LCD
3.2	Understanding Directives – Component directive – Attribute Directive – Structural directive – Project Creation	3	Demonstration	LCD
UNIT IV: SERVICES DEPENDANCY INJECTION				
4.1	Need for angular service – features of angular service	2	Demonstration	LCD
4.2	what is dependency injection – Types of dependency	2	PPT	LCD
4.3	Advantages of dependency - working with service and dependency injection	2	Demonstration	LCD
UNIT V: Angular Forms & Pipes				

5.1	Introduction to angular forms – template driven approach – reactive approach - form control - form group	3	Demonstration	LCD
5.2	Angular pipes – Built-in Pipes – creating custom pipes	3	Demonstration	LCD

EVALUATION PATTERN

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	Quiz (Best one out of 2) 5 Mks.	PPT / Open Book Test (Best one out of 2) 5 Mks	Assignment 5 Mks.	Test1 10 Mks	Test 2 10 Marks	35 Mks.	5 Mks.	40Mks.	
K1	5	-	-	1½	1	7.5	-	7.5	18.75 %
K2	-	5	2	2	2½	11.5	-	11.5	28.75 %
K3	-	-	1½	3	3½	8	-	8	20 %
K4	-	-	1½	3½	3	8	-	8	20 %
Non Scholastic	-	-	-	-			5	5	12.5 %
Total	5	5	5	10	10	35	5	40	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

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

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Knowledge about Angular Framework	K1&K2	PSO1	PO1
CO 2	Design the layout of Single Page Application	K2	PSO3 & PSO4	PO3
CO 3	Binding the different components as single page	K2&K3	PSO2	PO2
CO 4	Develop a dynamic web page as SPA	K1& K3	PSO5	PO4
CO 5	Validating the Angular Forms.	K2&K3	PSO6	PO3

Mapping COs Consistency with PSOs

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

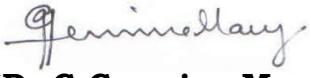
Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2** ♦ Weakly Correlated -**1**

Mapping of COs with POs

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

COURSE DESIGNER:
Dr. K.RosemaryEuphrasia

Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature & Name

III B.Sc. Computer Science

SEMESTER –V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	19B5SB4	Internet Programming - Paper IV Server Side Programming using ASP.Net	Skill Based Elective	2	2

COURSE DESCRIPTION

Server Side Programming using ASP.NET contains Introduction to .NET FrameWork3.5, Web Forms – Standard Controls and Navigation Controls, Validation Controls and Fundamentals of ADO.NET and basic SQL Commands.

COURSE OBJECTIVES

- To Understand NET framework and Web Forms using Standard Controls and Navigation Controls.
- To Understand Input Validation Controls
- To demonstrate data binding features and advanced data controls to create web pages that integrate attractive, customizable data displays.
- To Understand the fundamental of ADO.NET and use basic

SYLLABUS

UNIT I: INTRODUCTION TO .NET FRAMEWORK (6 Hrs)

Introduction to .NET FrameWork3.5 and Visual Studio 2008 : Introduction - Version of .NET FrameWork – Benefits of .NET Frame Work- Architecture of .NET Frame Work – Components of .NET FrameWork – Introducing Visual Studio 2008- New Features of Visual Studio 2008 - Installing Visual Studio 2008 - Visual Studio 2008 IDE- Developing Visual Studio 2008 Applications.

UNIT II: WEB FORMS (6 Hrs)

Web Forms: Standard Controls: Introduction – Control Class Using Label Control – Using TextBox Control – Using Button Control –Using ListBox Control – Using RadioButton Control.

UNIT III: NAVIGATION CONTROLS (6 Hrs)

Web Forms: Navigation Controls: Introduction to Navigation Controls – SiteMapPath Control – Using SiteMapPath Control, Customizing Appearance of the SiteMapPath Control – Menu Control, TreeView Control.

UNIT IV: BASE VALIDATION CLASS (6 Hrs)

Web Forms: Base Validation Class: Introduction – The Base Validator Class- Using RequiredFieldValidator Control – Using RangeValidator Control – Using RegularExpression Validator Control – Using CompareValidator Control – Using CustomValidator Control – Using ValidationSummary Control. Login Controls: Introduction to Login Controls – Using Login Control – Login View Control – Login Name Control – Using Login Name Control- Login Status Control -Password Recovery Control, Configuring the web.config file for Password Recovery.

UNIT V:WORKING WITH ADO.NET (6 Hrs)

Working with ADO.NET – Introduction – Basic SQL Statements –SELECT – DELETE – UPDATE – WHERE Clause – BETWEEN Clause – IN Clause – LIKE Clause -DISTINCT Clause – ORDERBY Clause –AS Clause GROUP BY Clause – HAVING Clause. Introducing ADO.NET– New Features in ADO.NET – Components of ADO.NET - basic operation in ADO.NET – Creating a Connection to Data Base – Executing Commands by using the Command objects – Adding and configuring a data adaptor Creating a DataSet – Using Data Adapter to retrieve data in a DataSet. Implementing Data Binding – Introduction – Types of Data Binding - Using GridView Control – DataList Control – Details View Control – FormView Control

SELF STUDY:

UNIT III: Introduction to Navigation Controls – SiteMapPath Control

UNIT IV: Login Status Control -Password Recovery Control, Configuring the web.config file for Password Recovery

TEXT BOOK

Comdex .NET 3.5 Programming Course Kit,Vikas Gupta &Kogent Solutions Inc., Dreamtech Press, Reprint Edition 2008.

Chapters : 2 (in Introduction) 3, 4, 5, and 6 (in ASP.NET3.5) 6 and 7(in C# 2008)

REFERENCE BOOKS

1. ***Microsoft ASP.NET 3.5***, George Shepherd, PHI PvtLtd , 2008.
2. ***Professional ASP.NET 3.5 in C# & VB***, Bill Evjen, Scott Hanselman& Devin Rader, Wiley Publication, 2009.
3. ***Programming Microsoft ASP.NET4,*** Dino Esposito, Dream Tech press, 2011.
4. ***The Complete Reference ASP.NET***, Matthew MacDonald, Tata McGrow Hill Education Pvt Ltd, 2012.

Digital Open Educational Resources (DOER)

1. https://www.tutorialspoint.com/asp.net/index.htm#:~:text=ASP.NET%20is%20a%20web,to%20build%20web%20applications%20easily.
2. https://dotnettutorials.net/course/csharp-dot-net-tutorials/
3. https://www.youtube.com/watch?v=3AYoipyqOkQ

COURSE CONTENTS & TEACHING/LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT IINTRODUCTION TO .NET FRAMEWORK				
1.1	Introduction to .NET FrameWork3.5 and Visual Studio 2008 *:* Introduction- Version of .NET FrameWork	1	Chalk & Talk	Black Board
1.2	Benefits of .NET Frame Work- Architecture of .NET Frame Work	1	Lecture	Smart Board
1.3	Components of .NET FrameWork – Introducing Visual Studio 2008	1	Lecture	Smart Board
1.4	New Features of Visual Studio 2008 - Installing Visual Studio 2008	1	Lecture	Black Board
1.5	Web Forms Processing Stages	1	Chalk & Talk	Black Board
1.6	Visual Studio 2008 IDE- Developing Visual Studio 2008 Applications.	1	Discussion	Google classroom
UNIT II: WEB FORMS				
2.1	Web Forms: Standard Controls: Introduction	1	Chalk & Talk	Black Board
2.2	Control Class Using Label Control	1	Chalk & Talk	Black Board
2.3	Using TextBox Control	1	Discussion	Google classroom
2.4	Using Button Control	1	Lecture	PPT & Smart Board
2.5	Using ListBox Control	1	Lecture	PPT & Smart Board
2.6	Using RadioButton Control	1	Lecture	PPT & Smart Board
UNIT III: NAVIGATION CONTROLS				
3.1	Web Forms: Navigation Controls: Introduction to Navigation Controls	1	Chalk & Talk	Black Board
3.2	SiteMapPath Control	1	Chalk &Talk	Black Board
3.3	Using SiteMapPath Control	1	Discussion	Google classroom
3.4	Customizing Appearance of the SiteMapPath Control	1	Lecture	PPT & Smart Board
3.5	Menu Control	1	Chalk & Talk	Black Board

3.6	TreeView Control.	1	Chalk & Talk	Black Board
UNIT IV: BASE VALIDATION CLASS				
4.1	Web Forms: Base Validation Class: Introduction – The Base Validator Class- Using RequiredFieldValidator Control – Using RangeValidator Control	1	Lecture	PPT & Smart Board
4.2	Using RegularExpression Validator Control – Using CompareValidator Control	1	Chalk & Talk	Black Board
4.3	Using CustomValidator Control – Using ValidationSummary Control.	1	Lecture	PPT & Smart Board
4.4	Login Controls: Introduction to Login Controls – Using Login Control – Login View Control	1	Discussion	Black Board
4.5	Login Name Control – Using Login Name Control- Login Status Control	1	Chalk & Talk	Black Board
4.6	Password Recovery Control, Configuring the web.config file for Password Recovery.	1	Lecture	PPT & Smart Board
UNIT V: WORKING WITH ADO.NET				
5.1	Working with ADO.NET – Introduction – Basic SQL Statements- SELECT – DELETE – UPDATE – WHERE Clause – BETWEEN Clause – IN Clause – LIKE Clause- DISTINCT Clause -ORDERBY Clause –AS Clause GROUP BY Clause – HAVING Clause-	1	Seminar	PPT & Smart Board
5.2	Introducing ADO.NET– New Features in ADO.NET – Components of ADO.NET - basic operation in ADO.NET	1	Seminar	PPT & Smart Board
5.3	Creating a Connection to Data Base – Executing Commands by using the Command objects	1	Seminar	PPT & Smart Board
5.4	Adding and configuring a data adaptor Creating a DataSet – Using Data Adapter to retrieve data in a DataSet.	1	Seminar	PPT & Smart Board
5.5	Implementing Data Binding – Introduction – Types of Data Binding - Using Grid View Control	1	Seminar	PPT & Smart Board
5.6	DataList Control – Details View Control – FormView Control	1	Seminar	PPT & Smart Board

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

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

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level(According to Bloom's Taxonomy)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Define the Basic Concepts, Architecture and Components of .NET Framework.	K1	PSO1	PO1
CO 2	Discuss and use Web Forms with Standard Controls.	K2	PSO2	PO2
CO 3	Apply validations to standard controls of web form.	K3	PSO3	PO3
CO 4	Design and develop web applications using navigation controls.	K4	PSO3 &PSO4	PO4
CO 5	Write basic SQL commands and develop web applications with Data Manipulation Operations	K3,k4	PSO4&PSO5	PO4

Mapping of COs with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	**3**	1	1	2	2
CO2	1	**3**	2	2	1
CO3	2	2	**3**	1	2
CO4	2	2	**3**	**3**	1
CO5	2	2	1	**3**	**3**

Mapping of C0s with POs

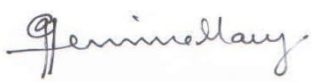
CO/ PSO	PO1	PO2	PO3	PO4
CO1	**3**	2	1	1
CO2	1	**3**	2	1
CO3	2	2	**3**	1
CO4	2	2	1	**3**
CO5	2	2	1	**3**

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

COURSE DESIGNER:
Dr. T.Vasantha

Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature& Name

IIIB.Sc. Computer Science

SEMESTER –VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	19B6SB5	Internet Programming - Paper V Server Side Programming using PHP	Skill Based Elective	2	2

COURSE DESCRIPTION

Server Side Programming using PHP consist of building block of PHP , functions , Arrays and Objects of PHP, Forms and Files, interactive with MYSQL.

COURSE OBJECTIVES

- To understand fundamental concepts of PHP.
- To implement array related functions.
- To understand and use Web form and File operations.
- To understand Data Manipulation Operations in MYSQL

SYLLABUS

UNIT I : BUILDING BLOCKS OF PHP AND FUNCTIONS (6 Hrs)

The Building Blocks of PHP: Variables – Data Types – Operators and Expressions – Constants. Flow Control Functions in PHP:Switching flow – Loops – Code Blocks and Browser and Output. Working with Functions: What is a function – Calling Functions – Defining a Functions – Returning values from User – Defined Functions - Variable Scope – Saving State Between Function Calls with the static Statement – More about Arguments – Testing for the Existence of a Function.

UNIT II:WORKING WITH ARRAYS AND OBJECTS (6 Hrs)

Working with Arrays: What are Arrays – Creating Arrays – Some Array-Related Functions. Working with Strings, Dates and Time: Formatting Strings with PHP – Investigating Strings in PHP – Manipulating Strings in PHP – Using Date and Time Functions in PHP – Other String, Date, Time Functions.

UNIT III: WORKING WITH FORMS (6 Hrs)

Working with Forms: Creating a Simple Input Form – Accessing form Input with user - Defined Arrays – Combining HTML and PHP Code on a Single Page.

UNIT IV:WORKING WITH FILES (6 Hrs)

Working with Files and Directories: Including Files with include() – validating files

– Creating and Deleting files – Opening a file for Writing, Reading or Appending – Reading from files – Writing or Appending to a File.

UNIT V: **INTERACTING WITH MYSQL** **(6 Hrs)**

Learning Basic SQL Commands: Learning the MYSQL Data Types – Learning the Table Creation Syntax – Using the INSERT command - Using the SELECT Command – Using WHERE in your Queries – Selecting from Multiple Tables – Using the UPDATE Command to Modify Records – Using the REPLACE Command – Using the DELETE Command – Frequently Used String Functions in MYSQL – Using Date and Time Functions in **UNIT I:**More about Arguments – Testing for the Existence of a Function.

UNIT IV: Validating files – Creating and Deleting files .

TEXT BOOK

Sams Teach Yourself PHP, MYSQL and APACHE, Julie C.Meloni, 5th Edition, Pearson Education, 2012.

Chapters : 5, 6, 7, 8, 10, 13, 16

REFERENCE BOOKS

1. ***PHP 6***, Julie Meloni Matt Telles, Cengage Learning Publication, 1st Edition, 2008.
2. ***Web Data base Applications with PHP & MYSQL***, Hugh E.Williams David Lane, Shroff Publishers & Distributors Pvt. Ltd., 1st Edition, 2009.

Digital Open Educational Resources (DOER)

1. https://www.w3schools.com/php/php_intro.asp
2. http://mrbool.com/php-server-side-programming-languages-in-web-development/28361
3. https://www.youtube.com/watch?v=CXnU9L1GHmQ

COURSE CONTENTS & TEACHING/LEARNING SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I - BUILDING BLOCKS OF PHP AND FUNCTIONS				
1.1	The Building Blocks of PHP: Variables – Data Types – Operators and Expressions – Constants. Flow Control Functions in PHP:Switching flow – Loops – Code Blocks and Browser and Output.	3	Chalk & Talk	Black Board
1.2	Working with Functions: What is a function – Calling Functions – Defining a Functions – Returning values from User – Defined Functions - Variable Scope – Saving State Between Function Calls with the static Statement – More about Arguments – Testing for the Existence of a Function.	3	Lecture	Smart Board
UNIT II: WORKING WITH ARRAYS AND OBJECTS				
2.1	Working with Arrays: What are Arrays – Creating Arrays – Some Array-Related Functions.	2	Chalk & Talk	Black Board
2.2	Working with Strings, Dates and Time: Formatting Strings with PHP – Investigating Strings in PHP – Manipulating Strings in PHP – Using Date and Time Functions in PHP – Other String,.	3	Chalk & Talk	Black Board
2.3	Date, Time Functions	1	Discussion	Google classroom
UNIT III: WORKING WITH FORMS				
3.1	Working with Forms: Creating a Simple Input Form – Accessing form Input with user -	5	Chalk & Talk	Black Board
3.2	Defined Arrays – Combining HTML and PHP Code on a Single Page.	5	Chalk & Talk	Black Board
UNIT IV: WORKING WITH FILES				
4.1	Working with Files and Directories:	2	Lecture	PPT & Smart Board

4.2	Including Files with include() – validating files – Creating and Deleting files – Opening a file for Writing, Reading or Appending – Reading from files – Writing or Appending to a File.	4	Chalk & Talk	Black Board
UNIT V: INTERACTING WITH MYSQL				
5.1	Learning Basic SQL Commands: Learning the MYSQL Data Types – Learning the Table Creation Syntax – Using the INSERT command - Using the SELECT Command – Using WHERE in your Queries –	2	Chalk & Talk	Black Board
5.2	Selecting from Multiple Tables – Using the UPDATE Command to Modify Records – Using the REPLACE Command – Using the DELETE Command –	2	Chalk & Talk	Black Board
5.3	Frequently Used String Functions in MYSQL – Using Date and Time Functions in MYSQL.	2	Chalk & Talk	Black Board

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

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

COURSE OUTCOMES (CO)

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

No.	Course Outcome	Knowledge Level(According to Bloom's Taxonomy)	PSOs ADDRESSED	PSOs ADDRESSED
CO 1	Explain fundamental concepts of PHP .	K1	PSO1	PO1
CO 2	Identify and use array and array related functions	K1,K2	PSO2	PO2
CO 3	Design and Develop Form with PHP Code.	K3	PSO3& PSO4	PO3
CO 4	Develop File operations.	K3	PSO5	PO4
CO 5	Demonstrate Data Manipulation Operations in MYSQL	K3,K4	PSO5& PSO6	PO4

Mapping of C0s with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**3**	1	2	2	2	1
CO2	1	**3**	1	2	2	2
CO3	2	2	**3**	**3**	1	1
CO4	1	2	1	2	**3**	1
CO5	2	2	2	1	**3**	**3**

Mapping of C0s with POs

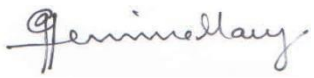
CO/ PSO	PO1	PO2	PO3	PO4
CO1	**3**	1	2	2
CO2	2	**3**	1	2
CO3	2	1	**3**	2
CO4	2	2	1	**3**
CO5	1	1	2	**3**

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

COURSE DESIGNER:
Dr. T.Vasantha

Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature& Name

III B.Sc. Computer Science

SEMESTER –VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	19B6SB6	Internet Programming - Paper VI Web Services Development Using XML	Skill Based Elective	2	2

COURSE DESCRIPTION

Xml is used for designing the web pages in an application.xml means extensible

markup language. The tags used in the language contain the content specific meaning.

COURSE OBJECTIVES

OBJECTIVES :

- To Know about Web Services that convert application into a Web-application
- To understand the differences between HTML and XML
- To understand XML as a markup language for transferring data
- To learn XML syntax and to create and validate XML documents

SYLLABUS

UNIT I: INTRODUCTION TO WEB SERVICES (6 Hrs)

Introduction – Background - Services-Web Services - Web Services Application Opportunities.

UNIT II: EMERGENCE OF WEB SERVICES (6 Hrs)

Emergence of Web Services – Background - Server-side Architecture Progression – Client-side Architecture Progression – Service-oriented Architecture and Web Services.

UNIT III : WEB SERVICES APPLICATION SCENARIO (6 Hrs)

Web Services Application Scenario – Background - Web Services Hype and the Industry – Web Services and the Industry Acceptance.

UNIT IV : EXTENSIBLE MARKUP LANGUAGE (6 Hrs)

Extensible Markup Language - Background – History of Markup Language – What is XML – Validation of XML Data – Advanced XML – Document Constraining.

UNIT V: SIMPLE OBJECT ACCESS PROTOCOL (6 Hrs)

Simple Object Access Protocol – Background – What is SOAP – SOAP Interaction – SOAP Modelling – SOAP Binding.

SELF STUDY :

UNIT I : Web Services Application Opportunities
UNIT II : Emergence of Web Services
UNIT III : Web Services and the Industry Acceptance.
UNIT IV : Background – History of Markup Language
UNIT V: SOAP Modeling

TEXT BOOK

Web Services An Introduction, B.V Kumar, S.V. Subrahmanya, Tata McGraw-Hill Publishing Company Limited, New Delhi, 2009.
Chapters : 1- 5

REFERENCEBOOKS

1. Programming the World Wide Web, Robert W. Sebesta Pearson Published, 2012.

2. Xml and Web Services ,Ron Schmelzer, Pearson Published, 2013.

3. Web Technology, S.PadmaPriya, Scitech Publications (India)Pvt.Ltd, 2013.

Digital Open Educational Resources (DOER)

1. https://www.w3schools.com/xml/
2. https://www.tutorialspoint.com/webservices/what_are_web_services.htm
3. https://youtu.be/ekXzRqyZtiU

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I - INTRODUCTION TO WEB SERVICES				
1.1	Introduction – Background - Services-Web Services -	3	Chalk & Talk	Black Board
1.2	Web Services Application Opportunities.	3	Lecture	Smart Board
UNIT II: EMERGENCE OF WEB SERVICES				
2.1	Emergence of Web Services – Background -	2	Chalk & Talk	Black Board
2.2	Server-side Architecture Progression – Client-side Architecture Progression –.	2	Chalk & Talk	Black Board
2.3	Service-oriented Architecture and Web Services	2	Discussion	Google classroom
UNIT III: WEB SERVICES APPLICATION SCENARIO				
3.1	Web Services Application Scenario – Background -	3	Chalk & Talk	Black Board
3.2	Web Services Hype and the Industry – Web Services and the Industry Acceptance.	3	Chalk & Talk	Black Board
UNIT IV: EXTENSIBLE MARKUP LANGUAGE				
4.1	Extensible Markup Language - Background – History of Markup Language –	3	Lecture	PPT & Smart Board
4.2	What is XML – Validation of XML Data – Advanced XML – Document Constraining.	3	Chalk & Talk	Black Board
UNIT V: SIMPLE OBJECT ACCESS PROTOCOL				
5.1	**(6 Hrs)** Simple Object Access Protocol – Background – What is SOAP –	3	Chalk & Talk	Black Board
5.2	SOAP Interaction – SOAP Modelling – SOAP Binding.	3	Chalk & Talk	Black Board

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

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

COURSE OUTCOMES (CO)

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	POs ADDRESSED
CO 1	Define the Web Services that convert application into a Web-application	K1	PSO1	PO1
CO 2	Analyze the differences between HTML and XML	K2 & K3,	PSO2	PO2
CO 3	Apply XML markup language for transferring data	K3& K4	PSO3 & PSO4	PO3
CO 4	Create and validate XML documents	K2, K3 & K4	PSO5	PO4
CO 5	Discuss Simple Object Access Protocol in detail	K2 & K4	PSO6	PO3

Mapping COs Consistency with PSOs

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	**3**	1	1	2	2	2
CO 2	1	**3**	2	1	2	2
CO 3	2	2	**3**	**3**	1	1
CO 4	1	1	2	2	**3**	1
CO 5	2	2	2	1	1	**3**

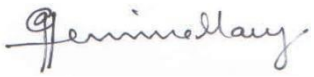
Mapping COs Consistency with POs

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

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

COURSE DESIGNER:
Dr. P.Meenakshi Sundari

Forwarded by



(Dr.G.Germine Mary)

HOD'S Signature& Name

SELF STUDY PAPER

UNDER GRADUATES
For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	20UGSLB1	**DIGITAL IMAGE PROCESSING**	EXTRA CREDIT	-	2

COURSE DESCRIPTION
The course helps to learn the fundamental concepts of digital image processing

COURSE OBJECTIVES
- To inculcate ideas and create interest in processing images techniques.
- To expose students to current applications in the field of digital image processing.

SYLLABUS

UNIT I : Introduction
Introduction- Definition of Digital Image Processing- The Origins of Digital Image

Processing – Examples of Fields that Use Digital Image Processing – Fundamental Steps in Digital Image Processing – Components of an Image Processing System.

UNITII :Digital Image Fundamentals

Image Sensing and Acquisition – Image Sampling and Quantization – image interpolation - Some Basic Relationships between Pixels – An Introduction to the Mathematical Tools Used in Digital Image Processing.

UNITIII:Intensity Transformations And Spatial Filtering

Background-Some Basic Intensity Transformation Functions – Fundamentals of Spatial Filtering – Smoothing Spatial Filters – Sharpening Spatial Filters.

UNIT IV:Image Restoration And Reconstruction

A Model of the Image Degradation/Restoration Process-Noise Models - Restoration in the Presence of Noise Only-Spatial Filtering.

UNITV:Image Segmentation

Segmentation Fundamentals -Point,Line and Edge Detection.

TEXT BOOK

Digital Image Processing, Rafael.C.Gonzalez and Richard E.Woods,3rdEdition, Pearson Publications, 2014.

REFERENCE BOOKS

1. ***Fundamentals of Digital image processing***, Anil Jain, PHI Learning Pvt Ltd. 2011.
2. ***Digital Image Processing & Analysis***, B.Chanda, D.DuttaMajumder, 2nd Edition, PHI Learning Pvt Ltd. 2013.
3. ***Digital Image Processing***, Chaturvedi, 1st Edition, Vayu Educaton India Publisher, 2013.

Digital Image Processing: Principles and Applications, Wilhelm Burger and Mark J. Burge**,** 2nd Edition, Springer

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

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

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	POs ADDRESSED
CO 1	Explain the representation of digital image and its manipulations	K1	PSO1	PO1
CO 2	Analyze image sampling and quantization requirements and implications	K2 & K3,	PSO2	PO2
CO 3	Describe various Filtering Techniques	K3& K4	PSO3 & PSO4	PO3
CO 4	Demonstrate Restoration And Reconstruction models	K2, K3 & K4	PSO5	PO4
CO 5	Utilize Segmentation for extracting information from the images	K2 & K4	PSO6	PO3

Mapping COs Consistency with PSOs

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

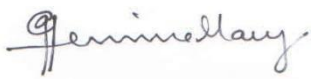
Mapping COs Consistency with POs

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

Note: ♦ Strongly Correlated – **3** ♦ ModeratelyCorrelated – **2**
♦ WeaklyCorrelated -**1**

COURSE DESIGNER:
Dr. P.Meenakshi Sundari

Forwarded by



(Dr.G.Germine Mary)
HOD'S Signature& Name

IV- A SELF-LEARNING EXTRA CREDIT COURSES

UNDER GRADUATES
For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	21UGSLB2	**PRINCIPLES OF CRYPTOGRAPHY**	EXTRA CREDIT	-	2

COURSE DESCRIPTION

To understand and use different cryptographic algorithm to ensure information security

COURSE OBJECTIVE/S

- To gain knowledge about the mathematics of the cryptographic algorithms
- To get an insight into the working of different existing cryptographic algorithms
- To learn how to use cryptographic algorithms in security

UNITS

UNIT I: NUMBER THEORY

Number Theory: Fermat's theorem, Cauchy's theorem, Chinese remainder theorem, Primality testing algorithm, Euclid's algorithm for integers, quadratic residues, Legendre symbol, Jacobi symbol

UNIT II:CRYPTOGRAPHY AND CRYPTANALYSIS

Cryptography and cryptanalysis, Classical Cryptography, different type of attack: CMA, CPA, CCA etc., Shannon perfect secrecy, OTP, Pseudo random bit generators, stream ciphers and RC4 .

UNIT III: BLOCK CIPHERS

Block ciphers: Modes of operation, DES and its variants, finite fields (2n), AES, linear and differential cryptanalysis

UNIT IV: PUBLIC KEY CRYPTOGRAPHY

One-way function, trapdoor one-way function, Public key cryptography, RSA cryptosystem, Diffie-Hellman key exchange algorithm, ElGamal Cryptosystem

UNIT V: CRYPTOGRAPHIC HASH FUNCTIONS

Cryptographic hash functions, secure hash algorithm, Message authentication, digital signature, RSA digital signature

TEXT BOOKS

1. Cryptography: Theory and Practice, Stinson. D.,4th edition, Chapman & Hall/CRC Press, 2018

REFERENCE

1. ***Cryptography and Network Security Principles and practice***, W. Stallings,6TH Edition, Pearson Education Asia, 2014

2. Behrouz A. Forouzan and Debdeep Mukhopadhyay, "Cryptography and Network Security", 3rd edition, Tata McGraw Hill, 2015
3. Thomas Koshy, "Elementary Number Theory with Applications", Elsevier India, 2005

DIGITAL OPEN EDUCATIONAL RESOURCE

Online course: course on cryptography by Dan Boneh

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

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

UNDER GRADUATES
For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	21UGSLB3	**WEB APP WITH SPRING BOOT**	EXTRA CREDIT	-	2

COURSE DESCRIPTION

This course provide a platform to develop a stand-alone web application with Spring framework.

COURSE OBJECTIVE/S

- To gain knowledge about project management tool, Maven
- To get an insight into spring MVC

- To build a complete application with database connectivity

UNITS

Unit I: Create and Setup Spring Web Project using Maven

Maven Project Creation – POM.xml – Plugins – Coordinates – Repositories – Aspects related to project structure

Unit II: Introduction to Spring MVC

Spring – IOC Container – Dependency Injection – Spring MVC flow – Model – View – Controller

Unit III: Build Spring MVC Application

Dispatcher Servlet – Form Backing Object – Spring Form Tags – Spring MVC Annotations – Map Web Requests

Unit IV: Introduction to Spring Boot

Spring Boot – Architecture – @SpringBootApplication – run Method – Spring Annotations – Autowiring

Unit V: Database Connectivity

Application Context – JdbcTemplate – Data Access Layer

References:

1. https://www.javatpoint.com/spring-boot-tutorial
2. https://www.tutorialspoint.com/spring/spring_web_mvc_framework.htm
3. https://www.javatpoint.com/spring-mvc-tutorial
4. https://howtodoinjava.com/spring-mvc-tutorial/

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

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

UNDER GRADUATES

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
UACS	21UGSLB4	**CONTENT MANAGEMENT SYSTEMS**	EXTRA CREDIT	-	2

COURSE DESCRIPTION

Basic concepts and techniques of web development using Content Management System

COURSE OBJECTIVE/S

- To understand the basic role of CMS
- To understand the WordPress Environment
- To develop web sites using CMS software.

UNITS

UNIT I: CONTENT MANAGEMENT SYSTEMS

Introduction, Components of content management, Features of cms, Advantage of cms, Disadvantages of cms, Choosing cms.

UNIT II: INTRODUCTION TO WORDPRESS

Introduction, Installation, Preparation, Step by step installation, Web host with a pre-installed version of WordPress, Updating WordPress, Getting to know the dashboard , Front end / back end, Log in (to get access to the back end) , Configuring WordPress (Settings), General Settings, Writing Settings, Reading Settings, Discussion Settings, Default Article Settings

UNIT III: PAGES, POSTS, MENUS

The Basics Of WordPress, The WYSIWYG editor, Hyperlinks , Handling media, Inserting an image, Editing an image, Deleting an image, Creating a gallery, Editing or deleting a gallery, Documents (pdf, doc, xls,...)
Pages : Overview, add a new page, edit an existing page, delete a page
Posts: Overview, add a new post, edit an existing post, delete a post, categories & tags, Post categories, Post tags,
Custom menus, Introduction, Create a custom menu, Add custom links, Change the order of the menu items, creating a submenu, Remove a menu item

UNIT IV: THEME, WIDGETS, PLUGINS

User management : Introduction, Different roles in WordPress, add a Themes: Working of theme, Widgets , activate a widget, Plugins-What's a plugin?, Find a plugin, How to install a plugin?, How to configure a plugin, My favourite plugins.

UNIT V: Other CMS Web Site Development

Joomla, Drupal : introduction, Creating Web Site

References:

- **Professional WordPress: Design and Development ,** Book by Brad Williams, David Damstra, and Hal Stern, Wiley Publisher March 2010.
- **Wordpress Complete, Karol Krol (Author), Sixth Edition Paperback, 2017**

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

The levels of CIA Assessment based on Revised Bloom's Taxonomy are :

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse

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

IV-B INTERDISCIPLINARY SELF-LEARNING EXTRA CREDIT COURSES

UNDER GRADUATES

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	21UGIDBP1	**FUNDAMENTALS & PROGRAMMING OF MICROPROCESSOR 8085MS**	EXTRA CREDIT	-	2

COURSE DESCRIPTION

The course provides an exposure assembly language programs of Intel 8085

COURSE OBJECTIVE/S

This course deals with organization of microprocessor, its important signals, instruction cycle, fetch cycle, execute cycle, timing diagrams, registers and flags of Intel 8085 and assembly language programs of Intel 805

UNITS

Unit I: Introduction to Microprocessors

Word Length of a Computer or Microprocessor-Evolution of Microprocessors-Evolution of Digital Computers-Computer Generation-Single Chip Microcomputers-Embedded Microprocessor-Hardware, Software and Firmware-CPU-Buses

Unit II: Microprocessor Architecture

Introduction-Intel 8085-ALU-Timing and control unit-Registers-Pin Configuration-Intel 8085 Instructions-Instruction Cycle-Fetch operation-Execute operation-Instruction and Data flow

Unit III: Instruction set of 8085

Introduction-Instruction and Data formats-Addressing modes-Direct Addressing-Register Addressing - Register Indirect Addressing – Immediate Addressing-Implicit Addressing – Status flags- Symbols and Abbreviations- Intel 8085 instructions- Data transfer group-Arithmetic Group-Logical group-Branch Group-Stack I/O and Machine Control Group

Unit IV: Assembly language programming

Introduction to programming –Program development using Mnemonics – converting mnemonic code into Assemble code – Entering the code – Editing and Executing the Assemble language programs -Programs to do arithmetic operations – Data transfer operations - Logical operations – Relational operations - Rotation operations –

Unit V: Program Control instrctions

Programs using looping statements – operations on 16-bit data – Programs using timer control – Seven segment Display control programs

DYNAMISM:

UNIT IV: Simple program development

UNIT V: Designing display control

TEXT BOOKS:

1. Fundamentals of MicroProcessors and Microcomputers by B. Ram, Sixth Revised and Enlarged Edition, Dhanpat Rai Publications Ltd.
2. Microprocessor Architecture, Programming and Applications with 8085 by Ramesh Goankar – Sixth Edition , Penram International Publishing Private Ltd, India

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

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

INTERDISCIPLINARY SELF-LEARNING EXTRA CREDIT COURSE

UNDER GRADUATES

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	21UGIDBT1	**TAMILUM INAIYAMUM**	EXTRA CREDIT	-	2

HRS/WEEK: 6 **CREDITS: 2**

COURSE DESCRIPTION

,iza mwpKfk;> ,izaj;jpd; tuyhW> ,izaj;jpd; gad;ghL> ,izatop jkpo; fw;wy; Kjypatw;iw mwpjy;.

COURSE OBJECTIVE/S

,izaj;jkpo; cj;jpfisg; gpioapd;wpf; fw;Wf;nfhs;Sjy;. muRg;gzptha;g;Gg; ngWjy;.

COURSE OUTCOMES (CO)

No.	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
CO 1	,iza mwpKfKk; ,izag; gad;ghLk; mwptu;.	K1
CO 2	,izatopj; jkpo; fw;wy; Kiwia ,dk; fhz;gu;.	K2
CO 3	fy;tprhh; ,izajsq;fis mwpe;J Ntiytha;g;igg; ngWtu;.	K2,K3

myF 1 : ,izak; - mwpKfKk; tuyhWk; - nra;jpfisj; Njbg; ngWjy; - ,izak; - nrhw;nghUs; - njhiyNgrpf; fk;gp topj; jftywpAk; Nrit - tiyg;gpd;dy; - Kjy; ,izajsk; - jkpopy; Kjy; ,izajsk; - ,izaKfthp - ,izaj;jpd; gad;fs; - ,iza khehLfs;.

myF 2 : ,izatopj; jkpo; fw;wYk; fw;gpj;jYk; - kuGrhh; fw;gpj;jy; Kiwfs; - Mrphpaiu ikakhff; nfhz;l fy;tpKiw - khztiu ikakhff; nfhz;l fy;tp Kiw - ,izatopf; fw;wYk; fw;gpj;jYk; - gad;fs; - ,izatop jkpo; fw;wy; - fw;gpj;jy; - jkpo; ,izag; gy;fiyf;fofk; -

myF 3 : jkpo;g; gy;fiyf;fofq;fs; - fy;tprhh; ,iza jsq;fs; - fw;gpg;git - E}yfq;fs; - jfty;fis toq;Fgit - tpf;fpg;gPbah - jkpo;tpf;fpg;gPbah - kdpjts Nkk;ghl;Lj;Jiw jkpo;ehL khepy cah;fy;tp kd;wk; - jkpo;ehL mwptpay; kw;Wk; njhopy;El;g kd;wk; - cah;fy;tpj;Jiw - jkpo; tsh;r;rpj;Jiw - tiytha;g;G ,iza jsq;fs; - jkpo;ehL muRg; gzpahsh; Njh;thizak; - kj;jpa muRg; gzpahsh;

Njh;thizak; - ,e;jpa Ml;rpg;gzp - Mrphpah;
Njh;T thhpak; - ,iza Ntiy tha;g;G ikaq;fs;
Ntiy tha;g;gfj; jfty;fs;.

UNIT IV: INTRODUCTION TO INTERNET

Introduction to Internet – What is Internet – How does Internet works – What is special about the Internet – A brief history of Internet. How Internet Works – People and Organizations – Hardware. World Wide Web (WWW) – Internet and Web – How the web works – A brief history of WWW. Web Browsers and Web Browsing : Web Browsers – Types of Browser – Web Browsing Tips.

UNIT V : E-MAIL

E-mail – How E-mail Works – Why use E-mail – E-mail – Names and Addresses - Mailing Basics – E-mail Ethics – Spamming – E-mail – Advantages and disadvantages – Smileys – Free e-mail Providers. Anonymity, Safety and Privacy – Privacy – Anonymity – Encryption – Understanding Safety and Privacy – Viruses – Virus from E-mails – Virus from Websites.

Text Books:

ghlE}y; : ,izaKk; ,dpa jkpOk;>

Kidth; f. Jiuaurd;> ,izg;Nguhrphpah; jkpo;j;Jiw> murpdh; fiyf;fy;Y}hp (jd;dhl;rp)> Fk;gNfhzk;-1. ,ir gjpg;gfk;> 24>rghpefh;> lhf;lh; FU%h;j;jp rhiy> Fk;gNfhzk; - 1> miyNgrp : 9442426552> njhiyNgrp : 0435 – 2402501.

2. Internet for Everyone, Alexis Leon, Mathew Leon, Leon Tech World Publication, 2012.

ghh;it E}y;fs; : References

1. Kidth; K. ,sq;Nfhtd; : ,izak; fw;Nghk;> tay;ntspg; gjpg;gfk;> ,ilf;fl;L cs;Nfhl;il (mQ;ry;)> fq;ifnfhz;l NrhoGuk; (top)> mhpaY}h; khtl;lk; - 612 901.

2. K. godpag;gd; : fzpdpAk; ,izaKk;> kPdhl;rp E}yf ntspaPL> GJf;Nfhl;il – 622 003.

3. K. godpag;gd; : ,iza cyfk ;> v];.utpr;re;jpud; ghkh gjpg;gfk;> nrd;id – 24.

4. gthdp : ,d;iwa tho;f;ifapd; ,izak;> n[a;rq;fh; gg;spNf\d;];> 38> eNlr ma;ah; njU> jp.efh;> nrd;id – 17.

5. How the Internet works, Preston Gralla, Pearson Education Publication, 2012.

6. The Internet Book, Douglas E.Comer, Pearson Education Publication, 2015.

EVALUATION PATTERN

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 %

CIA	
Scholastic	35
Non Scholastic	5
	40

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse

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

UNDER GRADUATES

Chemistry Problem Solving using C Programming

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
UACS	21UGIDBC1	**Chemistry Problem Solving using C Programming**	EXTRA CREDIT	**-**	**2**

COURSE DESCRIPTION

This paper focuses on all the important aspects of theory and applications of C-programming to solve problems in CHEMISTRY.

COURSE OBJECTIVES

This paper deals with programming in C languaage and its applications to solve problems in chemistry.

UNIT –I INTRODUCTION TO C LANGUAGE

History of C, Importance of C, Introduction, Character set in C, C Tokens, Style of C Language – Identifiers and Key words – Constants, Variables and Data types, Declaration of Variables, Defining Symbolic constants, Declaring a variable as Constant.

UNIT –II PROGRAMMING IN C LANGUAGE

Operators in C, Input and Output in C, Control statements in C, Storage classes in C, Decision making and Branching, Decision Making and Looping, Functions in C, Arrays , Preprocessors in C, The type def statement and Files in C language.

UNIT –III APPLICATIONS OF C LANGUAGE IN INORGANIC CHEMISTRY

Writing the Program using the various features of C language –Determination of mass number of any atom-Determination of electronegativity of an atom from bond energy data using pauling's relation-Determination of electronegativity of an atom from bond energy data using Mulliken's relation

UNIT –IV APPLICATIONS OF C LANGUAGE IN GENERAL CHEMISTRY

Determination of RMS, MPV and Average Velocity-Calculation of ionic strength, Determination of lattice energy of a crystal using Born-Lande equation, Determination of Shapes of molecules or ions using VSEPR Theory

UNIT –V APPLICATIONS OF C LANGUAGE IN PHYSICAL CHEMISTRY

Calculation of Partition Co-efficient, Calculation of Heat of the solution, Detemination of Normality, Molarity and Molality of solutions, Determination of half life of a radioactive nucleus.

REFERENCES:

1. Balagurusamy E, Programming in ANSI C, 8th Edition, McGraw Hill Education, 2019
2. Raman KV, Computers in Chemistry, Tata McGraw Hill Publications, 2013

EVALUATION PATTERN

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 %

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

- **The levels of CIA Assessment based on Revised Bloom's Taxonomy are :**

K1- Remember**,** **K2-**Understand**,** **K3-**Apply**,** **K4-**Analyse

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