FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with "A" Grade by NAAC (3rd Cycle)
74th Rank in India Ranking 2021 (NIRF) by MHRD
Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT: COMPUTER APPLICATIONS

NAME OF THE PROGRAMME : B.C.A

PROGRAMME CODE   : USCA

ACADEMIC YEAR   : 2021 - 2022

COLLEGE PROFILE

Fatima College (Autonomous), Mary Land, Madurai, is a Post Graduate and Research Institution for Women affiliated to Madurai Kamaraj University. It is a Catholic Minority institution established and run by St. Joseph's Society of Madurai (of the Congregation of the Sisters of St. Joseph of Lyons, France). This institution came into existence through the tireless efforts of the missionary sisters of St. Joseph of Lyons and the zeal and heroic sacrifice of Rev. Sr. Rose Benedicta, the Foundress of the College.

The College was started in St. Joseph's Campus Madurai as a Second Grade College with 63 students in 1953. It was upgraded into a Post Graduate College in 1964; Autonomous in 1990 and a Research Institute in 2004. The College now offers 21 Undergraduate Programmes, 13 Postgraduate Programmes, 2 Professional Programme, 5 M.Phil. Programmes and 6 Departments have become Research Centres. It has strength of 4134 Students, 206 Teaching Staff and 100 Non-Teaching Staff.

The comprehensive assessment by NAAC in 1999 placed Fatima College in Five Star Status of merit. The college strives to sustain excellence, quality and relevance while equipping the students to meet the demands of higher education in India. In 2004 UGC conferred on Fatima College the status of College with Potential for Excellence. In 2006 and 2013 NAAC Re-Accredited the College with 'A' Grade. The College was ranked 94th in the All India NIRF Ranking in 2019 by MHRD.

VISION OF THE COLLEGE

WOMEN'S EMPOWERMENT THROUGH EDUCATION

The vision of the college is to empower women by developing human capabilities through quality education based on Christian values, making them responsible citizens who can work for the advancement of the society and promote communal harmony in the multi-religious and multi-cultural reality of India eventually evolving into women of communion.

MISSION OF THE COLLEGE

- To enhance quality of life through the development of individuals.
- To enable women to become contributors in the economic, social and political development of India.
- To equip the students with 21st century skill-sets with a focus on problem-solving abilities
- To motivate them to work for social justice
- To give preference to the rural economically backward and first-generation learners
- To enable students to be employed in the technology oriented competitive market

VISION OF THE DEPARTMENT

The vision of the department is to empower women by bringing out their hidden potentials by providing quality computer education to meet excellence and adapt to the challenges of the society.

MISSION OF THE DEPARTMENT

- To bring out the inherent talents of each student & guide them to adapt to the dynamic IT world and make them responsible citizens.

- To be trained with cutting edge technologies in order to improve their personality in a supportive and caring environment.

- To build leadership traits among students.

- To inculcate ethical attitude among computer professionals.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

A graduate of B.C.A programme after three years,

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 individuals and team performers, exhibiting progress, flexibility, transparency and accountability in their professional work
PEO 3	Our graduates will be effective managers in all sorts of real life and professional circumstances, making ethical decisions, pursuing excellence within the time frame and in demonstrating apt leadership skills
PEO 4	They will engage locally and globally evincing social and environmental stewardship, demonstrating civic responsibilities and employing right skills at the right moment

GRADUATE ATTRIBUTES (GA)

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

I. SOCIAL COMPETENCE	
GA 1	Deep disciplinary expertise with a wide range of academic and digital literacy
GA 2	Hone creativity, passion for innovation and aspire excellence
GA 3	Enthusiasm towards emancipation and empowerment of humanity
GA 4	Potentials of being independent
GA 5	Intellectual competence and inquisitiveness with problem solving abilities befitting the field of research
GA 6	Effectiveness in different forms of communications to be employed in personal and professional environments through varied platforms
GA 7	Communicative competence with civic, professional and cyber dignity and decorum
GA 8	Integrity respecting the diversity and pluralism in societies, cultures and religions
GA 9	All – inclusive skill sets to interpret, analyse and solve social and environmental issues in diverse environments
GA 10	Self awareness that would enable them to recognise their uniqueness through continuous self-assessment in order to face and make changes building on their strengths and improving their weaknesses
GA 11	Finesse to co-operate exhibiting team-spirit while working in groups to achieve goals
GA 12	Dexterity in self-management to control their selves in attaining the kind of life that they dream for

GA 13	Resilience to rise up instantly from their intimidating setbacks
GA 14	Virtuosity to use their personal and intellectual autonomy in being life-long learners
GA 15	Digital learning and research attributes
GA 16	Cyber security competence reflecting compassion, care and concern towards the marginalised
GA 17	Rectitude to use digital technology reflecting civic and social responsibilities in local, national and global scenario
II. PROFESSIONAL COMPETENCE	
GA 18	Optimism, flexibility and diligence that would make them professionally competent
GA 19	Prowess to be successful entrepreuners and become employees of trans-national societies
GA 20	Excellence in Local and Global Job Markets
GA 21	Effectiveness in Time Management
GA 22	Efficiency in taking up Initiatives
GA 23	Eagerness to deliver excellent service
GA 24	Managerial Skills to Identify, Commend and tap Potentials
III. ETHICAL COMPETENCE	
GA 25	Integrity and be disciplined in bringing stability leading a systematic life promoting good human behaviour to build better society
GA 26	Honesty in words and deeds
GA 27	Transparency revealing one's own character as well as self-esteem to lead a genuine and authentic life
GA 28	Social and Environmental Stewardship
GA 29	Readiness to make ethical decisions consistently from the galore of conflicting choices paying heed to their conscience

GA 30	Right life skills at the right moment

PROGRAMME OUTCOMES (PO)

On completion (after three years) of B.C.A programme, the students are able to:

PO 1	Model Tool Usage: Understand, analyze and apply the concepts of latest technologies to bring solutions to the problems in the areas of computer applications.
PO 2	Computer Knowledge: Analyze and synthesize computing systems through quantitative and qualitative techniques along with effective verbal and non-verbal communication.
PO 3	Environment Sustainability: Apply technical and professional skills practically to excel in providing solutions for solving complex real life problems satisfying industrial and societal needs.
PO 4	Team Work with Professional Skills: To promote leadership skills and also as an individual on working with multi-disciplinary projects using Modern computing tools and Open-Source Technologies.
PO 5	Ethics: Commit to professional ethics and cyber regulations considering the societal and environmental issues within local and global contexts for sustainable development

PROGRAMME SPECIFIC OUTCOMES (PSO)

On completion (after three years) of B.C.A programme, the students are able:

PSO 1	To achieve significant understanding of theoretical and programming concepts in key areas of Computer Applications.
PSO 2	To expand and sharpen practical and problem solving skills to provide solutions to industry, society and business problems.
PSO 3	To apply modern practices and strategies in software project development using open source and other programming environments.
PSO 4	To inculcate the ability to analyze and interpret problems, make inferences from the resulting data and apply technical skills to solve real time problems.
PSO 5	To make graduates understand various professional, technical and ethical issues prevailing in the industry
PSO 6	To gain exposure in preventive, ethical hacking and security technologies in recent trends
PSO 7	To equip the students to meet the requirement of Corporate world and Industry standards
PSO 8	To engage in professional development and to pursue Post graduate education in the fields of Information Technology and Computer Applications
PSO 9	To generate ideas of innovation and to identify, formulate and solve problems in software solutions, outsourcing services, public and private sectors
PSO 10	To engage the students technically on par with the societal and environmental responsibilities added with professional ethics

FATIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF COMPUTER APPLICATIONS (BCA)

For those who joined in June 2021 onwards

PROGRAMME CODE :USCA

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	CRE DIT	CIA Mks	ESE Mks	TOT. MK s
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**	**160**	**240**	**400**

PART – I – FRENCH

Offered by The Department of French

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRE DIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19RL1C1	PART 1 LANGUAGE FRENCH	5	3	40	60	100
2.	II	19RL2C2	PART 1 LANGUAGE FRENCH	5	3	40	60	100
3.	III	19RL3C3	PART 1 LANGUAGE FRENCH	5	3	40	60	100
4.	IV	19RL4C4	PART 1 LANGUAGE FRENCH	5	3	40	60	100
			Total	**20**	**12**	**160**	**240**	**400**

PART – I – HINDI

Offered by The Department of Hindi

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRE DIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19DL1C1	PART 1 LANGUAGE HINDI	5	3	40	60	100
2.	II	19DL2C2	PART 1 LANGUAGE HINDI	5	3	40	60	100
3.	III	19DL3C3	PART 1 LANGUAGE HINDI	5	3	40	60	100
4.	IV	19DL4C4	PART 1 LANGUAGE HINDI	5	3	40	60	100
			Total	**20**	**12**	**160**	**240**	**400**

PART – II -ENGLISH – 12 CREDITS

Offered by The Research Centre of English

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRE DIT	CIA Mks	ESE Mks	TOT . MK s
1.		19EL1WB	BASIC COMMUNICATIVE ENGLISH	5	3	40	60	100
2.	I	19EL1WI	INTERMEDIATE COMMUNICATIVE ENGLISH	5	3	40	60	100
3.		19EL1WA	ADVANCED COMMUNICATIVE ENGLISH	5	3	40	60	100
4.		19EL2WB	ENGLISH COMMUNICATION SKILLS (BASIC)	5	3	40	60	100
5.	II	19EL2WI	ENGLISH FOR EMPOWERMENT (INTERMEDIATE)	5	3	40	60	100
6.		19EL2WA	ENGLISH FOR CREATIVE WRITING (ADVANCED)	5	3	40	60	100
7.	III	19EL3WN	ENGLISH FOR DIGITAL ERA	5	3	40	60	100
8.	IV	19EL4WN	ENGLISH FOR INTEGRATED DEVELOPMENT	5	3	40	60	100
			Total	**20**	**12**	**160**	**240**	**400**

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

MAJOR CORE COURSES INCLUDING PRACTICALS : 60 CREDITS

S. NO	SEM	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	I	19J1CC1	PROGRAMMING IN C	6	4	40	60	100
2.		19J1CC2	LAB IN C PROGRAMMING	6	3	40	60	100
3.	II	19J2CC3	OBJECT ORIENTED PROGRAMMING IN C++	6	4	40	60	100
4.		19J2CC4	LAB IN C++ PROGRAMMING	6	3	40	60	100
5.	III	19J3CC5	OPERATING SYSTEMS	6	4	40	60	100
6.		19J3CC6	LAB IN RELATIONAL DATABASE MANAGEMENT SYSTEMS	6	3	40	60	100
7.	IV	19J4CC7	DATA STRUCTURES AND ALGORITHMS	6	4	40	60	100
8.		19J4CC8	LAB IN WEB PROGRAMMING	6	3	40	60	100
9.	V	19J5CC9	SOFTWARE ENGINEERING	5	5	40	60	100
10.		19J5CC10	JAVA PROGRAMMING	5	5	40	60	100
11.		19J5CC11	LAB IN JAVA PROGRAMMING	5	3	40	60	100
12.		19J5CC12	LAB IN DOT NET PROGRAMMING	5	3	40	60	100
13.	VI	19J6CC13	PYTHON	5	5	40	60	100
14.		19J6CC14	COMPUTER NETWORKS	5	5	40	60	100
15.		19J6CC15	LAB IN PYTHON	5	3	40	60	100
16.		19J6CC16	PROJECT	1	3	40	60	100

ALLIEDCOURSES- 20 CREDITS

S.NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19G1ACJ1	DISCRETE MATHEMATICS	5	5	40	60	100
2.	II	19G2ACJ2	OPERATIONS RESEARCH	5	5	40	60	100
3.	III	19AC3ACJ3	PRINCIPLES OF FINANCIAL ACCOUNTING AND ACCOUNTING PACKAGE	5	5	40	60	100
4.	IV	19P4ACJ4	DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION	5	5	40	60	100

ELECTIVES-15 CREDITS

S. No	SEM	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TO TM ks
1.	V	19J5ME1 / 19J5ME2	CLOUD COMPUTING / MOBILE COMPUTING	5	5	40	60	100
2.	VI	19J6ME3 / 19J6ME4	SECURITY PRACTICES/ DATA MINING	5	5	40	60	100
3.		19J6ME5 / 19J6ME6	INTERNET OF THINGS (IoT) / HUMAN COMPUTER INTERACTION	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.		19G1VE	PERSONAL VALUES	1	1	40	60	100
2.	I	21J1NME	NON MAJOR ELECTIVE – I NIMATIONTOOLS ANDTECHNIQUES	2	2	40	60	100
3.		19G2VE	VALUES FOR LIFE	1	1	40	60	100
4.	II	21J2NME	NON MAJOR ELECTIVE – II ANIMATIONTOOLS ANDTECHNIQUES	2	2	40	60	100
5.		19G3EE	ENVIRONMENTAL EDUCATION	1	1	40	60	100
6.	III	19J3SB1	SKILL BASED – I LOGICAL REASONING AND DATA INTERPRETATION	2	2	40	60	100
7.		19G4EE	ENVIRONMENTAL EDUCATION	1	1	40	60	100
8.	IV	19J4SB2	SKILL BASED – II DATA ANALYSIS USING SPREADSHEETS	2	2	40	60	100
9.		19J5SB3	SKILL BASED –III LAB IN ANIMATIONTECHNIQUES	2	2	40	60	100
10.	V	19J5SB4	SKILL BASED – IVLAB IN E –CONTENT DEVELOPMENT	2	2	40	60	100
11.	VI	19J6SB5	SKILL BASED – V LAB IN PHP	2	2	40	60	100
12.		19J6SB6	SKILL BASED – VI LAB IN LINUX	2	2	40	60	100

PART – V – 1 CREDIT

SHIFT - II (2021 Onwards)

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

OFF-CLASS 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**	40	2	I & II	40	60	100
19UADFC	**ONLINE SELF LEARNING COURSES-** Foundation Course for Arts	40	2	I	40	60	100
	ONLINE SELF	40	2	II	40	60	100

COURSE CODE	COURSE TITLE	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA Mks	ESE Mks	TOTAL Mks
	LEARNING COURSE- Foundation Course for Science						
19UADES	Social & Professional Ethics	15	1	III	40	60	100
	Personality Development	15	1	IV	40	60	100
	Family Life Education	15	1	V	40	60	100
	Life Skills	15	1	VI	40	60	100
19UADHR	**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**				

EXTRA CREDIT COURSES

COURSE CODE	SELF LEARNING COURSES for ADVANCED LEARNERS	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA MKS	ESE MKS	TOTAL MARKS
21J1SL1	OPEN SOURCE ANIMATION TOOLS	-	2	II	40	60	100
21J2SL ST2	STATISTICAL DATA SCIENCE USING PYTHON	-	2	II	40	60	100
21J3SL ST3	STATISTICS USING R	-	2	II	40	60	100
21J4SL JM4	CONTENT WRITING AND VIDEO EDITING	-	2	IV	40	60	100
21J5SL AC5	EMERGING TRENDS AND TECHNOLOGIES	-	2	VI	40	60	100
21J6SLI6	DATA SCIENCE	-	2	VI	40	60	100
	MOOC COURSES / International Certified online Courses (Department Specific Courses/any other courses) * Students can opt other than the listed course from UGC-SWAYAM UGC / CEC	-	Minimum 2 Credits	I – VI	-	-	

OFF CLASS PROGRAMMES

19UGVAJ1 - Value Added Crash Course
Android Application Development

19UGVAJ2 - Crash Course
E-Content Development

19UAD2CA - Value Added Certificate Course
VB.NET – (Only for First Years – Compulsory)

I B.C.A
SEMESTER – I

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J1CC1	PROGRAMMING IN C	LECTURE	90	4

COURSE DESCRIPTION

To learn the basic knowledge of structured programming in C control structures, data structures and functions along with basic problem solving techniques.

COURSE OBJECTIVES

1. To acquire knowledge in algorithms and flowcharts
2. To learn the basic knowledge of structured programming in C
3. To solve problems through logical thinking

UNITS

UNIT I:INTRODUCTION TO COMPUTERS AND C FUNDAMENTALS (18 HRS)

Evolution of Computers – Generation of Computers – Classification of Computers – Characteristics of Computers– Advantages of Computers – Block Diagram of Digital Computer – Introduction to C – Simple C Programs – Character Set – Identifiers & Keywords – Data Types – Constant – Variables and Arrays – Declarations – Expressions – Statements – Symbolic Constants – Operators and Functions – Data Input and Output.

UNIT II: CONTROL STATEMENTS AND ARRAYS   (18HRS)

 Control Structures – Looping Structures – Program Structure – Definition and Processing of Arrays – Multi – dimensional Arrays – Arrays and Strings.

UNIT III: FUNCTIONS AND POINTERS   (18HRS)

Functions – Declaration – Definition – Categories – Pointers Declaration –

Passing Pointer to Function – Passing Function to another Function

UNIT IV: STRUCTURES AND UNIONS **(18HRS)**

 Defining Structure – Processing a Structure – Structures and Pointers – Passing – Structure to Function – Self Referential Structure – Union

UNIT V: DATA FILES **(18HRS)**

 Defining and Opening a File – Closing a File – Input Output Operations on Files – Error Handling during I/O Operations – Random Access Files– Command Line Arguments.

UNIT –VI DYNAMISM (Evaluation Pattern – CIA only)

Macros – Preprocessor Directives – DoS commands – Binary Files – Working C in Linux/Unix Environment – Usage of Compiler Shortcut Keys

REFERENCES:

1. Deitel H M and Deitel P J, C:How to Program, 5th Edition, Prentice Hall Publication, 2006.
2. E Balagurusamy, Programming with C, 7th Edition, Tata McGraw Hill Publication, 2017.
3. Byron Gottfried, Programming with C, Schaum Outline Series, 3rd Edition, McGrawHill Publication, 2016.
4. Yashwant Kanetkar, Let Us C, 13th Edition, BPB Publication, 2014

WEB REFERNCES :

1. https://www.javatpoint.com/c – programming – language – tutorial
2. https://www.tutorialspoint.com/cprogramming/
3. https://www.studytonight.com/c/

OER REFERENCES :

1. https://www.oercommons.org/authoring/14615-c-language/view
2. https://nptel.ac.in/courses/106/104/106104128/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
Unit -1 Introduction to Computers and C Fundamentals				
1.1	Topic 1Evolution of Computers – Generation of Computers	2	Chalk & Talk	Black Board
1.2	Classification of Computers – Characteristics of Computers – Advantages of Computers	2	Chalk & Talk	LCD
1.3	Block Diagram of Digital Computer – Introduction to C – Simple C Programs – Character Set	4	Lecture	PPT & White board
1.4	Identifier & keywords – data types – constant	2	Lecture	Smart Board
1.5	Variables and Arrays – Declarations – Expressions	2	Lecture	Black Board
1.6	Statements – symbolic constants	2	Discussion	Google classroom
1.7	Operators and Functions	2	Lecture	Black Board
1.8	Data Input and Output	2	Discussion	Black Board
Unit -2 Control Statements and arrays				
2.1	Control structures – looping structures	2	Chalk & Talk	Black Board
2.2	Program Structure – Definition and Processing of Arrays	2	Chalk & Talk	LCD
2.3	Multi – dimensional Arrays	4	Lecture	PPT & White board
2.4	Arrays and Strings	2	Lecture	Smart Board

2.5	Variables and Arrays	2	Lecture	Black Board
2.6	Declarations – expressions	2	Discussion	Google classroom
2.7	Statements – symbolic constants	2	Lecture	Black Board
2.8	Operators and Functions Data Input and Output	2	Discussion	Black Board
Unit -3 functions and pointers				
3.1	Functions – declaration – definition	3	Chalk & Talk	Black Board
3.2	Categories	4	Chalk & Talk	LCD
3.3	Pointers declaration	4	Lecture	PPT & White board
3.4	Passing Pointer to Function	4	Lecture	Smart Board
3.5	Passing Function to another Function	3	Lecture	Black Board
Unit -4 structures and unions				
4.1	Defining structure	2	Chalk & Talk	Black Board
4.2	Structures and Pointers	2	Chalk & Talk	LCD
4.3	Passing	4	Lecture	PPT & White board
4.4	Structure to Function	2	Lecture	Smart Board
4.5	Self referential structure	2	Lecture	Black Board
4.6	Union	2	Discussion	Google classroom
UNIT -5 DATA FILES				

5.1	Defining and Opening a File	2	Chalk & Talk	Black Board
5.2	Closing a File	2	Chalk & Talk	LCD
5.3	Input Output Operations on Files	4	Lecture	PPT & White board
5.4	Error Handling during I/O Operations	2	Lecture	Smart Board
5.5	Random access files	2	Lecture	Black Board
5.6	Command line arguments	2	Discussion	Google classroom

INTERNAL - UG

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

END SEMESTER - UG

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

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Acquire basic understanding of C programming	K1	PSO1, PSO2
CO 2	Illustrate how arrays and strings are implemented in C	K2	PSO1, PSO2, PSO3
CO 3	Utilize the knowledge of Functions and Pointers	K2	PSO3, PSO4
CO 4	Analyze the memory management concept in C using structure and Unions	K4	PSO4, PSO5
CO 5	Outline the file operations in C	K4	PSO5, PSO6

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	2	1	1	1	2	2	1
CO2	3	3	3	2	1	1	1	2	1	1
CO3	2	2	3	3	2	1	1	2	1	2
CO4	2	2	2	3	3	1	2	2	1	1
CO5	2	2	2	2	3	3	2	2	1	1
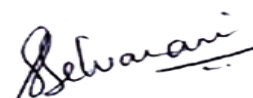
Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1
CO2	1	1	3	1	2
CO3	1	2	1	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

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

COURSE DESIGNER:

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

Forwarded By

(S.Selvarani)

I B.C.A

SEMESTER – I

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
USCA	19J1CC2	LAB IN C PROGRAMMING	PRACTICAL	6	3

COURSE DESCRIPTION

To learn the practical implementation of structured programming using control structures, data structures and functions along with basic problem solving techniques.

COURSE OBJECTIVES

1. To learn problem solving through procedural language programming technique
2. To understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc.
3. To develop programming skills in C.

PROGRAM LIST:

1. Write Simple Programs to implement procedural language.
2. Write a C Program to implement Conditional statements.
3. Write a C Program to implement looping statements.
4. Write a C Program to implement arrays.
5. Write a C Program to implement Functions.
6. Write a C Program to implement Pointers.
7. Write a C Program to implement Structures.
8. Write a C Program to implement Union.
9. Write a C Program to implement Files.
10. Write a C Program using Command line Arguments.

WEB REFERENCES:

1. https://www.tutorials.com/cprogramming/
2. https://www.cprogramming.com/tutorial/c–tutorial.html

OER REFERENCES:

https://youtu.be/JUH1ivQvvnY

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
LAB IN C PROGRAMMING				
1.1	Implement procedural language	10	Demo & Working in Lab	LCD
1.2	Conditional statements	10	Demo & Working in Lab	LCD
1.3	Looping statements	10	Demo & Working in Lab	LCD
1.4	Arrays	10	Demo & Working in Lab	LCD
1.5	Functions	10	Demo & Working in Lab	LCD
1.6	Pointers	10	Demo & Working in Lab	LCD
1.7	Structures	10	Demo & Working in Lab	LCD
1.8	Union	10	Demo & Working in Lab	LCD
1.9	Command line Arguments	10	Demo & Working in Lab	LCD

CIA

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

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Acquire basic understanding of C programming	K1	PSO1, PSO2
CO 2	Illustrate how arrays and strings are implemented in C	K2	PSO1, PSO2,PSO3
CO 3	Utilize the knowledge of Functions and Pointers	K2	PSO3, PSO4

CO 4	Analyze the memory management concept in C using structure and Unions	K4	PSO4, PSO5
CO 5	Outline the file operations in C	K4	PSO5, PSO6

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	2	1	1	1	2	1	1
CO2	3	3	3	2	1	1	1	2	1	1
CO3	2	2	3	3	1	1	1	2	1	1
CO4	2	2	2	3	3	1	2	2	1	1
CO5	2	2	2	2	3	3	2	2	1	1

Mapping of C0s with POs

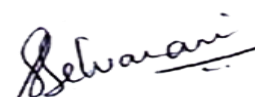| CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1
CO2	1	1	3	1	2
CO3	1	2	1	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

Note:

ɸ Strongly Correlated – **3**

ɸ Moderately Correlated – **2**

ɸ Weakly Correlated -**1**

COURSE DESIGNER:

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

Forwarded By

(S.Selvarani)

I B.C.A

SEMESTER – I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
USCA	21J1NME	NON MAJOR ELECTIVE – I ANIMATION TOOLS AND TECHNIQUES	PRACTICAL	2	2

COURSE DESCRIPTION

This course helps to become familiar with the elements and tools in Alice that is used to create interactive animated media such as scene creation and movie making.

COURSE OBJECTIVES

1. To develop programming skills and impart animation techniques using Alice.
2. To gain knowledge in interactive scene creation.
3. To create motion movies by animating

PROGRAM LIST:

1. Exploring the Alice interface
2. Setting the scene
   - Adding an object
   - Set object properties
   - Set special effects
3. Learning to program through Alice
   - Do in Order
   - Do Together
4. Branching: Conditional execution, Relational Operators, Randomness
5. Looping : Repetition, While loops, Lists
6. Event handling
7. Methods
8. 3D and billboards (Create 3D Text, Billboards)

REFERENCE BOOKS :

1. Wanda Dann, Stephen Cooper, and Randy Pausch; Learning to Program with Alice, Prentice Hall

2. Joel Adams, Alice 3 in Action with Java

OER REFERENCES :

http://courses.oermn.org/course/view.php?id=224

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
NON MAJOR ELCTIVE-MULTIMEDIA LAB-3D ANIMATION TOOL				
1.1	Exploring the Alice interface	4	Demo & Working in Lab	LCD
1.2	Setting the scene (Adding an object, set object properties, set special effects)	4	Demo & Working in Lab	LCD
1.3	Learning to program through Alice (Do in order , Do together)	4	Demo & Working in Lab	LCD
1.4	Branching: Conditional execution, Relational Operators, Randomness	4	Demo & Working in Lab	LCD
1.5	Looping : Repetition, While loops, Lists	4	Demo & Working in Lab	LCD
1.6	Event handling	4	Demo & Working in Lab	LCD
1.7	Methods	3	Demo & Working in Lab	LCD
1.8	3d and billboards (Create 3D Text, Billboards)	3	Demo & Working in Lab	LCD

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

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Apply object properties, methods and events	K1	PSO1& PSO2
CO 2	Design, create and edit animation scenes and interactive movies	K1, K2	PSO3
CO 3	Utilize event handling methods and properties	K1 & K3	PSO5
CO 4	Demonstrate story boards and animation movies	K1, K2, K3	PSO2, PSO3
CO 5	Utilize and understand different sounds and sound formats in alice	K2 & K4	PSO5, PSO8

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	2	1	1	1	2	1	1
CO2	2	2	3	2	1	1	1	2	1	1
CO3	2	2	2	2	3	1	1	2	1	1
CO4	2	3	3	2	2	1	2	2	1	1
CO5	2	2	2	2	2	2	2	3	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1
CO2	1	1	3	1	2
CO3	1	2	1	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

Note:

φ Strongly Correlated – **3**

φ Moderately Correlated – **2**

φ Weakly Correlated -**1**

COURSE DESIGNER:

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

Forwarded By

(S.Selvarani)

I B.C.A

SEMESTER – II

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J2CC3	OBJECT ORIENTED PROGRAMMING IN C++	LECTURE	90	4

COURSE DESCRIPTION

To get better understanding in the OOPS Concept and to have basic knowledge in writing programs using C++ Programming

COURSE OBJECTIVES

1. To introduce Object Oriented Programming concepts using C++ and improve OOP Skills.
2. To understand the concepts of inheritance and polymorphism
3. To get expertise in function overloading and operator overloading concepts
4. To analyze the different searching and sorting techniques

UNITS

UNIT I: INTRODUCTION TO C++   (18 HRS)
Principles of Object Oriented Programming, Beginning with C++, Tokens, Expressions and Control Structures: Introduction – Tokens – keywords – Identifiers and constants – Basic data types – user defined data type – Storage classes – derived data type – symbolic constants – type compatibility – declaration of variables – Dynamic Initialization of variables – Reference Variables – Operators in C++ – Scope resolution Operator – Member Dereferencing Operator – Memory management Operator – Manipulators – Type cast operator – Expressions and their Types – Special assignment expressions – Implicit conversions – Control Structures

UNIT II: FUNCTIONS IN C++   (18 HRS)
Functions in C++: The Main Function – Function Prototyping – Call by Reference – Return by reference Inline function – Default Arguments – Constant arguments – Recursion – Function Overloading – Friend and Virtual functions – Classes and Objects: Introduction – C Structures Revisited Specifying a class – Defining Member functions – A C++ Program

with Class – Making an Outside function Inline – Nesting of member functions – Private member functions –Arrays within a class – Memory allocation for objects – Static data members – Static member functions – Array of Objects – Objects as function Arguments – Friendly functions – Returning Objects

UNIT III: CONSTRUCTORS AND DESTRUCTORS   (18 HRS)
Constructors and Destructors: Constructors – Parameterized Constructors – Multiple Constructors in Class – constructors with default arguments – Dynamic initialization of objects – Copy constructors – Dynamic Constructors – const Objects – Destructors. Operator overloading and type conversion: Defining operator overloading – overloading unary operators – overloading binary operators – using friend function.

UNIT IV: INHERITANCE   (18 HRS)
Inheritance: Extending Classes Introduction – defining derived classes – single inheritance – Making a Private Member Inheritable – Multiple Inheritance – Multilevel Inheritance – Hierarchical inheritance – Hybrid Inheritance – Virtual Base classes – Abstract Classes – Constructor in Derived Classes – Member Classes: Nesting of Classes.

UNIT V: FILES   (18 HRS)
Working with Files: Classes for file stream operations – opening and closing files – detecting end – of – file – More about Open (): file modes – file pointers and their manipulations – sequential I/P and O/P operations – updating a file: Random Access – Error handling during file operations.
UNIT VI: DYNAMISM
Command Line Arguments – Dynamic Constructor in C++ – C++Projects – Diamond Problem in Inheritance – Standard Template Library (STL)

REFERENCE BOOKS:
1. E Balagurusamy, Object Oriented Programming with C++, VI Edition, Tata McGraw – Hill, 2016

2. Alfred V Aho, John E Hopcroft, Jeffrey D Ullman; Data Structures and Algorithms, Pearson Education, 2013

WEB REFERNECES :

1. https://www.tutorialspoint.com/cplusplus
2. https://www.cplusplus.com
3. https://www.javapoint.com/cpp–tutorial

OER REFERENCES :

1. https://www.oercommons.org/authoring/14616-c/view

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT1: INTRODUCTION TO C++				
1.1	Principles of Object Oriented Programming, Beginning with C++	2	Chalk & Talk	Black Board
1.2	Introduction – Tokens – keywords – Identifiers and constants	2	Chalk & Talk	LCD
1.3	Basic data types – user defined data type – Storage classes – derived data type	2	Lecture	PPT & White board
1.4	Symbolic constants – type compatibility – declaration of variables –Dynamic Initialization of variables	2	Lecture	Smart Board
1.5	Importing Pictures	2	Lecture	Black Board
1.6	Animation (Key Frame, Straight Line, User Defined Path)	2	Discussion	Google classroom
1.7	Reference Variables – Operators in C++ – Scope resolution Operator	2	Lecture	Black Board
1.8	Member Dereferencing Operator – Memory management Operator – Manipulators – Type cast operator	2	Discussion	Black Board
1.9	Expressions and their Types – Special assignment expressions – Implicit conversions – Control Structures	2	Discussion	Black Board

UNIT-2 FUNCTIONS IN C++				
2.1	The Main Function – Function Prototyping – Call by Reference – Return by reference Inline function	2	Chalk & Talk	Black Board
2.2	Default Arguments – Constant arguments – Recursion – Function Overloading	2	Chalk & Talk	LCD
2.3	Friend and Virtual functionS	2	Lecture	PPT & White board
2.4	C Structures Revisited Specifying a class – Defining Member functions – A C++ Program with Class	2	Lecture	Smart Board
2.5	Making an Outside function Inline – Nesting of member functions	2	Lecture	Black Board
2.6	Private member functions – Arrays within a class – Memory allocation for objects	2	Discussion	Google classroom
2.7	Static data members – Static member functions	2	Lecture	Black Board
2.8	Array of Objects – Objects as function Arguments	2	Discussion	Black Board
2.9	Friendly functions – Returning Objects	2	Discussion	Black Board
UNIT -3 CONSTRUCTORS AND DESTRUCTORS				
31	Constructors – Parameterized Constructors	3	Chalk & Talk	Black Board
3.2	Multiple Constructors in Class – constructors with default	3	Chalk & Talk	LCD

	arguments			
3.3	Dynamic initialization of objects – copy constructors	3	Lecture	PPT & White board
3.4	Dynamic Constructors – const Objects – Destructors	3	Lecture	Smart Board
3.5	Defining operator overloading – overloading unary operators	3	Lecture	Black Board
3.6	Overloading binary operators – using friend function.	3	Lecture	Black Board
UNIT -4 INHERITANCE				
4.1	Extending Classes Introduction – defining derived classes	3	Chalk & Talk	Black Board
4.2	single inheritance – Making a Private Member Inheritable	3	Chalk & Talk	LCD
4.3	Multiple Inheritance – Multilevel Inheritance	3	Lecture	PPT & White board
4.4	Hierarchical inheritance – Hybrid Inheritance	3	Lecture	Smart Board
4.5	Virtual Base classes – Abstract Classes	3	Lecture	Black Board
4.6	Constructor in Derived Classes – Member Classes: Nesting of Classes	3	Discussion	Google classroom
UNIT -5 FILES				
5.1	Opening and closing files	3	Chalk & Talk	Black Board
5.2	Detecting end – of – file – More about Open ()	3	Chalk & Talk	LCD
5.3	File modes – file pointers and their manipulations	3	Lecture	PPT & White board

5.4	Sequential I/P and O/P operations	3	Lecture	Smart Board
5.5	Updating a file: Random Access	3	Lecture	Black Board
5.6	Error handling during file operations.	3	Discussion	Google classroom

INTERNAL - UG

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

END SEMESTER - UG

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

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Assess the object – oriented	K1	PSO1, PSO2

	concepts in C++		
CO 2	Illustrate the usage of Functions in C++	**K1 & K2**	**PSO1, PSO2,PSO3**
CO 3	Analyze advanced features of C++ specifically stream I/O and overloading	**K1 & K2**	**PSO3, PSO4**
CO 4	Demonstrate on Inheritance and Virtual Classes	**K1, K2, K3 & K4**	**PSO4, PSO5**
CO 5	Outline the file operations in C++	**K2, K3 & K4**	**PSO5, PSO6**

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	1	1	1	1	2	1	1
CO2	3	3	3	1	1	1	1	2	1	1
CO3	2	2	3	3	2	1	2	2	1	1
CO4	2	2	2	3	3	1	2	2	2	1
CO5	2	2	2	2	3	3	2	2	1	2

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1
CO2	1	1	3	1	2
CO3	1	2	1	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

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

COURSE DESIGNER:

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

Forwarded By

(S.Selvarani)

I B.C.A
SEMESTER – II
For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
USCA	19J2CC4	LAB IN C++ PROGRAMMING	PRACTICAL	6	3

COURSE DESCRIPTION

To learn the basic knowledge of Object-Oriented Programming in C++ and write code in all aspects of C++ Language.

COURSE OBJECTIVES

1. To develop object oriented programming skills using C++.
2. To learn how to design C++ classes for code reuse.
3. To learn how to implement Constructors, Overloading and Polymorphism concepts.
4. To learn how object oriented and virtual functions implement dynamic binding with polymorphism.

PROGRAM LIST:
1. Write a C++ Program to implement Conditional statements.
2. Write a C++ Program to implement looping statements.
3. Write a C++ Program to implement arrays.
4. Write a C++ Program to implement Classes and objects.
5. Write a C++ Program to implement array of objects.
6. Write a C++ Program to implement constructor and destructor.
7. Write a C++ Program to implement Unary Operator overloading.

8. Write a C++ Program to implement Binary Operator overloading.
9. Write a C++ Program to implement Inheritance.
10.   Write a C++ Program using Files

WEB REFERENCES :

1. https://www.tutorialspoint.com/cplusplus

2. https://www.cplusplus.com

OER REFERENCES :

https://onlinecourses.nptel.ac.in/noc21_cs02/preview

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
LAB IN C++				
1.1	Conditional statements	4	Demo & Lab	LCD
1.2	Looping statements	4	Demo & Lab	LCD
1.3	Arrays.	4	Demo & Lab	LCD
1.4	Classes and objects.	4	Demo & Lab	LCD
1.5	Array of objects	4	Demo & Lab	LCD
1.6	Constructor and destructor	1	Demo & Lab	LCD
1.7	Unary Operator overloading	3	Demo & Lab	LCD
1.8	Binary Operator overloading	3	Demo & Lab	LCD
1.9	Inheritance, Files	3	Demo & Lab	LCD

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

*The best out of two will be taken into account

COURSE OUTCOMES

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

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

		TAXONOMY)	
CO 1	Read, understand and trace the execution of programs written in C++ language	**K1**	**PSO1, PSO2**
CO 2	Demonstrate class and object functions	**K1 & K2**	**PSO1, PSO2,PSO3**
CO 3	Assess operator overloading and function overloading to specific problem definition	**K1 & K2**	**PSO3, PSO4**
CO 4	Demonstrate file operations in C++.	**K1, K2, K3 & K4**	**PSO4, PSO5**
CO 5	Write C++ code to demonstrate each concept	**K2, K3 & K4**	**PSO5, PSO6**

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	1	1	1	1	2	1	1
CO2	3	3	3	1	1	1	1	2	1	1
CO3	2	2	3	3	2	1	2	2	1	1
CO4	2	2	2	3	3	1	2	2	2	1
CO5	2	2	2	2	3	3	2	2	1	2

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1
CO2	1	1	3	1	2
CO3	1	2	1	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

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

II B.C.A

SEMESTER – III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J3CC5	OPERATING SYSTEMS	LECTURE	6	4

COURSE DESCRIPTION

To Study about the concepts, structure and mechanisms of operating systems. To examine the operations of processes and threads, scheduling, deadlock, memory management and file systems.

COURSE OBJECTIVES

1. To have in–depth knowledge about the functionalities of the operating systems.
2. To learn the mechanisms of OS to handle processes and threads and their communication.
3. To learn the mechanisms involved in memory management
4. To gain knowledge on distributed operating system concepts

UNITS

UNITS

UNIT I: PROCESSES   **(18 HRS)**

Introduction: Definition, Main frame System, Multiprocessor System,

Distributed systems – Process: Process concept, Process scheduling.

UNIT II: CPU SCHEDULING, PROCESS SYNCHRONIZATION   (18 HRS)

CPU Scheduling: Basic concepts – scheduling criteria – Scheduling algorithms – Process Synchronization: Background – the critical section problem, Semaphores – Usage, Monitors.

UNIT III: DEADLOCK   (18 HRS)

Deadlock and Starvation – Binary Semaphore – System model – deadlock characterization – methods for handling deadlocks – deadlock prevention – deadlock avoidance – deadlock deduction – recovery from deadlock

UNIT IV: MEMORY MANAGEMENT   (18 HRS)

Background – Swapping, Contiguous Memory Allocations, Paging, Segmentation, Segmentation with paging. Background – demand paging – Page Replacement Algorithms – allocation of frames – thrashing

UNIT V: FILESYSTEM CONCEPTS   (18 HRS)

File concept – access methods – directory structures – protection – File system structure – allocation methods.

UNIT VI: DYNAMISM

Distributed shared memory (DSM) –Kernel Programming – Memory Partitioning – Linux Basic Commands – Problems in Job Scheduling Algorithms

REFERENCE BOOKS:

1.   Deitel H.M, Operating System, 7th Edition, Pearson Education, 1996

2.   Silberscahatz Galvin Gagne, Operating System Concept, VI Edition, John Wiley's Sons, 2010.

3.   Operating System, Concept & Design, II Edition,2001 TATA McGraw – Hill.

4.   Abraham Silberschatz, Peter Baer Galvin, Operating System Concepts, VII Edition ,2014.

WEB REFERENCES :

  1. http://Williamstallings.com/os/animations
  2. https://www.tutorial.com/operating_system/

OER REFERENCES :

1. https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=7

2. https://greenteapress.com/thinkos/index.html

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: PROCESSES				
1.1	Definition	3	Chalk & Talk	Black Board
1.2	Main frame System	3	Chalk & Talk	LCD
1.3	Multiprocessor System	3	Lecture	PPT & White board
1.4	Distributed systems – Process	3	Lecture	Smart Board
1.5	Process concept	3	Lecture	Black Board
1.6	Process scheduling	3	Discussion	Google classroom
UNIT 2: CPU SCHEDULING, PROCESS SYNCHRONIZATION				
2.1	Basic concepts – scheduling criteria	3	Chalk & Talk	Black Board
2.2	Scheduling algorithms – Process Synchronization	3	Chalk & Talk	LCD
2.3	Background	3	Lecture	PPT & White board
2.4	The critical section problem	3	Lecture	Smart

				Board
2.5	Semaphores	3	Lecture	Black Board
2.6	Usage, Monitors	3	Discussion	Google classroom
UNIT -3 DEADLOCK				
31	Deadlock and Starvation	2	Chalk & Talk	Black Board
3.2	Binary Semaphore	2	Chalk & Talk	LCD
3.3	System model – deadlock characterization	3	Lecture	PPT & White board
3.4	methods for handling deadlocks	3	Lecture	Smart Board
3.5	Deadlock Prevention	2	Lecture	Black Board
3.6	Deadlock Avoidance	2	Lecture	Black Board
3.7	Deadlock Deduction	2	Lecture	Black Board
3.8	Recovery from Deadlock	2	Lecture	Black Board
UNIT -4 MEMORY MANAGEMENT				
4.1	Background	3	Chalk & Talk	Black Board
4.2	Swapping, Contiguous Memory Allocations	3	Chalk & Talk	LCD
4.3	Paging	3	Lecture	PPT & White board
4.4	Segmentation	3	Lecture	Smart Board

4.5	Segmentation with paging	3	Lecture	Black Board
4.6	Background – demand paging	3	Discussion	Google classroom
4.7	Page replacement algorithms	3	Lecture	Black Board
4.8	Allocation of frames	3	Lecture	Black Board
4.9	Thrashing	3	Lecture	Black Board
UNIT -5 FILESYSTEM CONCEPTS				
5.1	File concept	3	Chalk & Talk	Black Board
5.2	Access methods	3	Chalk & Talk	LCD
5.3	Directory structures	3	Lecture	PPT & White board
5.4	Protection	3	Lecture	Smart Board
5.5	File system structure	3	Lecture	Black Board
5.6	Allocation methods	3	Discussion	Google classroom

INTERNAL - UG

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

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

END SEMESTER - UG

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

CIA

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

EVALUATION PATTERN

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

UG CIA Components

Nos

C1   -   Test (CIA 1)   1   -   10 Mks

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Outline the structure of OS, basic architectural components	K1	PSO1& PSO2
CO 2	Analyze on the different scheduling algorithms and critical section problems	K1, K2 & K3	PSO1, PSO2, PSO3
CO 3	Critique device and resource management techniques by concentrating on deadlocks	K1, K2 & K3	PSO5, PSO6
CO 4	Identify and know about memory management techniques	K1, K2, K3 & K4	PSO3, PSO5, PSO6
CO 5	Interpret the mechanisms adopted for file sharing in distributed Applications	K2, K3 & K4	PSO4, PSO5, PSO6

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10

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

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1
CO2	1	1	3	1	2
CO3	1	2	1	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

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

COURSE DESIGNER:

1. **Staff Name : Ms. A. Punitha Rosline**

Forwarded By

(S.Selvarani)

II B.C.A

SEMESTER – III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
USCA	19J3CC6	LAB IN RELATIONAL DATABASE MANAGEMENT SYSTEMS	PRACTICAL	6	3

COURSE DESCRIPTION

To learn Relational Database concepts and to work with dynamic, reflective, object–oriented concepts through Query processing

COURSE OBJECTIVES

1. To give in depth practical approach to the database concepts.
2. To populate relational database and formulate SQL queries on data.
3. To developing database designs

PROGRAM LIST

1. Implement Queries using DDL commands
2. Implement Queries using DML commands
3. Implement Queries using SELECT commands
4. Implement Queries using Set operations
5. Implement Queries using Joins.
6. Implement Queries using Grouping Functions.
7. Implement Queries using Sequence.

8. Implement Queries using Views and Indexes

9. Implement Cursors using PL/SQL program

10.   Implement Packages and Triggers using PL/SQL program

WEB REFERENCES :

1. https://www.tutorialspoint.com/sql/sql–rdbms–concepts.htm

2. https://www.tutorialspoint.com/ruby/index.htm

3. https://www.javatpoint.com/ruby–tutorial

OER RESOURCES :

1. https://www.oercommons.org/authoring/14614-rdbms/1/view

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
LAB IN RELATIONAL DATABASE MANAGEMENT SYSTEMS				
1.1	DDL commands	10	Demo & Lab	LCD
1.2	DML commands	10	Chalk & Talk	PPT & White board
1.3	SELECT commands	10	Lecture	PPT & White board
1.4	Set operations	10	Demo & Lab	LCD
1.5	Joins	10	Chalk & Talk	PPT & White board
1.6	Grouping Functions	10	Lecture	PPT & White board
1.7	Sequence	5	Demo & Lab	LCD
1.8	Views and Indexes	5	Chalk & Talk	PPT & White board
1.9	Cursors, Packages and Triggers	10	Lecture	PPT & White

				board

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

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

		TAXONOMY)	
CO 1	Critique SQL commands to create tables and indexes	**K1**	**PSO1& PSO2**
CO 2	Apply DDL and DML commands in real time applications	**K1, K2 & K3**	**PSO1, PSO2, PSO3**
CO 3	Understand the needs of triggering applications	**K2, K3 & K4**	**PSO5, PSO6**
CO 4	Disseminate knowledge of RDBMS and SQL, both in terms of design and implementation usage	**K1, K2, K3 & K4**	**PSO3, PSO5, PSO6**
CO 5	Write dynamic queries to demonstrate the concepts of RDBMS	**K2, K3 & K4**	**PSO4, PSO5, PSO6**

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	2	2	1	1	2	1	1
CO2	3	3	3	2	1	1	2	2	1	2
CO3	2	2	1	2	3	3	2	2	1	2
CO4	2	2	3	2	3	3	2	2	1	1
CO5	2	2	2	3	3	3	2	2	1	2

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1
CO2	1	1	3	1	2
CO3	1	2	1	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

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

COURSE DESIGNER:

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

Forwarded By

(signature)

(S.Selvarani)

II B.C.A
SEMESTER – III
For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
USCA	19AC3ACJ3	PRINCIPLES OF FINANCIAL ACCOUNTING AND ACCOUNTING PACKAGE	LECTURE	5	5

COURSE DESCRIPTION

This course provides the accounting language's essentials that helps to read and interpret financial statements for business diagnosis and decision–making.

COURSE OBJECTIVES

1. It is the language that managers use to communicate with the terms of accounting.

2. The firm's financial and economic information can be shared to external parties such as shareholders and creditors.

3. It tells how to work with Journals, Ledgers and Cash Flow Statements

UNITS

Unit 1: Principles of Accounting   (15 HRS)

Principles of Accounting –Accounting Concepts & Conventions– Double entry

system of book–keeping

Unit II: Journal and Ledger **(15 HRS)**

Journal – Ledger–Subsidiary books – Trial balance

Unit III: Accounting for Sole Trading Concern **(15 HRS)**

Final Accounts of Sole Trading Concern – Adjustments in the preparation of Final Accounts.

Unit IV: Introduction to tally (Practical) **(15HRS)**

Meaning – Creation of a company –creating groups and ledger– display of Trial Balance, Profit and loss and Balance sheet. Create stock – unit – Good own.

Unit V: Accounting Voucher(Practical) **(15 HRS)**

Creating accounting voucher for purchase, sales, debit note, credit note, payment and receipt voucher

Text Book:

1. Advanced Accountancy, T.S.Reddy&A.Murthy,Margham publications,1st edition,2007

Reference Books:

1. R.L. Gupta and Radhaswamy – Advanced Accountancy – Sulthan Chand and sons – New Delhi – 110002.

2. Jain, S.P.Jain and K.L. Narang – Advanced Accountancy – Kalyani publishers – New Delhi – 110002.

INTERNAL - UG

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

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

END SEMESTER - UG

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

CIA

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

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

Mapping COs Consistency with PSOs

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

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1
CO2	1	1	3	1	2
CO3	1	2	1	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

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

COURSE DESIGNER:

1. **Staff Name : Dr. N. Arasammal**

Forwarded By

(S.Selvarani)

II B.C.A

SEMESTER – III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
USCA	19J3SB1	SKILL BASED – I LOGICAL RESONING AND DATA INTERPRETATION	LECTURE	2	2

COURSE DESCRIPTION

To improve aptitude, problem solving skills and reasoning ability that helps to focus on their career development

COURSE OBJECTIVES

1. To judge a candidate's capability in problem solving

2. To analyze and make sense of the data given in various representation

3. To understand statements and making sense of them using logic and establishing theory.

4. To solve critical problems in competitive examinations

LIST OF PROBLEMS

1. Problems on Numbers
2. Problems on Ages
3. Time and Work
4. Time andDistance
5. Simple Interest

6. Permutation and Combination

7. Odd Man Out & Series

8. Logical Sequence of words

9. Blood Relations Test

10.   Series Completion

11.   Mirror Images.

WEB REFERENCES :

1. https://www.javatpoint.com/reasoning

2. https://www.toppr.com/guides/quantitative–aptitude/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
SKILL BASED – II QUANTITATIVE APTITUDE				
1.1	Problems on Numbers	3	Chalk & Talk	Black Board
1.2	Problems on Ages	3	Chalk & Talk	LCD
1.3	Time and Work	3	Lecture	PPT & White board
1.4	Time and Distance	3	Lecture	Smart Board
1.5	Simple Interest, Mirror Images	4	Chalk & Talk	Black Board
1.6	Permutation and Combination	3	Discussion	Google classroom
1.7	Odd Man Out & Series	3	Lecture	Black Board
1.8	Logical Sequence of words	3	Chalk & Talk	Black Board
1.9	Blood Relations Test, Series	3	Chalk &	Black

	Completion			Talk	Board
1.10	Mirror Images		2	Lecture	Black Board

INTERNAL - UG

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

END SEMESTER - UG

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

Total	5	5	8	12	20	10	60	100 %

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING	PSOs ADDRESSE

		TO REVISED BLOOM'S TAXONOMY)	D
CO 1	Apply quantitative techniques to solve variety of problems	K1	PSO2
CO 2	Perform statistical analysis to interpret information	K1, K2	PSO2, PSO4
CO 3	Apply the aptitude tricks, shortcuts and formulas	K1, K2 & K3	PSO4
CO 4	Acquire clear understanding on easily solving the reasoning	K1, K2 & K3	PSO9
CO 5	Focuses in clearing the competitive, Campus and entrance online tests	K2, K3 & K4	PSO10

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	2	3	1	1	1	1	1	2	1	1
CO2	2	3	1	3	1	1	1	2	1	1
CO3	2	2	2	3	2	1	2	2	2	1
CO4	2	2	2	2	2	1	2	2	3	1
CO5	2	2	2	2	2	2	2	2	1	3

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1
CO2	1	1	3	1	2
CO3	1	2	1	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

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

COURSE DESIGNER:

1. **Staff Name : Dr. G. PREETHA**

Forwarded By

(signature)

(S.Selvarani)

II B.C.A

SEMESTER – IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J4CC7	DATA STRUCTURES AND ALGORITHMS	LECTURE	6	4

COURSE DESCRIPTION

To give better understanding of how algorithms are developed along their appropriate data structures which have both historical and contemporary significance

COURSE OBJECTIVES

1. To understand about writing algorithms and step by step approach in solving problems with the help of fundamental data structures
2. To disseminate knowledge in Abstract Data Types
3. To Work with Tree Traversals
4. To analyze the different searching and sorting techniques

UNITS

UNIT I: Design and Analysis with Datatypes   (18 HRS)

Design and Analysis of Algorithm: From Problem to Programs – Abstract Data types – data types, Data structures, and Abstract Data Types – The Running Time of a program – Calculating the Running Time of A Program. Basic Data Types: The Data Type "List" – Implementation of Lists – Array Implementation of Lists – Pointer Implementation of Lists – Stacks – Queues

UNIT II: Trees   (18 HRS)

Trees: Basic Terminology – The ADT TREE, Implementations of Trees, Binary Trees – Advanced Set Representation Methods: Binary Search Trees

UNIT III: Sets and Sorting Schemes   (18 HRS)

Basic Operations on Sets: Introduction to Sets – An ADT with Union – Intersection and Difference – The Hash Table Data Structure. Sorting: The Internal Sorting Model – Some Simple Sorting Schemes – Quick Sort – Heap Sort

UNIT IV: Directed and Undirected Graphs   (18 HRS)

Directed Graphs: Basic Definitions – Representation for directed graphs – The single – source Shortest Path Problem – The All – Pairs Shortest Path Problem. Undirected Graphs: Definitions – Minimum – Cost Spanning Trees – Traversals

UNIT V: Algorithm Analysis Techniques   (18 HRS)

Algorithm Analysis Techniques: Efficiency of Algorithms – Algorithm Design Techniques: Divide – and – Conquer Algorithms – Dynamic Programming – Greedy Algorithms.

UNIT VI: DYNAMISM

Algorithm Compilation Time – Running Time Calculation – Problem Solving in Tree Traversals – Pointer Implementation in Linked Lists – Merge Sort – Red Trees – Splay Trees.

.

REFERENCE BOOKS:

1. Ellis Horowitz & Sartaj Sahni, Fundamentals of Data Structures, II Edition, 1998
2. Trembly & Sorenson, An Introduction to Data Structures with Applications, II Edition, McGraw – Hill, 1997
3. Langsam, Augenstein, Tenenbaum; Data Structures Using C and C++, II Edition
4. Alfred V Aho, John E Hopcroft, Jeffrey D Ullman; Data Structures and Algorithms, II Edition, Pearson Education, 1983

WEB REFERENCES :

1. https://www.w3schools.in/data–structures–tutorial/intro

2. https://www.tutorialride.com/data–structures/data–structures–tutorial.htm

3. https://www.geeksforgeeks.org/fundamentals–of–algorithms/

OER REFERENCE :

https://nptel.ac.in/courses/106/102/106102064/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: Design and Analysis with Datatypes				
1.1	From Problem to Programs	3	Chalk & Talk	Black Board
1.2	Abstract Data types – data types	3	Chalk & Talk	LCD
1.3	Data structures, and Abstract Data Types	3	Lecture	PPT & White board
1.4	The Running Time of a program	3	Lecture	Smart Board
1.5	Calculating the Running Time of A Program	3	Lecture	Black Board
1.6	The Data Type "List" – Implementation of Lists	3	Discussion	Google classroom
1.7	Array Implementation of Lists	3	Lecture	Black Board
1.8	Pointer Implementation of Lists	3	Lecture	Black Board
1.9	Stacks – Queues	3	Lecture	Black Board
UNIT 2: Trees				
2.1	Basic Terminology	2	Chalk & Talk	Black Board
2.2	The ADT TREE	4	Chalk &	LCD

			Talk	
2.3	Implementations of Trees	4	Lecture	PPT & White
2.4	Binary Trees	4	Lecture	Smart Board
2.5	Binary Search Trees	4	Lecture	Black Board
UNIT -3 Sets and Sorting Schemes				
31	Introduction to Sets	2	Chalk & Talk	Black Board
3.2	An ADT with Union	3	Chalk & Talk	LCD
3.3	Intersection and Difference	3	Lecture	PPT & White board
3.4	The Hash Table Data Structure	3	Lecture	Smart Board
3.5	The Internal Sorting Model	2	Lecture	Black Board
3.6	Some Simple Sorting Schemes	3	Lecture	Black Board
3.7	Quick Sort	2	Lecture	Black Board
3.8	Heap Sort	2	Lecture	Black Board
UNIT -4 Directed and Undirected Graphs				
4.1	Basic Definitions – Representation for directed graphs	3	Chalk & Talk	Black Board
4.2	The single – source Shortest Path Problem	3	Chalk & Talk	LCD
4.3	The All – Pairs Shortest PathProblem	3	Lecture	PPT & White board
4.4	Undirected Graphs: Definitions	3	Lecture	Smart Board
4.5	Minimum – Cost Spanning Trees	3	Lecture	Black Board
4.6	Traversals	3	Discussion	Google

					classroom
	UNIT -5 Algorithm Analysis Techniques				
5.1	Efficiency of Algorithms	4	Chalk & Talk	Black Board	
5.2	Algorithm Design Techniques: Divide – and – conquer Algorithms	5	Chalk & Talk	LCD	
5.3	Dynamic Programming	5	Lecture	PPT & White board	
5.4	Greedy Algorithms.	4	Lecture	Smart Board	

INTERNAL - UG

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

END SEMESTER - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	

K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA

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

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

SNO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Assess the concept of various data structures and the logic behind their workings	K1	PSO1, PSO2
CO 2	Compare various ADT	K1, K2 & K3	PSO2
CO 3	Utilize trees and graphs in real time application	K1, K2 & K3	PSO3, PSO5
CO 4	Compare the various Directed and Undirected Graphs	K1, K2, K3	PSO7, PSO8
CO 5	Analyze case studies to implement and comment about performance of algorithms	K2, K3 & K4	PSO7, PSO8

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	1	1	1	1	2	1	1
CO2	2	3	2	2	1	1	2	2	1	1
CO3	2	2	3	2	3	1	2	2	1	2
CO4	2	2	2	2	1	1	3	3	2	1

CO5	2	2	2	2	2	2	3	3	2	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	3	1	1	1
CO2	1	1	3	1	2
CO3	1	1	3	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

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

COURSE DESIGNER:

1. **Staff Name : Ms. A. Punitha Rosline**

Forwarded By

(S.Selvarani)

II B.C.A
SEMESTER – IV

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
USCA	19J4CC8	LAB IN WEB PROGRAMMING	PRACTICAL	6	3

COURSE DESCRIPTION

To understand web design principles and technologies and to create web pages with emerging and existing technologies added with scripting.

COURSE OBJECTIVES

1. To impart the practical aspects in the development of web pages.
2. To develop an ability to design and implement static and dynamic website.
3. To Use scripting languages and web services to transfer data and add interactive components to web pages.

PROGRAM LIST:

1. Create website for Fatima College using Java Script.
2. Create website for online shopping.
3. Create website for online Newspaper.
4. Prepare a personal biodata.
5. Perform Form validation.
6. Create Employee details using database connection.
7. Perform bank operation using database connection.
8. Create a website for online test.

WEB REFERENCES :

1. https://www.w3schools.com/html/

2. https://www.tutorialspoint.com/vbscript/index.htm

OER REFERENCES :

https://nptel.ac.in/courses/106/105/106105084/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: Design and Analysis with Datatypes				
1.1	Website for Fatima college	10	Demo & Lab	LCD
1.2	Website for online shopping	10	Chalk & Talk	LCD
1.3	Website for online News Paper	10	Demo & Lab	PPT & White board
1.4	Personal bio – data	10	Demo & Lab	Smart Board
1.5	Perform Form validation	10	Lecture	LCD
1.6	Employee details using database connection	10	Discussion	Google classroom
1.7	Bank operation using database connection	10	Demo & Lab	LCD
1.8	Website for online test	10	Demo & Lab	LCD

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

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

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

		BLOOM'S TAXONOMY)	
CO 1	Select and apply markup languages for processing and presenting information in web pages.	**K1**	**PSO1& PSO2**
CO 2	Design and implement dynamic websites with good aesthetic sense of designing.	**K2**	**PSO2, PSO3**
CO 3	Use fundamental skills to maintain web server services required to host a website.	**K3**	**PSO3, PSO5**
CO 4	Prepare the students to write a well formed DB connection	**K3**	**PSO5, PSO8**
CO 5	Create Webpages for any application	**K4**	**PSO8**

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	2	1	2	1	2	2	1	2
CO2	2	3	3	3	2	1	1	2	1	2
CO3	2	2	3	2	3	2	2	2	2	1
CO4	2	2	2	2	3	1	2	3	3	2
CO5	2	2	2	2	2	1	2	3	1	2

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	3	1	1	1
CO2	1	1	3	1	2
CO3	1	1	3	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

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

COURSE DESIGNER:

1. **Staff Name : Ms. S. Selvarani**

Forwarded By

(S.Selvarani)

II B.C.A

SEMESTER – IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19P4ACJ4	DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION	LECTURE	5	5

COURSE DESCRIPTION

To know about computers, learn the basics and take advantage of the latest technologies in the field of computers and information technology.

COURSE OBJECTIVES

1. To impart the knowledge on various Number Systems and Boolean algebra
2. To conceptualize the basics of organizational and architectural issues.
3. To familiarize students about logic design, basic structure and behavior of various functional modules of computer systems

UNITS

Unit I: Introduction and Anatomy of Computers   (12 HRS)

Introduction – Types of computers – Characteristics of computers. Classification of computers: Microcomputers – Mini Computers – Mainframes – Super Computers. Anatomy of Digital Computers: Function and components of computer – CPU –memory.

Unit II: Memory Units and StorageDevices(12 HRS)

Memory units: RAM – ROM – PROM – EPROM – EEPROM – FLASH Memory. Auxiliary storage devices: Magnetic tapes– Winchesters Disks – MO Drives – Input devices – Output devices.

Unit III: Number System and Conversions (12 HRS)

Number systems – Decimal Systems – Bi–stable Devices – Counting in the Binary Systems – Binary Addition and Subtraction – Binary Multiplication and Division – Converting Decimal Numbers to Binary –Negative numbers – Use of complements to Represent negative numbers – complements in other number systems – Binary number complements – BCD representation – Octal and hexadecimal number systems.

Unit IV: Boolean Algebra and Gates (12 HRS)

Boolean Algebra and Gate Networks: Fundamental concepts of Boolean algebra – logical multiplication– AND Gates and OR gates – complementation and inverters – evaluation of logical expressions – Evalution of expression containing parentheses – Laws of Boolean algebra – Perfect Induction – simplification of expressions – De Morgan's Theorem – Basic duality – derivation – interconnecting gates – SOP and POS – derivation – NAND Gates and NOR gates – map methods – Subcubes and Covering

Unit V: Logic Design (12 HRS)

Flip–Flops – Transfer Circuits – Clocks – Flip–Flop Designs – RS Flip–Flop – JK Flip–Flop – Master–Slave Flip–Flop – Shift Register – Binary Counter – BCD Counters.

UNIT –VI DYNAMISM (Evaluation Pattern – CIA only)

Conversion Practical Implementation – Comparative study on GATES – Ripple and Ring Counters

REFERENCES:

1. Alexis Leon & Mathews Leon, Introduction to Computers
2. Thomas C.Bartee, Digital Computer Fundamentals, VI Edition, Tata–McGrawHill
3. V.Carl Hamacher & Zvonko Gvranesic Safwat G. Zaky, Computer Organization, III Edition, Prentice Hall

4. M. Morris Mano, Computer System Architecture, III Edition, Prentice–Hall India

WEB REFERNCES :

1. https://www.geeksforgeeks.org/computer–organization–and–architecture–tutorials/

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

OER REFERENCE:

1. https://dc.etsu.edu/computer-organization-design-oer/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: Introduction and Anatomy of Computers				
1.1	Introduction – Types of computers	3	Chalk & Talk	Black Board
1.2	Characteristics of computers	3	Chalk & Talk	LCD
1.3	Microcomputers – Mini Computers	3	Lecture	PPT & White board
1.4	Mainframes– Super Computers.	3	Lecture	Smart Board
1.5	Function and components of computer	3	Lecture	Black Board
1.6	CPU	3	Discussion	Google classroom
1.7	memory	3	Lecture	Black Board
UNIT 2: Memory Units and StorageDevices				
2.1	RAM	3	Chalk &	Black

			Talk	Board
2.2	ROM	3	Chalk & Talk	LCD
2.3	PROM,EPROM	2	Lecture	PPT & White board
2.4	FLASH Memory	2	Lecture	Smart Board
2.5	Magnetic tapes- Winchesters Disks	2	Lecture	Black Board
2.6	MO Drives	2	Lecture	Black Board
2.7	Input devices	2	Lecture	Black Board
2.8	Output devices	2	Lecture	Black Board
UNIT -3 Number System and Conversions				
3.1	Number systems – Decimal Systems	2	Chalk & Talk	Black Board
3.2	Bi-stable Devices	3	Chalk & Talk	LCD
3.3	Counting in the Binary Systems	3	Lecture	PPT & White board
3.4	Binary Addition and Subtraction ,Binary Multiplication and Division	2	Lecture	Smart Board
3.5	Converting Decimal Numbers to Binary –Negative numbers	2	Lecture	Black Board
3.6	Use of complements to Represent negative numbers	2	Lecture	Black Board
3.7	complements in other number	2	Lecture	Black Board

	systems – Binary number complements			
3.8	BCD representation – Octal and hexadecimal number systems	2	Lecture	Black Board
UNIT -4 Boolean Algebra and Gates				
4.1	Fundamental concepts of Boolean algebra – logical multiplication	2	Chalk & Talk	Black Board
4.2	AND Gates and OR gates – complementation and inverters	2	Chalk & Talk	LCD
4.3	evaluation of logical expressions – Evalution of expression containing parentheses	2	Lecture	PPT & White board
4.4	Laws of Boolean algebra – Perfect Induction – simplification of expressions	2	Lecture	Smart Board
4.5	De Morgan's Theorem – Basic duality – derivation	2	Lecture	Black Board
4.6	interconnecting gates – SOP and POS – derivation	2	Discussion	Google classroom
4.7	NAND Gates and NOR gates	2	Lecture	Black Board
4.8	Map Methods	2	Lecture	Black Board
4.9	Subcubes and Covering	2	Lecture	Black Board
UNIT -5 Logic Design				
5.1	Flip-Flops - Transfer Circuits	3	Chalk & Talk	Black Board
5.2	Clocks - Flip-Flop Designs	3	Chalk & Talk	LCD

5.3	RS Flip-Flop - JK Flip-Flop	3	Lecture	PPT & White board
5.4	Master-Slave Flip-Flop	3	Lecture	Smart Board
5.5	Shift Register	3	Lecture	Smart Board
5.6	Binary Counter	3	Lecture	Smart Board

INTERNAL - UG

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

END SEMESTER - UG

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

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

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE	PSOs

		LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	ADDRESSED
CO 1	Identify the anatomy of computers	K1	PSO1, PSO2
CO 2	Compare the various memory units along with the storage devices	K1 & K2	PSO1, PSO2,PSO3
CO 3	Demonstrate and perform computer arithmetic operations on integer and real numbers	K1 & K2	PSO3, PSO4
CO 4	Analyze the performance of Gates	K1, K2, K3 & K4	PSO4, PSO5
CO 5	Conceptualize the basics of organizational and architectural issues of a digital computer with logics	K2, K3 & K4	PSO5, PSO6

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	2	1	1	1	2	1	1
CO2	3	3	3	2	1	1	2	2	1	1
CO3	1	2	3	3	2	1	2	2	2	1
CO4	2	2	1	3	3	1	2	2	3	1
CO5	2	2	2	1	3	3	2	2	1	2

Mapping of C0s with POs

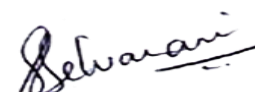| CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	3	1	1	1
CO2	1	1	3	1	2
CO3	1	1	3	3	1
CO4	1	1	1	1	1

CO5	1	1	1	1	1

Note:
ϕ Strongly Correlated – **3**
ϕ Moderately Correlated – **2**
ϕ Weakly Correlated -**1**
COURSE DESIGNER:

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

Forwarded By

(signature)

(S.Selvarani)

II B.C.A

SEMESTER – IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
USCA	19J4SB2	SKILL BASED – II DATA ANALYSIS USING SPREADSHEETS	PRACTICAL	2	2

COURSE DESCRIPTION

To enable the students in crafting professional excel spread sheets and to familiarize the students in preparation of analysis in data and presentations with automation tools.

COURSE OBJECTIVES

1. To use the Ribbon interface and different options the Ribbon offers

2. To understand the formatting features which enhances the overall appearance

3. To create basic charts that helps to help convey the details of analyzed data.

4. To manage spreadsheet data in table format, an excellent feature to administrate large sets of data.

UNIT I : EXCEL TO EXCELLENCE   (6 HRS)

Introduction – What is Excel – Need for excel – Advantages – Ribbon Components – Customization of Ribbons – Important Shortcuts – Managing Windows – Multiple Windows – Splitting Windows – Freezing Panes – Paste Special Techniques – Inserting Page Breaks – Tables – Formatting – Pictures – Smart Arts – Creating Hyperlinks – Adding Files as Links – Bookmarks – Header – Footer.

UNIT II: VISUALIZING DATA USING CHARTS   (6 HRS)

Enhancing a Chart With Titles & Tables – Drawing Tools – Adding Chart Elements – Formatting Charts – Chart Options – Chart Data Selection – Editing and Moving Data – Creating Charts – Changing Chart Types – Chart Layout – Data tables – Pivot tables – Using Bar and Line Chart together – Using Secondary Axis in Graphs – Sharing Charts to Word, Powerpoint dynamically

UNIT III : ADVANCED FUNCTIONS   (6 HRS)

Conditional expressions – Logical functions – lookup and reference functions – Exact Match, Approximate Match – Date and time functions – Text functions – Power Functions – statistical Functions – Tracking and Evaluating Formulae – New Excel Functions.

UNIT IV : DATA ANALYSIS AND CONSOLIDATION   (6 HRS)

Managing Data – Finding Records Using Criteria – Totals and Subtotals – Row Subtotals – Sorting – Format your data – Sorting tables – Multiple–level sorting – custom sorting – Filtering Data – AutoFilter – Advanced filters – Consolidating Data – Consolidate Data across Sheets – Data Validation – Removing Duplicates – Preparing Sheets for Printing.

UNIT V – PROTECTING SPREADSHEET AND USING MACROS   (6 HRS)

 Encrypting Excel Files – Sharing Workbooks – Password Protecting Specific Ranges – Applying Workbook Protection – Applying Worksheet Protection – Merge multiple Files to a Sheet – Recording and Playing Macros – Copying and Deleting Macros – Merge Worksheets using Macros – Importing data

from other sources.

REFERENCE BOOKS:

1. Excel 2019 in Easy Steps, Michael.
2. MS Office, C.Nellai Kannan.

WEB REFERENCES :

1. https://spreadsheeto.com/
2. https://www.udemy.com/course/excel_quickstart/

OER REFERENCE:

> https://www.classcentral.com/course/wharton-introduction-

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
SKILL BASED – II				
1.1	What is Excel, Customization of Ribbons, Managing Windows	3	Chalk & Talk	Black Board
1.2	Freezing Panes , Paste Special Techniques, Inserting Page Breaks	3	Demo & Lab	LCD
2.1	Enhancing a Chart, Formatting Charts, Changing Chart Types	2	Demo & Lab	PPT & White board
2.2	Data tables – Pivot tables	2	Demo & Lab	Smart Board
2.3	Using Bar and Line Chart, Secondary Axis in Graphs	2	Lecture	Black Board
3.1	Conditional expressions, Logical functions, lookup and reference functions	2	Discussion	Google classroom
3.2	Exact Match, Approximate Match, Date and time functions	2	Demo & Lab	Black Board
3.3	Text functions, Power Functions, statistical Functions, New Functions	2	Demo & Lab	Black Board

4.1	Managing Data, Totals and Subtotals, Sorting	2	Demo & Lab	Black Board
4.2	Filtering Data, AutoFilter, Advanced filters	2	Demo & Lab	PPT & White board
4.3	Consolidating Data, Consolidate Data across Sheets, Data Validation, Removing Duplicates	2	Lecture	Smart Board
5.1	Encrypting Excel Files, Sharing Workbooks, Password Protecting	2	Demo & Lab	PPT & White board
5.2	Merge multiple Files to a Sheet, Recording and Playing Macros	2	Demo & Lab	Smart Board
5.3	Merge Worksheets using Macros, Importing data	2	Lecture	PPT

INTERNAL - UG

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

END SEMESTER - UG

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

CIA

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

EVALUATION PATTERN

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

UG CIA Components

Nos

C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks

C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Customize the Ribbons of Spreadsheets	K1	PSO1& PSO2
CO 2	Perform statistical analysis using charts	K1, K2	PSO3
CO 3	Apply the aptitude tricks, shortcuts and formulas	K1 & K3	PSO5
CO 4	Compare all the functions available	K1, K2, K3	PSO3& PSO5
CO 5	Focuses on the protection of data in spreadsheets	K2 & K4	PSO8

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10

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

Mapping of COs with POs

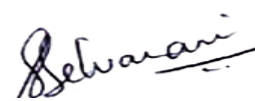| CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	3	1	1	1
CO2	1	1	3	1	2
CO3	1	1	3	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

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

COURSE DESIGNER:

   1. Staff Name : Dr. G. PREETHA

Forwarded By

(S.Selvarani)

III B.C.A
SEMESTER – V

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J5CC9	SOFTWARE ENGINEERING	LECTURE	5	5

COURSE DESCRIPTION

Aims to provide a thorough knowledge about various phases involved in software development along with the testing techniques.

COURSE OBJECTIVES

1. To impart fundamental knowledge and skills in Software Engineering.
2. To think critically, clearly identifying and using evidence, criteria, and values in decision making process.
3. To develop Software engineering skills that will enable them to create high quality of software.
4. To gain the techniques and skills on how to use modern software testing tools to support software testing projects.

5. To understand software test automation problems and solutions.

UNITS

UNIT I: INTRODUCTION TO SOFTWARE ENGINEERING   (12 HRS)

Definitions – Size Factors – Quality and Productivity Factors – Planning a Software Project:Planning the Development Process – Planning an Organizational Structure

UNIT II: COST ESTIMATION   (12 HRS)

Software cost Factors – Software Cost Estimation Techniques – Staffing – Level Estimation – Estimating Software Estimation Costs.

UNIT III: SOFTWARE REQUIREMENTS DEFINITION   (12 HRS)

The Software Requirements specification – Formal Specification Techniques – Software Design:Fundamental Design Concepts – Modules – Modularization Criteria.

UNIT IV: SOFTWARE TESTING   (12 HRS)

Levels of Testing – Introduction – Proposal Testing – Requirement Testing– Design Testing– Code Review – Unit testing – Module Testing – Integration testing – Big – Bang Testing– System testing– Testing stages – Special Tests – Complexity – GUI – Compatibility – Security – Performance – Volume – Stress – Recovery – Installation– Manual Support – Adhoc Testing – Usability Testing

UNIT V: TESTING TOOLS   (12 Hrs)

Software Testing tools an Overview: Need for automated Testing tools– Taxonomy of Testing tools– Functional – Regression testing tools– Performance Testing Tools– Testing Management tools– Source code testing tools– How to select a testing tool.

UNIT VI: DYNAMISM

Manual Test Cases – UML Diagrams – Developing Software using SDLC Model – Case Study for Test Cases – Testing Tools Online

REFERENCE BOOKS:

1. Software Engineering Concepts, Richard Fairley, 2012, TMH.

2. Software Engineering Project Management, 2nd Edition, 2006,Wiley India.

3. Software testing principles , techniques and tools, M.G. LIMAYE , Tata McGraw Hill , 2009.

4. Software Testing Tools, Dr. K. V. K. K. Prasad, Dream Tech press, Edition 2012

WEB REFERENCES:

1. https://en.wikipedia.org/wiki/Software_engineering

2. https://www.tutorialspoint.com/software_engineering/index.htm

3. https://www.softwaretestingmaterial.com/software–testing/

OER REFERENCES:

https://www.oercommons.org/courses/software-engineering

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: INTRODUCTION TO SOFTWARE ENGINEERING				
1.1	Definitions – Size Factors	3	Chalk & Talk	Black Board
1.2	Quality and Productivity Factors	3	Chalk & Talk	LCD
1.3	Planning the Development Process	3	Lecture	PPT & White board
1.4	Planning an Organizational Structure	3	Lecture	Smart Board
UNIT 2: COST ESTIMATION				
2.1	Software cost Factors	3	Chalk & Talk	Black Board

2.2	Software Cost Estimation Techniques	3	Chalk & Talk	LCD
2.3	Staffing-Level Estimation	3	Lecture	PPT & White board
2.4	Estimating Software Estimation Costs	3	Lecture	Smart Board
UNIT -3 SOFTWARE REQUIREMENTS DEFINITION				
3.1	The Software Requirements specification	3	Chalk & Talk	Black Board
3.2	Formal Specification Techniques	3	Chalk & Talk	LCD
3.3	Fundamental Design Concepts- Modules	3	Lecture	PPT
3.4	Modularization Criteria	3	Lecture	PPT
UNIT -4 SOFTWARE TESTING				
4.1	Levels of Testing – Introduction	1	Chalk & Talk	Black Board
4.2	Proposal Testing – Requirement Testing- Design Testing	1	Chalk & Talk	LCD
4.3	Code Review – Unit testing – Module Testing	1	Lecture	PPT & White board
4.4	Integration testing – Big – Bang Testing	2	Lecture	Smart Board
4.5	System testing- Testing stages - Special Tests – Complexity	2	Lecture	Black Board
4.6	GUI – Compatibility – Security	2	Discussion	Google classroom
4.7	Performance –Volume –Stress – Recovery	1	Lecture	Black Board
4.8	Installation– Manual Support	1	Lecture	Black Board

4.9	Adhoc Testing – Usability Testing	1	Lecture	Black Board
UNIT -5 TESTING TOOLS				
5.1	Need for automated Testing tools	2	Chalk & Talk	Black Board
5.2	Taxonomy of Testing tools-Functional	2	Chalk & Talk	LCD
5.3	Regression testing tools	2	Lecture	PPT & White board
5.4	Performance Testing Tools-Testing Management tools	2	Lecture	Smart Board
5.5	Source code testing tools	2	Lecture	Smart Board

INTERNAL – UG

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

END SEMESTER - UG

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

CIA

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

EVALUATION PATTERN

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

UG CIA Components

Nos

C1 - Test (CIA 1) 1 - 10 Mks

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Compare the various software models	K1	PSO1& PSO2
CO 2	Use knowledge, techniques, skills and modern tools necessary for software engineering practice	K1, K2, K3	PSO3
CO 3	Analyze on the design factors and guidelines	K1 & K3	PSO5
CO 4	Understand the different types of testing used in software's	K1, K2, K3	PSO3, PSO5
CO 5	Compare the various types of Testing styles	K2, K3 & K4	PSO8

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	1	1	1	2	2	1	1
CO2	2	2	3	2	2	1	1	2	1	1
CO3	2	2	2	2	3	1	1	2	2	1
CO4	2	1	3	2	3	1	2	2	1	1
CO5	2	2	1	2	2	2	2	3	1	2

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	3	1	1	1
CO2	1	1	3	1	2
CO3	1	1	3	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

Note:

ɸ Strongly Correlated – **3**

ɸ Moderately Correlated – **2**

ɸ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name : Ms. S. Selvarani**

Forwarded By

(S.Selvarani)

III B.C.A

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J5CC10	JAVA PROGRAMMING	LECTURE	5	5

COURSE DESCRIPTION

To acquire knowledge on Object Oriented Programming using Multithreading, Exceptions, GUI & database Applications

COURSE OBJECTIVES

1. To acquire knowledge in Object Oriented Concepts
2. To learn about Exceptions and the usage of Strings
3. To create java applications using GUI and Databases

UNITS

UNIT I: OVERVIEW   (15 HRS)

The genesis of Java – An overview of Java – Object Oriented Programming – A First simple program – Lexical issues – Data Types, Variables and Arrays – Operators

UNIT II: CONTROL STATEMENTS   (15 HRS)

Control Statements – Java's Selection Statements – Iteration Statements – Jump Statements – Introducing classes – A closer look at methods and classes – Inheritance

UNIT III: EXCEPTION AND STRING HANDLING   (15 HRS)

Exception Handling – Exception Handling Fundamentals – Exception Types – Uncaught Exceptions – Using try and catch – Multiple catch Clauses – Nested try statements – Java's Built – in Exceptions – String Handling.

UNIT IV: PACKAGE AND INTERFACES (15 HRS)

Packages – Access Protection – Importing Packages – Interfaces – The Java Thread Model – The Main Thread – Creating a Thread – Creating Multiple Threads – Using isAlive() and join() – Thread Priorities.

UNIT V: APPLET CLASS AND EVENT HANDLING   (15 HRS.)

Applet Basics – Applet Architecture – An Applet Skeleton – Simple Applet Display Methods – Requesting Repainting – Using the status window – Two Event Handling Mechanisms – The Delegation Event Model – Event Classes – Sources of Events – Event Listener Interfaces.

UNIT VI: DYNAMISM

Basic JDBC Programming Concepts – RMI – Servlets – Heap Memory – Stack Memory – Swings

REFERENCE BOOKS:

1. Herbert Schildt, Java 2 – The Complete Reference, V Edition,2014.
2. Herbert Schildt with Joe 'O' Neil, Java Programmer's Reference, Tata McGraw – Hill, 3rd edition,2000.
3. Jamie Jaworski, Java Unleashed, Techmedia, 1999.

WEB REFERENCES:

1. https://www.javatpoint.com/java – tutorial
2. https://www.tutorialspoint.com/java/

OER REFERENCES:

https://greenteapress.com/thinkapjava/index.html

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: OVERVIEW				
1.1	The genesis of Java	2	Chalk & Talk	Black Board
1.2	An overview of Java	3	Chalk & Talk	LCD
1.3	Object Oriented Programming	2	Lecture	PPT & White board
1.4	A First simple program.	2	Lecture	Smart Board
1.5	Lexical issues	2	Lecture	Smart Board
1.6	Data Types, Variables and Arrays	2	Lecture	Smart Board
1.7	Operators	2	Lecture	Smart Board
UNIT 2: CONTROL STATEMENTS				
2.1	Control Statements	2	Chalk & Talk	Black Board
2.2	Java's Selection Statements	2	Chalk & Talk	LCD
2.3	Jump Statements	3	Lecture	PPT & White board
2.4	Introducing classes	3	Lecture	Smart Board
2.5	A closer look at methods and	3	Lecture	Smart

	classes			Board
2.6	Inheritance	2	Lecture	Smart Board
UNIT -3 EXCEPTION AND STRING HANDLING				
3.1	Exception Handling	2	Chalk & Talk	Black Board
3.2	Exception Handling Fundamentals	2	Chalk & Talk	LCD
3.3	Exception Types – Uncaught Exceptions	3	Lecture	PPT & White board
3.4	Using try and catch – Multiple catch Clauses	3	Lecture	Smart Board
3.5	Nested try statements	2	Lecture	PPT
3.6	Java's Built – in Exceptions	2	Lecture	Smart Board
3.7	String Handling	1	Chalk & Talk	LCD
UNIT -4 PACKAGE AND INTERFACES				
4.1	Packages – Access Protection	2	Chalk & Talk	Black Board
4.2	Importing Packages – Interfaces	2	Chalk & Talk	LCD
4.3	The Java Thread Model	3	Lecture	PPT & White board
4.4	The Main Thread – Creating a Thread	2	Lecture	Smart Board
4.5	Creating Multiple Threads	2	Lecture	Black Board
4.6	Using isAlive() and join()	2	Discussion	Google classroom
4.7	Thread Priorities	2	Lecture	Black

					Board
UNIT -5 TESTING TOOLS APPLET CLASS AND EVENT HANDLING					
5.1	Applet Basics – Applet Architecture	2	Chalk & Talk	Black Board	
5.2	An Applet Skeleton – Simple Applet Display Methods	3	Chalk & Talk	LCD	
5.3	Requesting Repainting – Using the status window	2	Lecture	PPT & White board	
5.4	Two Event Handling Mechanisms	3	Lecture	Smart Board	
5.5	The Delegation Event Model – Event Classes – Sources of Events	3	Lecture	Smart Board	
5.6	Event Listener Interfaces.	2	Lecture	PPT	

INTERNAL - UG

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

END SEMESTER - UG

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

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

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

*The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Acquire in depth knowledge in Java programming concepts	K1	PSO1& PSO2
CO 2	Identify and analyze platform independent environment and byte code generation	K1, K2	PSO2, PSO3
CO 3	Build, Execute and Debug java programs along with Exceptions	K1 & K3	PSO3, PSO5
CO 4	Design and Implement packages	K1, K2 & K3	PSO5, PSO8
CO 5	Write, Compile and Execute applet programs which includes GUI	K3 & K4	PSO8

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10

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

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	1	1	1	1	1	1
CO2	1	1	3	1	2	1	1
CO3	1	2	1	3	1	2	1
CO4	1	1	1	1	1	3	1
CO5	1	1	1	1	1	3	1

Note:
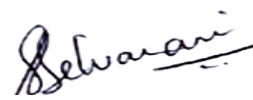
ɸ Strongly Correlated – **3**

ɸ Moderately Correlated – **2**

ɸ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name : DR. G. PREETHA**

Forwarded By

(S.Selvarani)

III B.C.A

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
USCA	19J5CC11	LAB IN JAVA PROGRAMMING	PRACTICAL	5	3

COURSE DESCRIPTION

. To acquire practical knowledge on Object Oriented Programming using Multithreading, Exceptions, GUI & database Applications

COURSE OBJECTIVES

1. To develop object oriented and GUI programming skills in Java.
2. To get an insight knowledge in applets
3. To acquire various listener operations and exception handling in Java

PROGRAM LIST:

1. Write a Java Program to Implement arrays
2. Write a Java Program to implement Conditional statements
3. Write a Java Program to implement Looping statements
4. Write a Program using constructors.(parameter passing, return value)

5. Write a Program to perform stack operations. (use static)

6. Write a Program using Interfaces

7. Write a Program using Packages

8. Write a Program using Applets

9. Write a program to handle Exceptions.

10.   Write a program to perform multithreading

WEB REFERENCES:

1. https://www.javatpoint.com/java – tutorial

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

OER REFERENCE:

https://github.com/RITESHMOHAPATRA/JAVA-LAB

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
LAB IN JAVA PROGRAMMING				
1.1	Implementing arrays	2	Chalk & Talk	Black Board
1.2	Conditional statements, looping statements	3	Chalk & Talk	LCD
1.3	Program using constructors	2	Lecture	PPT & White board
1.4	Program to perform stack operations	2	Lecture	Smart Board
1.5	Program for implementing string functions	2	Lecture	Smart Board
1.6	Program using Applets	2	Lecture	Smart

1.7	implementing Listeners	2	Lecture	Smart Board
1.8	Handling exceptions	7	Lecture	Smart Board
1.9	multithreading	7	Lecture	Smart Board

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Acquire in depth knowledge in Java programming concepts	K1	PSO1& PSO2
CO 2	Identify and analyze platform independent environment and byte code generation	K1, K2	PSO2, PSO3
CO 3	Build, Execute and Debug java programs along with Exceptions	K1 & K3	PSO3, PSO5
CO 4	Design and Implement packages	K1, K2 & K3	PSO5, PSO8
CO 5	Write, Compile and Execute applet programs which includes GUI	K3 & K4	PSO8

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	1	2	1	1	2	1	1
CO2	2	3	3	2	1	1	1	2	2	1
CO3	2	2	3	2	3	1	2	2	2	1
CO4	2	2	2	1	3	1	2	3	3	2
CO5	2	2	2	2	1	2	2	3	1	2

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1
CO2	1	1	3	1	2
CO3	1	2	1	3	1

| CO4 | 1 | 1 | 1 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 | 1 |

Note:

ɸ Strongly Correlated – **3**

ɸ Moderately Correlated – **2**

ɸ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name : DR. G. PREETHA**

Forwarded By

(S.Selvarani)

III B.C.A

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS /WEEK	CREDITS
USCA	19J5CC12	LAB IN DOT NET PROGRAMMING	PRACTICAL	5	3

COURSE DESCRIPTION

To know the rapid development of powerful Window applications and Web application which makes the web development easier

COURSE OBJECTIVES

1. To develop web programming skills through the use of Dot Net Frameworks
2. To design and implement web pages for real time applications

PROGRAM LIST:

1. Develop a database application to view the details of students
2. Develop a database application to insert, modify, update and delete operations for Employee Payment

3. Develop an application using Datagrid to display records.

4. Develop an application using Datagrid to add, edit and modify records

5. Create a simple web page using forms and controls

6. Create a web application for Room Reservations.

7. Create web pages with links and Custom Controls

8. Develop a web application to create a online newspaper

9. Develop a web application to create a online Quiz

10. Develop a web application for E–Shopping using C# with .Net

WEB REFERENCES:

1. https://dotnet.microsoft.com/languages

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

3. https://www.w3schools.com/cs/

OER REFEREMCE:

https://www.wisc-online.com/learn/computer-science/computer-programming/cp114/value-types-and-reference-types-in-the-net-fr

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	LAB IN DOT NET PROGRAMMING			
1.1	Database applicationto view the details of students	8	Demo & Lab	LCD
1.2	Databaseapplication-insert,modify,updateanddeleteoperations for Employee Payment	8	Demo & Lab	LCD
1.3	Applicationusing DataGrid todisplayrecords	5	Lecture	PPT & White board
1.4	Applicationusing DataGrid -	10	Demo & Lab	Smart

	add,editandmodifyrecords			Board
1.5	Webpageusing forms and controls	9	Demo & Lab	LCD
1.6	Web Applicationfor Room Reservations	5	Lecture	LCD
1.7	web pages with links and Custom Controls	5	Demo & Lab	LCD
1.8	Web Applicationtocreateaonlinenewspaper	5	Demo & Lab	Smart Board
1.9	Webapplicationfor E-Shopping using C# with .Net	5	Demo & Lab	LCD

CIA

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

EVALUATION PATTERN

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

UG CIA Components

Nos

C1   -   Test (CIA 1)   1   -   10 Mks

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Use Dot Net Framework along with the features of C#	K1	PSO1& PSO2
CO 2	Create websites to explore database connectivity	K1, K2	PSO2, PSO3
CO 3	Analyze debugging webpages through case studies	K1 & K3	PSO3, PSO5
CO 4	Use the different types of master page creation	K1, K2 & K3	PSO5, PSO8
CO 5	Create different dynamic websites for applications	K3 & K4	PSO8

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	1	2	1	1	2	1	1
CO2	2	3	3	2	1	2	1	2	1	1
CO3	2	1	3	2	3	1	2	2	2	2
CO4	2	2	1	2	3	1	1	3	2	1
CO5	2	1	2	2	1	2	2	3	1	1

Mapping of C0s with POs

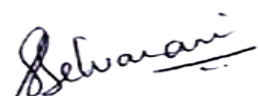| CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	3	1
CO2	3	1	3	1	2
CO3	1	2	1	3	1
CO4	1	1	1	1	1
CO5	1	3	1	3	1

Note:

ϕ Strongly Correlated – **3**

ϕ Moderately Correlated – **2**

ϕ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name : Ms. S. Selvarani**

Forwarded By

(S.Selvarani)

III B.C.A

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J5ME1	CLOUD COMPUTING	LECTURE	5	5

COURSE DESCRIPTION

To learn the basic knowledge of structured programming in C control structures, data structures and functions along with basic problem solving techniques.

COURSE OBJECTIVES

1. To gain in – depth knowledge in cloud computing terminologies
2. To acquire key concepts of virtualization.
3. To formulate various cloud strategies
4. To assess benchmark tools and techniques

UNITS

UNIT I: CLOUD MODELS(15 HRS)

Introduction: Essential, Benefits, Business and IT perspective, Cloud and virtualization, Cloud services requirements, Cloud and Dynamic Infrastructure, Cloud Computing Characteristics, Cloud Adoption. Cloud Models – Introduction, Cloud Characteristics, cloud Models, Security in a public cloud, Public versus private clouds.

UNIT II: CLOUD SERVICES(15 HRS)

Introduction: Cloud as a Service –Gamut of Cloud Solutions, Principal Technologies, Cloud Strategy, Cloud design and implementation using SOA, Conceptual cloud model. Cloud Solutions – Introduction, Cloud Ecosystem, Cloud Business process Management, Cloud service management, Cloud stack.

UNIT III: CLOUD SECURITY MANAGEMENT(15 HRS)

Introduction: Cloud Offerings:–Information Storage, Retrieval, Archive and Protection – Cloud Analytics – Testing Under Cloud –Information Security – Storage Cloud. Cloud Management – Introduction, Resiliency, Provisioning, Asset Management, Cloud Governance, High Availability and Disaster Recovery.

UNIT IV: CLOUD VIRTUALIZATION(15 HRS)

Introduction: Cloud Virtualization Technology – Virtualization Defined, Virtualization Benefits, Server Virtualization, Virtualization for x86 Architecture, Hypervisor Management Software, VIO Server, Virtual Infrastructure Requirements.Deep Dive: Cloud Virtualization – Introduction, Storage Virtualization, Storage Area Networks, Network – Attached Storage, Cloud server Virtualization.

UNIT V: BENCHMARK TOOLS (15 HRS)

Cloud Infrastructure –   Introduction, OLTP Benchmark, Business Intelligences Benchmark, E – Business Benchmark, ISV Benchmarks, Cloud performance Data Collection and performance Monitoring Commands, Benchmark Tools.

UNIT VI: DYNAMISM   **(HRS.)**

First movers in the cloud – Google Big Table Data Store – Cloud services for individuals – Using smart phones with the cloud.–what are APIshow. APIs work – API creators – Web Browsers – Service Level Agreements (SLA).

REFERENCE BOOKS:

1. John Rhoton, Cloud Computing Explained – Implementation Handbook for Enterprises, Amazon.com
2. David S. Linthicum, Cloud Computing and SOA Convergence in Your Enterprise – A Step – by – Step Guide
3. Dr Kumar Saurabh, Cloud Computing Insights into New Era Infrastructure, An Emm International,2014, III Edition

WEB REFERENCES:

1. https://en.wikipedia.org/wiki/Cloud_computing
2. https://searchcloudcomputing.techtarget.com/definition/cloud–computing

OER REFERENCE:

https://onlinecourses.nptel.ac.in/noc21_cs14/preview

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: CLOUD MODELS				
1.1	Essential, benefits, business	2	Chalk & Talk	Black Board
1.2	cloud and virtualization, cloud services requirements	3	Chalk & Talk	LCD
1.3	Cloud and dynamic infrastructure, cloud	2	Lecture	PPT & White

	computing characteristics			board
1.4	Introduction,cloud characteristics	2	Lecture	Smart Board
1.5	Cloud models, security in a public cloud	3	Lecture	Smart Board
1.6	Public versus private clouds	3	Lecture	Smart Board
UNIT 2: CLOUD SERVICES				
2.1	Cloud as a Service –Gamut of Cloud Solutions	2	Chalk & Talk	Black Board
2.2	Principal Technologies, Cloud Strategy	2	Chalk & Talk	LCD
2.3	Cloud design & implementation using SOA, Conceptual model	3	Lecture	PPT
2.4	Introduction, Cloud Ecosystem	2	Lecture	Smart Board
2.5	Cloud Business process Management	2	Lecture	Smart Board
2.6	Cloud service management	2	Lecture	Smart Board
2.7	Cloud stack	2		
UNIT -3 CLOUD SECURITY MANAGEMENT				
3.1	Cloud Offerings:–Information Storage, Retrieval, Archive and Protection	2	Chalk & Talk	Black Board
3.2	Cloud Analytics – Testing Under Cloud	2	Chalk & Talk	LCD
3.3	Information Security – Storage Cloud	3	Lecture	PPT & White board
3.4	Cloud Management – Introduction	3	Lecture	Smart Board
3.5	Resiliency, Provisioning	2	Chalk &	Black

			Talk	Board
3.6	Asset Management, Cloud Governance	2	Lecture	Smart Board
3.7	High Availability and Disaster Recovery	1	Chalk & Talk	LCD
UNIT -4 CLOUD VIRTUALIZATION				
4.1	Cloud Virtualization Technology – Virtualization Defined	1	Chalk & Talk	Black Board
4.2	Virtualization Benefits, Server Virtualization	2	Chalk & Talk	LCD
4.3	Virtualization for x86 Architecture	2	Lecture	PPT & White board
4.4	Hypervisor Management Software, VIO Server	2	Lecture	Smart Board
4.5	Virtual Infrastructure Requirements	2	Lecture	Black Board
4.6	Cloud Virtualization – Introduction, Storage Virtualization	2	Discussion	Google classroom
4.7	Storage Area Networks	2	Lecture	Black Board
4.8	Network – Attached Storage	1	Lecture	Black Board
4.9	Cloud server Virtualization	1	Lecture	Black Board
UNIT -5 BENCHMARK TOOLS				
5.1	Cloud Infrastructure – Introduction	2	Chalk & Talk	Black Board
5.2	OLTP Benchmark, Business Intelligences Benchmark	3	Chalk & Talk	LCD
5.3	E – Business Benchmark, ISV Benchmarks	3	Lecture	PPT & White

5.4	Cloud performance Data Collection	3	Lecture	Smart Board
				board
5.5	performance Monitoring Commands	2	Lecture	Smart Board
5.6	Benchmark Tools.	2	Lecture	Smart Board

INTERNAL - UG

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

END SEMESTER - UG

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

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

Nos

C1 - Test (CIA 1) 1 - 10 Mks

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Outline problems and evaluate various cloud computing solutions	K1	PSO1, PSO2
CO 2	Outline Cloud service and deployment models	K1 & K2	PSO1, PSO2,PSO3
CO 3	Identify the architecture and infrastructure of cloud computing including SaaS,PaaS, IaaS, public cloud, private cloud, hybrid cloud and community cloud	K1 & K2	PSO3, PSO4
CO 4	Predict security issues and formulate recovery mechanisms	K1, K2, K3 & K4	PSO4, PSO5

| CO 5 | Understand the concept of virtualization | K2, K3 & K4 | PSO5, PSO6 |

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	2	1	1	2	2	1	1
CO2	3	3	3	2	1	2	1	2	1	1
CO3	2	1	3	3	2	1	2	2	2	1
CO4	2	1	2	3	3	1	2	2	2	2
CO5	2	2	2	3	3	1	2	2	1	3

Mapping of C0s with POs
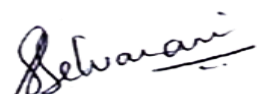
CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	3	1
CO2	3	1	3	1	2
CO3	1	2	1	3	1
CO4	1	1	1	1	1
CO5	1	3	1	3	1

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

COURSE DESIGNER:

1. Staff Name : Ms. S. Selvarani

Forwarded By

(signature)

(S.Selvarani)

III B.C.A

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J5ME2	MOBILE COMPUTING	LECTURE	5	5

COURSE DESCRIPTION

   To be acquainted with the Mobile Application Development Platform and its Architectures, GSM, GPRS, Applications

COURSE OBJECTIVES

1. To obtain knowledge on Mobile Computing Concepts and emerging technologies and applications.
2. To study the specifications and functionalities of various protocols / standards of mobile networks

UNITS

UNIT I: MOBILE COMPUTING ARCHITECTURE   **(15 HRS)**

History of computers and Internet – Architecture for mobile computing – Three – tier architecture – Design considerations for mobile computing – Mobile computing through Internet – Making exiting applications mobile enabled

UNIT II: MOBILE COMPUTING THROUGH TELEPHONY   (15 HRS)

Evaluation of telephony – Multiple access procedures – Mobile computing through telephone – IVR Application – Voice XML – TAPI Emerging Technologies: Blue Tooth – RFID – WiMAX – Mobile IP

UNIT III: GSM (15 HRS)

GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GSM Frequency allocations – Authentications and Security. SMS

UNIT IV: GPRS   (15 HRS)

GPRS and packet data network – GPRS network architecture – GPRS network operations – Data services in GPRS – Application for GPRS – Limitations – Billing and Charging. WAP : MMS – GPRS Applications

UNIT V: MOBILE COMPONENTS AND APPLICATIONS   (15 HRS)

 Mobile Device Operating Systems – Special Constrains & Requirements – Commercial Mobile Operating Systems – Software Development Kit: iOS, Android, BlackBerry, Windows Phone – MCommerce – Structure – Mobile Payment System – Security Issues.

UNIT VI: DYNAMISM   (HRS.)

Mobile App Development – Current trends in Mobile Computing – 5G – Adhoc Networks – Protocol Design and Development

REFERENCE BOOKS:

1. Mobile Communication 2nd edition by Jochen Schiller, Pearson education

2. Mobile Computing by Asoke Talukder, Roopa Yavagal (Tata McGraw Hill)

3. MOBILE COMPUTING, Asoke K Talukder , Roopa R Yavagal, TMH, II Edition, 2016

4. FUNDAMENTALS OF MOBILE COMPUTING , Prasant Kumar Pattnaik, Rajib Mall, PHI Learning Pvt. Ltd, New Delhi – 2012.

WEB REFERENCES:

1. https://en.wikipedia.org/wiki/Mobile_computing
2. https://www.tutorialspoint.com/mobile_computing/mobile_computing_overview.htm

OER REFERENCES:

https://nptel.ac.in/noc/courses/noc16/SEM2/noc16-cs13/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: MOBILE COMPUTTING ARCHITECTURE				
1.1	History of computers and Internet	5	Chalk & Talk	Black Board
1.2	Architecture for mobile computing – Three tier architecture	5	Chalk & Talk	LCD
1.3	Design considerations for mobile computing	5	Lecture	PPT & White board
1.4	Mobile computing through Internet	5	Lecture	Smart Board
1.5	Making exiting applications mobile enabled	5	Lecture	Smart Board

UNIT 2: MOBILE COMPUTING THROUGH TELEPHONY				
2.1	Evaluation of telephony	2	Chalk & Talk	Black Board
2.2	Multiple access procedures	2	Chalk & Talk	LCD
2.3	Mobile computing through telephone	3	Lecture	PPT & White board
2.4	IVR Application	2	Lecture	Smart Board
2.5	Voice XML	2	Lecture	Smart Board
2.6	Blue Tooth – RFID	2	Lecture	Smart Board
2.7	WiMAX – Mobile IP	2		
UNIT -3 GSM				
3.1	GSM Architecture – GSM Entities	2	Chalk & Talk	Black Board
3.2	Call routing in GSM	2	Chalk & Talk	LCD
3.3	PLMN Interfaces	3	Lecture	PPT & White board
3.4	GSM Addresses and Identifiers	2	Lecture	Smart Board
3.5	Network Aspects in GSM	2	Chalk & Talk	Black Board
3.6	GSM Frequency allocations	2	Lecture	Smart Board
3.7	Authentications and Security. SMS	2	Chalk & Talk	LCD
UNIT -4 GPRS				

4.1	GPRS and packet data network	2	Chalk & Talk	Black Board
4.2	GPRS network architecture	2	Chalk & Talk	LCD
4.3	GPRS network operations	3	Lecture	PPT & White board
4.4	Data services in GPRS	2	Lecture	Smart Board
4.5	Application for GPRS	2	Lecture	Black Board
4.6	Limitations – Billing and Charging	2	Discussion	Google classroom
4.7	MMS – GPRS Applications	2	Lecture	Black Board
UNIT -5 MOBILE COMPONENTS AND APPLICATIONS				
5.1	Mobile Device Operating Systems – Special Constrains & Requirements	2	Chalk & Talk	Black Board
5.2	Commercial Mobile Operating Systems	2	Chalk & Talk	LCD
5.3	iOS, Android,	3	Lecture	PPT & White board
5.4	BlackBerry, Windows Phone	2	Lecture	Smart Board
5.5	MCommerce – Structure	2	Lecture	Smart Board
5.6	Mobile Payment System	2	Lecture	Smart Board
5.7	Security Issues	2	Lecture	Smart Board

INTERNAL - UG

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

END SEMESTER - UG

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

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

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

CO 1	Create the infrastructure to develop mobile communication systems	K1	PSO1, PSO2
CO 2	Assess the characteristics of emerging technologies in mobilecommunication	K1 & K2	PSO1, PSO2,PSO3
CO 3	Critique new knowledge in the field of computer science by using appropriateresearch methodologies	K1 & K2	PSO3, PSO4
CO 4	Analyze on the various software kits available	K1, K2, K3 & K4	PSO4, PSO5
CO 5	Assess the characteristics of Mobile Components and Applications	K2, K3 & K4	PSO5, PSO6

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	2	1	1	1	2	1	1
CO2	3	3	3	2	1	1	2	2	1	1
CO3	2	1	3	3	2	1	1	2	2	1
CO4	2	2	1	3	3	1	2	2	1	1
CO5	2	2	1	2	3	3	2	1	2	2

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	3	1

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

Note:

ɸ Strongly Correlated – **3**

ɸ Moderately Correlated – **2**

ɸ Weakly Correlated -**1**

COURSE DESIGNER:

    1. Staff Name : Dr. G. Preetha

Forwarded By

(S.Selvarani)

III B.C.A

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J5SB3	SKILL BASED – III LAB IN ANIMATION TECHNIQUES	PRACTICAL	2	2

COURSE DESCRIPTION

    This course gives knowledge on the editing of images and created animated images.

COURSE OBJECTIVES

1. To develop skills for editing and altering photographs through tools, layers, and the adjustments panel.
2. To know about basic photo repairs and color enhancements
3. To design impressive cards for various occasions
4. To know about open source tool Gimp

UNITS

UNIT I: TOOLS OF PHOTOSHOP (6 HRS)

Selection and Painting Tools: Marquee Tool – Crop Tool – Lasso Tool – Move Tool –Rubber – Clone Stamp tool – Eraser Tool – Paint Brush Tool – Art History Brush Tool – Text Tool – Resizing – Rotating of Images.

UNIT II: FILTERS AND ANIMATION (6 HRS)

Filters: Sharpen – Blur Filters – Noise Filters – Render Filters – 3D transform – Clouds – Animations using Image Ready.

UNIT III: CORELDRAW (6 HRS)

Introduction – Selecting Objects – Creating Basic Shapes – Reshaping Objects – Organizing objects – Applying color fills – Outlines– Artistic – Paragraph Text Formatting – Applying Effects.

UNIT IV: GIMP (6 HRS)

Setup for GIMP –Main window – GIMP Interface – Tool box – Color box – Layer box – Channel box – Color channels box – Path box – Foreground Color – Background Color – Switching Layers – Adjusting opacity

UNIT V:EASY ANIMATIONS (6 HRS)

Transformation of Images – Applying Effects – Collage – Feathering – Masking Effects – Photo Text – Shear Effect – Check Board Effect – Rainbow Effect – Use Animation option – Playback the Animation – Save as GIF Animation – View in Web Browsers.

UNIT –VI DYNAMISM (Evaluation Pattern – CIA only)

Working With Photographs – Creating Creative Cards – Creating Animations and Uploading in web pages.

WEB REFERENCES :

1. https://www.photoshoptutorials.ws/
2. https://www.coreldraw.com/en/pages/tutorials/coreldraw/
3. https://www.gimp.org/tutorials/

OER REFERENCE:

https://www.naukri.com/learning/introduction-to-programming-and-animation-with-alice-course-courl903

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT I: TOOLS OF PHOTOSHOP				
1.1	Marquee Tool – Crop Tool	1	Chalk & Talk	Black Board
1.2	Lasso Tool – Move Tool	1	Chalk &Talk	LCD
1.3	Rubber – Clone Stamp tool	1	Lecture	PPT & White board
1.4	Eraser Tool – Paint Brush Tool	1	Lecture	Smart Board
1.5	Art History Brush Tool – Text Tool	1	Lecture	Smart Board
1.6	Resizing – Rotating of Images	1	Lecture	Smart Board
UNIT 2: FILTERS AND ANIMATION				
2.1	Sharpen – Blur Filters	1	Chalk &	Black

			Talk	Board
2.2	Noise Filters	1	Chalk & Talk	LCD
2.3	Render Filters	1	Lecture	PPT & White board
2.4	3D transform	1	Lecture	Smart Board
2.5	Clouds	1	Lecture	Smart Board
2.6	Animations using Image Ready	1	Lecture	Smart Board
UNIT -3 CORELDRAW				
3.1	Introduction – Selecting Objects	1	Chalk & Talk	Black Board
3.2	Creating Basic Shapes – Reshaping Objects	1	Chalk & Talk	LCD
3.3	Organizing objects – Applying color fills	1	Lecture	PPT & White board
3.4	Outlines– Artistic	1	Lecture	Smart Board
3.5	Paragraph Text Formatting	1	Chalk & Talk	Black Board
3.6	Applying Effects	1	Lecture	Smart Board
UNIT -4 GIMP				
4.1	Setup for GIMP – Main window	2	Chalk & Talk	Black Board
4.2	GIMP Interface – Tool box	2	Chalk & Talk	LCD
4.3	Color box – Layer box	3	Lecture	PPT & White board

4.4	Channel box – Color channels box – Path box	2	Lecture	Smart Board
4.5	Foreground Color – Background Color	2	Lecture	Black Board
4.6	Switching Layers – Adjusting opacity	2	Discussion	Google classroom
UNIT -5 EASY ANIMATIONS				
5.1	Transformation of Images – Applying Effects	1	Chalk & Talk	Black Board
5.2	Collage – Feathering – Masking Effects – Photo Text	1	Chalk & Talk	LCD
5.3	Shear Effect – Check Board Effect – Rainbow Effect	1	Lecture	PPT & White board
5.4	Use Animation option	1	Lecture	Smart Board
5.5	Playback the Animation	1	Lecture	Smart Board
5.6	Save as GIF Animation – View in Web Browsers.	1	Lecture	Smart Board

INTERNAL - UG

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

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

END SEMESTER - UG

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

CIA

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

EVALUATION PATTERN

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

10	10	5	5	5	5	40	60	100

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Analyze on the various tools of Photoshop	K1	PSO1& PSO2
CO 2	Compare different types of filters used in Photoshop	K1, K2	PSO2, PSO4

CO 3	Apply the techniques available in CorelDraw	K1 & K3	PSO4, PSO5
CO 4	Understand the Open Source techniques in editing	K1, K2 & K3	PSO3, PSO9
CO 5	Create animated banners and various simple animations	K3 & K4	PSO3

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	2	1	2	1	1	2	1	2
CO2	2	3	2	3	1	2	1	2	1	1
CO3	2	2	1	3	3	1	2	2	1	1
CO4	2	1	3	2	1	1	2	2	3	1
CO5	2	2	3	1	2	1	2	2	1	2

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1
CO2	1	3	1	1	2
CO3	1	2	1	1	3
CO4	3	1	1	1	1
CO5	1	3	1	1	1

Note:

φ Strongly Correlated – **3**
φ Moderately Correlated – **2**
φ Weakly Correlated -**1**

COURSE DESIGNER:

    1. Staff Name : Ms. S. Selvarani

Forwarded By

(S.Selvarani)

III B.C.A

SEMESTER – V

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J5SB4	SKILL BASED – IV LAB IN E–CONTENT EVELOPMENT	PRACTICAL	2	2

COURSE DESCRIPTION

This course helps to promote content generation, adaptation and distribution of e–content through electronic media

COURSE OBJECTIVES

- To identify the multimedia principles and elements for E–Learning

- To Understand the techniques to create customized lessons

- To work on the audio and video editing tools

UNITS

UNIT I: INTRODUCTION TO E–LEARNING   (6 HRS)

Introduction–Need for e–learning – Objectives–Trends – Benefits – Challenges–Phases of E–Content– Characteristics–Components–Elements of e–content–Content Generation–Adaptation

UNIT II: MULTIMEDIA IN E–CONTENT DEVELOPMENT   (6 HRS)

Electronic Content (E–content)– Designing and Development of E–content– Standards of E–content– Learning Objects and Re–usability of E–content

UNIT III: E–CONTENT TOOL   (6 HRS)

Tools– Freeware– Open Source Software (OSS)– Proprietary software– Public domain software

UNIT IV: GRAPHICS, AUDIO AND VIDEO EDITING   (6 HRS)

Wevideo –Magisto–DrawPad–PhotoShop–MyPaint–Inkscape–GIMP –WavePad– Audacity–Case Study – Video Pad –Magisto –Openshot –Concept mapping– Visual Understanding Environment (VUE)–Case Study

UNIT V:AUTHORING TOOLS   (6 HRS)

Introduction–Characteristics – eXe Learning– Xerte –Generation–Adaptation– Distribution of E–Content–Case Study

REFERENCE BOOKS:

1. Critical Understanding of ICT, Unit 12: E–Content and Open Educational Resources (OER)

WEB REFERENCES:

1. E–Learning for Beginners

2. E–Learning Swayam Portal

OER REFERENCES:

https://onlinecourses.swayam2.ac.in/ntr20_ed11/preview

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	UNIT I: INTRODUCTION TO E-LEARNING			
1.1	Introduction-Need for e-learning	1	Chalk & Talk	Black Board
1.2	Objectives-Trends – Benefits	1	Chalk & Talk	LCD
1.3	Challenges-Phases of E-Content	1	Lecture	PPT & White board
1.4	Characteristics-Components-	1	Lecture	Smart Board
1.5	Elements of e-content-Content	1	Lecture	Smart Board
1.6	Generation-Adaptation	1	Lecture	Smart Board
	UNIT 2: MULTIMEDIA IN E-CONTENT DEVELOPMENT			
2.1	Designing and Development of E-content	2	Chalk & Talk	Black Board
2.2	Standards of E-content	2	Chalk & Talk	LCD

2.3	Learning Objects and Re-usability of E-content	2	Lecture	PPT & White board
UNIT -3 E-CONTENT TOOLS				
3.1	Tools- Freeware	1	Chalk & Talk	Black Board
3.2	Open Source Software (OSS)	2	Chalk & Talk	LCD
3.3	Proprietary software	2	Lecture	PPT & White board
3.4	Public domain software	1	Lecture	Smart Board
UNIT -4 GRAPHICS, AUDIO AND VIDEO EDITING				
4.1	Wevideo –Magisto-DrawPad	1	Chalk & Talk	Black Board
4.2	PhotoShop – MyPaint-Inkscape-GIMP	1	Chalk & Talk	LCD
4.3	WavePad-Audacity-Case Study	1	Lecture	PPT & White board
4.4	VideoPad –Magisto –VideoPad-Openshot	1	Lecture	Smart Board
4.5	Concept mapping	1	Lecture	PPT
4.6	Visual Understanding Environment (VUE)-Case Study	1	Discussion	Google classroom
UNIT -5 AUTHORING TOOLS				
5.1	Charecteristics-eXe Learning	1	Chalk & Talk	Black Board
5.2	Xerte	2	Chalk & Talk	LCD
5.3	Generation-Adaptation	2	Lecture	PPT & White

				board
5.4	Distribution of Case Study	1	Lecture	Smart Board

INTERNAL - UG

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

END SEMESTER - UG

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

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

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

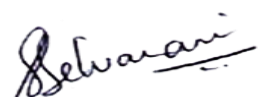On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand E-Learning with respect to its needs, challenges and benefits	K1	PSO1& PSO2
CO 2	Explain the components of Authoring tools and E-learning standards	K1, K2	PSO2, PSO3
CO 3	Apply Audio editing techniques for creating podcasts	K1 & K3	PSO3, PSO5
CO 4	Understand the techniques of creating customized lessons	K1, K2 & K3	PSO5, PSO8
CO 5	Create videos using online tools	K3 & K4	PSO8

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	2	1	1	1	1	2	1	1
CO2	2	3	3	1	2	1	1	2	1	2
CO3	2	2	3	2	3	1	2	2	2	1
CO4	2	2	1	2	3	1	2	3	2	1
CO5	2	1	2	2	2	1	1	3	1	2

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1
CO2	1	3	1	1	2
CO3	1	2	1	1	3
CO4	3	1	1	1	1
CO5	1	3	1	1	1

COURSE DESIGNER:

1. **Staff Name : Ms. S. Selvarani**

Forwarded By

(signature)

(S.Selvarani)

III B.C.A

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J6CC13	PYTHON	LECTURE	5	5

COURSE DESCRIPTION

This course helps to get knowledge in python language and to know about the different types of data like lists, dictionaries and files handling.

COURSE OBJECTIVES

1. To understand how Python is useful scripting language for developers.
2. To learn how to design and program Python applications.
3. To learn how to use lists, tuples, and dictionaries in Python programs.

UNITS

UNIT 1: INTRODUCTION TO PYTHON   [15 HRS]

Installation and Working with Python - Understanding Python variables - Python basic Operators - Understanding python blocks - Declaring and using Numeric data types: int, float, complex -Using string data type and string operations - Defining list and list slicing - Use of Tuple data type

UNIT 2: PYTHON PROGRAM FLOW CONTROL   [15 HRS]

Conditional blocks using if, else and elif - Simple for loops in python - For loop using ranges, string, list and dictionaries - Use of while loops in python - Loop manipulation using pass, continue, break and else - Programming using Python conditional and loops block

UNIT 3: PYTHON FUNCTIONS, MODULES AND PACKAGES   [15 HRS]

Organizing python codes using functions - Organizing python projects into modules - Importing own module as well as external modules   - Understanding Packages   - Powerful Lamda function in python   - Programming using functions, modules and external packages

UNIT 4: PYTHON STRING, LIST AND DICTIONARY MANIPULATIONS

15HRS]

Building blocks of python programs   - Understanding string in build methods   - List manipulation using in build methods   - Dictionary manipulation   - Programming using string, list and   - Dictionary in build functions

UNIT 5: PYTHON FILE OPERATION   [15 HRS]

Design with functions: hiding redundancy, complexity; arguments and return values; formal vs actual arguments, named arguments - Recursive functions - Understanding read functions, read(), readline() and readlines()   - Understanding write functions, write() and writelines() - manipulating file pointer using seek   - Programming using file operations

UNIT VI: DYNAMISM

Multithreading – CGI Programming – Python mini project – Shell Interface – System Programming with Python – Py Graphs

REFERENCE BOOKS:

1. Python Programming – Reema Thareja , Oxford University Press , 2017.
2. Think Python – Allen B.Downey ,O"Reilly Publications, 2nd Edition.
3. Exploring Python – Timothy A.Budd, Tata Mc Graw Hill, 2017

WEB REFERNCES :

1. https://www.python.org/about/gettingstarted/
2. https://www.w3schools.com/python/default.asp

OER REFERENCES :

https://greenteapress.com/thinkpython/thinkpython.html

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids

UNIT 1: INTRODUCTION TO PYTHON

1.1	Installation and Working with Python – Understanding Python variables	5	Chalk & Talk	Black Board
1.2	Python basic Operators – Understanding python blocks	5	Chalk & Talk	LCD
1.3	Declaring and using Numeric data types: int, float, complex	5	Lecture	PPT & White board
1.4	Using string data type and string operations	5	Lecture	Smart Board
1.5	Defining list and list slicing – Use of Tuple data type	5	Lecture	Smart Board

UNIT 2: PROGRAM FLOW CONTROL

2.1	Conditional blocks using if, else and else-if – Simple for loops in python	5	Chalk & Talk	Black Board
2.2	For loop using ranges, string, list and dictionaries	5	Chalk & Talk	LCD
2.3	Use of while loops in python	5	Lecture	PPT & White board
2.4	Loop manipulation using pass, continue, break and else	5	Lecture	Smart Board
2.5	Programming using Python conditional and loops block	5	Lecture	Smart Board

UNIT -3   FUNCTIONS, MODULES AND PACKAGES

3.1	Organizing python codes using functions	2	Chalk & Talk	Black Board
3.2	Organizing python projects into modules	2	Chalk & Talk	LCD
3.3	Importing own module as well	3	Lecture	PPT &

	as external modules			White board
3.4	Understanding Packages	2	Lecture	Smart Board
3.5	Powerful Lamda function in python	2	Chalk & Talk	Black Board
3.6	Programming using functions	2	Lecture	Smart Board
3.7	Programming using modules and external packages	2	Chalk & Talk	LCD
UNIT -4 STRING, LIST AND DICTIONARY				
4.1	Building blocks of python programs	2	Chalk & Talk	Black Board
4.2	Understanding string in build methods	2	Chalk & Talk	LCD
4.3	List manipulation using in build methods	3	Lecture	PPT & White board
4.4	Dictionary manipulation	2	Lecture	Smart Board
4.5	Programming using string	3	Lecture	Black Board
4.6	list and – Dictionary in build functions	3	Discussion	Google classroom
UNIT -5 FILE OPERATIONS				
5.1	Design with functions: hiding redundancy, complexity	2	Chalk & Talk	Black Board
5.2	arguments and return values	2	Chalk & Talk	LCD
5.3	formal vs actual arguments, named arguments – Recursive functions	3	Lecture	PPT & White board
5.4	Understanding read functions,	2	Lecture	Smart Board

	read(), readline() and readlines()			
5.5	Understanding write functions, write() and writelines()	2	Lecture	Smart Board
5.6	manipulating file pointer using seek	2	Lecture	Smart Board

INTERNAL - UG

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

END SEMESTER - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	

K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Identify different Python object types	K1	PSO1, PSO2
CO 2	Discuss how to use indexing and slicing to access data in Python programs	K1, K2 & K3	PSO1, PSO2,PSO3
CO 3	Assess structure and components of a Python program	K2 & K3	PSO3, PSO4
CO 4	Write programs to demonstrate loops and decision statements in Python	K2, K3 & K4	PSO4, PSO5
CO 5	Build and package in Python modules for reusability	K2, K3 & K4	PSO5, PSO6

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	1	1	1	1	2	1	1
CO2	3	3	3	2	1	1	1	2	1	1
CO3	2	2	3	3	2	1	2	2	2	1
CO4	2	2	2	3	3	1	2	2	1	1
CO5	2	2	2	2	3	3	2	2	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1

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

COURSE DESIGNER:

1. **Staff Name : Ms. S. Selvarani**

Forwarded By

(S.Selvarani)

III B.C.A

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J6CC14	COMPUTER NETWORKS	LECTURE	5	5

COURSE DESCRIPTION

This course helps to know about the layered architecture of different models and also the works of each layer with security features.

COURSE OBJECTIVES

1. To become an efficient administrator in networking side, the concept of data communication is being introduced.
2. To disseminate knowledge in OSI and TCP stack and real time implementations
3. To acquire detailed investigation of various threats and countermeasures in web and mobile security.

UNITS

UNIT I: INTRODUCTION   (15 HRS)

Uses of Computer Networks: Business Applications –Home Applications – Mobile Users– Social Issues. Network Hardware: Local Area Networks – Metropolitan Area Networks –Wide Area Networks –Wireless Networks – Home Networks – Internetworks. Network Software: Protocol Hierarchies – Connection – oriented and connectionless services – Reference Models: The OSI Reference Model – The TCP/IP Reference Model – A Comparison of the OSI and TCP/IP Reference Model.

UNIT II: PHYSICAL LAYER   (15 HRS)

The Guided Transmission Media : Magnetic Media – Twisted Pair – Coaxial Cable – Fiber Optics. Wireless Transmission: The Electromagnetic Spectrum – Radio Transmission – Microwave Transmission – Infrared and Millimeter Waves – Light wave Transmission.

UNIT III: DATA LINK LAYER   (15 HRS)

The Data link Layer Design Issues : Services provided to the Network Layer –

Framing – Error Control – Flow Control. Error Detection and correction: Error – Correcting Codes– Error – Detecting Codes.

UNIT IV: NETWORK LAYER   (15 HRS)

Routing Algorithms: The optimality principle, shortest path routing, Multicast Routing. Internetworking: Concatenated Virtual Circuits –A Connectionless Internetworking – Tunneling – Fragmentation.

UNIT V: APPLICATION LAYER, NETWORK SECURITY   (15 HRS)

Domain Name System: The DNS Namespace, Resource Records, Name Servers. Electronic Mail: Architecture and Services – The User Agent – Message Formats – Message Transfer – Final Delivery. Web Security: Threats – Secure Naming – SSL – The Secure Socket Layer – Mobile Code Security

UNIT VI: DYNAMISM

Distributed system security – Bombs – Bio – metrics – Trojan Horse – Trap door – Logic Bomb – Buffer Overflow – Viruses – User Authentication – Passwords Vulnerabilities – – Firewalling to Protect System and Networks – Phishing.

REFERENCE BOOKS:
1. Andrew S Tanenbaum& David J.Wetherall, Computer Networks, V Edition, Pearson, 2015
2. William Stallings, Data and Computer Communications, X Edition, Prentice Hall of India Pvt. Ltd., New Delhi, 2014

WEB REFERNCES :

1. https://en.wikipedia.org/wiki/Computer_network

2. https://www.geeksforgeeks.org/basics–computer–networking/

OER REFERNCES :

https://www.oercommons.org/courses/local-area-networks/view

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: INTRODUCTION				
1.1	Uses of Computer Networks: Business Applications –Home Applications –Mobile Users– Social Issues	5	Chalk & Talk	Black Board
1.2	Local Area Networks – Metropolitan Area Networks – Wide Area Networks –Wireless Networks	5	Chalk & Talk	LCD
1.3	Home Networks – Internetworks	5	Lecture	PPT & White board
1.4	Protocol Hierarchies – Connection – oriented and connectionless services	5	Lecture	Smart Board
1.5	The OSI Reference Model – The TCP/IP Reference Model – A Comparison of the OSI and TCP/IP Reference Model	5	Lecture	Smart Board
UNIT 2: PHYSICAL LAYER				
2.1	Magnetic Media – Twisted Pair	5	Chalk & Talk	Black Board
2.2	Coaxial Cable – Fiber Optics	5	Chalk & Talk	LCD
2.3	The Electromagnetic Spectrum – Radio Transmission	5	Lecture	PPT & White board
2.4	Microwave Transmission – Infrared and Millimeter Waves	5	Lecture	Smart Board

2.5	Light wave Transmission	5	Lecture	Smart Board
UNIT -3 DATA LINK LAYER				
3.1	Services provided to the Network Layer	3	Chalk & Talk	Black Board
3.2	Framing – Error Control – Flow Control	4	Chalk & Talk	LCD
3.3	Error – Correcting Codes	4	Lecture	PPT & White board
3.4	Error – Detecting Codes	4	Lecture	Smart Board
UNIT -4 NETWORK LAYER				
4.1	The optimality principle, shortest path routing	2	Chalk & Talk	Black Board
4.2	Multicast Routing.	2	Chalk & Talk	LCD
4.3	Concatenated Virtual Circuits	3	Lecture	PPT & White board
4.4	A Connectionless Internetworking	2	Lecture	Smart Board
4.5	Tunneling	3	Lecture	Black Board
4.6	Fragmentation.	3	Discussion	Google classroom
UNIT -5 APPLICATION LAYER, NETWORK SECURITY				
5.1	The DNS Namespace, Resource Records,Name Servers	3	Chalk & Talk	Black Board
5.2	Electronic Mail: Architecture and Services	2	Chalk & Talk	LCD
5.3	The User Agent – Message Formats	3	Lecture	PPT & White

				board
5.4	Message Transfer – Final Delivery	3	Lecture	Smart Board
5.5	Threats – Secure Naming – SSL	2	Lecture	Smart Board
5.6	The Secure Socket Layer – Mobile Code Security	2	Lecture	Smart Board

INTERNAL - UG

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

END SEMESTER - UG

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

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Outline the functionalities of OSI reference model	K1	PSO1, PSO2
CO 2	Discuss guided and unguided media and its real time usage and applications	K1 & K2	PSO1, PSO2, PSO3
CO 3	Analyze on the design issues of DLL	K1, K2 & K3	PSO3, PSO4
CO 4	Demonstrate various routing algorithms through case studies	K2, K3 & K4	PSO4, PSO5
CO 5	Assess real time web and network security mechanisms	K2, K3 & K4	PSO5, PSO6

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	2	1	1	1	2	2	1
CO2	3	3	3	2	1	1	2	2	1	1
CO3	2	1	3	3	2	1	2	2	1	1
CO4	2	2	1	3	3	1	1	2	1	1
CO5	2	1	2	1	3	3	2	2	1	2

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1
CO2	1	3	1	1	2
CO3	1	2	1	1	3
CO4	3	1	1	1	1
CO5	1	3	1	1	1

COURSE DESIGNER:

1. **Staff Name : Dr. G. Preetha**

Forwarded By

(S.Selvarani)

III B.C.A

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
USCA	19J6CC15	LAB IN PYTHON	PRACTICAL	5	3

COURSE DESCRIPTION

This course helps to get practical knowledge in python language and to know about the different types of data like lists, dictionaries and files handling.

COURSE OBJECTIVES

1. To develop programming skills in Python
2. To learn how to use lists, tuples, and dictionaries in Python programs
3. To demonstrate built in functions in Python applications
4. To define the structure and components of a Python program.
5. To learn packages and file concepts in Python

PROGRAM LIST:

1. Simple programs
2. Program to implement arrays
3. Program to implement Conditional statements
4. Program to implement looping statements
5. Program to manipulate String
6. Program to implement function
7. Program using interface
8. Program using packages
9. Program using Files
10. Program to implement build in functions

WEB REFERNCES :

1. https://www.w3schools.com/python/python_intro.asp

OER REFERENCE:

https://lab.github.com/everydeveloper/introduction-to-python

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
LAB IN PYTHON				
1.1	Simple programs	5	Demo & Lab	Black Board
1.2	Implement arrays	5	Demo & Lab	LCD
1.3	Conditional statements	15	Demo & Lab	PPT & White board
1.4	Looping statements	15	Demo & Lab	Smart Board
1.5	String Manipulation	5	Demo & Lab	Smart Board
1.6	Function	5	Demo & Lab	LCD
1.7	Interface	10	Demo & Lab	LCD
1.8	Packages	15	Demo & Lab	LCD
1.9	Files And built-in functions	15	Demo & Lab	LCD

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

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Identify different Python object types	K1	PSO1, PSO2

CO 2	Discuss how to use indexing and slicing to access data in Python programs	K1, K2 & K3	PSO1, PSO2,PSO3
CO 3	Assess structure and components of a Python program	K2 & K3	PSO3, PSO4
CO 4	Write programs to demonstrate loops and decision statements in Python	K2, K3 & K4	PSO4, PSO5
CO 5	Build and package in Python modules for reusability	K2, K3 & K4	PSO5, PSO6

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	2	1	1	1	2	1	1
CO2	3	3	3	2	1	1	1	2	1	1
CO3	2	2	3	3	2	1	2	2	2	1
CO4	2	1	2	3	3	1	2	2	1	1
CO5	2	2	1	2	3	3	2	2	1	2

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	3	1	1	1	1
CO2	1	3	1	1	2
CO3	1	2	1	1	3
CO4	3	1	1	1	1
CO5	1	3	1	1	1

COURSE DESIGNER:

1. **Staff Name : Ms. S. Selvarani**

Forwarded By

(S.Selvarani)

III B.C.A

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J6ME3	SECURITY PRACTICES	LECTURE	5	5

COURSE DESCRIPTION

This Course helps in examining the security issues and practices along with the encryption techniques.

COURSE OBJECTIVES

1. To be able to secure a message over insecure channel by various means

2. Describe the types of encryption techniques.

3. Analyze various security breaches.

4. Focus on the hacking types and cyber forensics mechanisms

UNITS

UNIT I: COMPUTER AND NETWOK SECURITY OVERVIEW   (15 HRS)

Computer Security Concepts – Security Architecture – Security Attacks – Security Services – Security Mechanisms –Model for Network Security.

UNIT II: CRYPTOGRAPHIC TECHNIQUES   (15 HRS)

Symmetric Cipher Model – Cryptography – Crypt Analysis – Types of Attacks –Substitution techniques – Caesar Cipher – Monoalphabetic Ciphers – Playfair cipher – Polyalphabetic Cipher – Vigenere Cipher – Vernam Cipher – One Time Pad – Transposition techniques – Steganography.

UNIT III : SECURITY BREACHES   (15 HRS)

BREACHES – Trust and Privacy – Security Vs Data Breach – Equifax – Yahoo – Ebay – Heartland Payment System – Target Breach – Myspace Breach – Verisign – Facebook – Ways to Protect from Security Breaches – Breach Avoidance.

UNIT IV : HACKING   (15 HRS)

What is Hacking – Techniques – Tools – Bait and Switch – DoS – DdoS – Eavesdropping – Key logging – Phishing – Malware – SQL Injection – Cookie Theft – MITM Attack – Ethical and Unethical Hacking – Data Leakage – Types and Prevention Methods

UNIT V : PATCH MANAGEMENT AND CYBER FORENSICS   (15 HRS)

Patch Management – Roles – Patch Testing – Types of Patches – Do's and Dont's – What is Cyber Forensics – Objectives and Needs – Steps or Stages of investigation – Incident Handlings – Cyber Laws

REFERENCES:

1. Cryptography and Network Security Principles & Practice, William Stallings, Pearson Education Limited, 7th Edition, 2018

2. Network Security Essentials: Applications and Standards, William Stallings, Pearson Publication, 6th Edition, 2017

3. Computer Forensics: Computer Crime Scene Investigation, John R. Vacca, Second Edition, 2005

4. Security Patch Management, Felicia Nicastro, 1st Edition, CRC Press Publication, 2019

WEB REFERNCES:

1. https://its.ucsc.edu/security/breaches.html

2. https://www.w3schools.in/cyber–security/cyber–forensics–and–incident–handling/

OER REFERNCES:

https://www.oercommons.org/courses/information-security-06-06-internet-security/view

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: COMPUTER AND NETWOK SECURITY OVERVIEW				
1.1	Computer Security Concepts – Security Architecture Applications –Mobile Users– Social Issues	5	Chalk & Talk	Black Board
1.2	Security Attacks	5	Chalk & Talk	LCD
1.3	Security Services	5	Lecture	PPT & White board
1.4	Security Mechanisms	5	Lecture	Smart Board
1.5	Model for Network Security	5	Lecture	Smart Board
UNIT 2: CRYPTOGRAPHIC TECHNIQUES				
2.1	Symmetric Cipher Model	2	Chalk & Talk	Black Board
2.2	Cryptography – Crypt Analysis	2	Chalk & Talk	LCD

2.3	Types of Attacks – Substitution techniques	3	Lecture	PPT
2.4	Caesar Cipher – Monoalphabetic Ciphers	2	Lecture	Smart Board
2.5	Playfair cipher – Polyalphabetic Cipher	2	Lecture	Smart Board
2.6	Vigenere Cipher – Vernam Cipher	2	Lecture	Smart Board
2.7	One Time Pad –Transposition techniques – Steganography.	2	Lecture	Smart Board
UNIT -3 SECURITY BREACHES				
3.1	BREACHES – Trust and Privacy	3	Chalk & Talk	Black Board
3.2	Security Vs Data Breach - Equifax	2	Chalk & Talk	LCD
3.3	Yahoo - Ebay – Heartland Payment System	2	Lecture	PPT & White board
3.4	Target Breach – Myspace Breach	2	Lecture	Smart Board
3.5	Verisign – Facebook	2	Chalk & Talk	Black Board
3.6	Ways to Protect from Security Breaches	2	Chalk & Talk	Black Board
3.7	Breach Avoidance.	2	Chalk & Talk	Black Board
UNIT -4 HACKING				
4.1	What is Hacking – Techniques – Tool	2	Chalk & Talk	Black Board
4.2	Bait and Switch – DoS – DdoS	2	Chalk & Talk	LCD

4.3	Concatenated Virtual Circuits	2	Lecture	PPT
4.4	Phishing – Malware – SQL Injection	2	Lecture	Smart Board
4.5	Cookie Theft – MITM Attack	3	Lecture	Black Board
4.6	Ethical and Unethical Hacking	2	Discussion	Google classroom
4.7	Data Leakage – Types and Prevention Methods	2	Lecture	Black Board
UNIT -5 PATCH MANAGEMENT AND CYBER FORENSICS				
5.1	Patch Management – Roles	3	Chalk & Talk	Black Board
5.2	Patch Testing – Types of Patches	2	Chalk & Talk	LCD
5.3	Do's and Dont's – What is Cyber Forensics	3	Lecture	PPT & White board
5.4	Objectives and Needs	3	Lecture	Smart Board
5.5	Steps or Stages of investigation	2	Lecture	Smart Board
5.6	Incident Handlings– Cyber Laws	2	Lecture	Smart Board

INTERNAL - UG

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

END SEMESTER - UG

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

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

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the concept of cryptography	K1 & K2	PSO1, PSO2
CO 2	Compare on the encryption techniques available	K1 & K2	PSO1, PSO2, PSO3
CO 3	Evaluate the Various tools and tactics followed in military	K1, K2 & K3	PSO3, PSO4
CO 4	Predict the forensics fundamentals and the various technologies used to avoid computer crimes.	K1, K2, K3 & K4	PSO4, PSO5
CO 5	Illustrate different methods to collect and preserve digital evidence and Digital Crime Scene	K2, K3 & K4	PSO5, PSO6

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	2	1	1	1	2	1	1
CO2	3	3	3	2	1	2	1	2	1	1
CO3	2	1	3	3	2	1	1	2	2	1
CO4	2	1	2	3	3	1	2	2	1	1
CO5	2	2	2	2	3	3	2	2	1	2

Mapping of C0s with POs

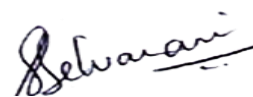| CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	3	1	1	1
CO2	1	1	1	1	2
CO3	1	3	1	1	1
CO4	1	1	1	1	3
CO5	1	1	1	1	1

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

COURSE DESIGNER:

1. **Staff Name : Ms. S. Selvarani**

Forwarded By

(S.Selvarani)

III B.C.A

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J6ME4	DATA MINING	LECTURE	5	5

COURSE DESCRIPTION

To discover the hidden patterns in the rapidly growing data generated by businesses, science, web, and other sources and to focus on the key tasks of data mining.

COURSE OBJECTIVES

1. To understand the basic concepts and techniques of Data Mining
2. To develop data mining software skills for solving practical problems.
3. To study the methodology of legacy databases for data mining to derive business intelligence rules for decision support systems
4. To develop and apply critical thinking, problem – solving, and decision – making skills.

UNITS

UNIT I: INTRODUCTION   (15 HRS)

Basic Data Mining Tasks – Data Mining Versus Knowledge Discovery in Data Bases – Data Mining Issues – Data Mining Matrices – Social Implications of Data Mining – Data Mining from Data Base Perspective.

UNIT II : DATA MINING TECHNIQUES(15 HRS)

A Statistical Perspective on data mining – Similarity Measures– Decision Trees – Neural Networks – Genetic Algorithms.

UNIT III :CLASSIFICATION   **(15 HRS)**

 Introduction – Statistical – Based Algorithms – Distance Based Algorithms – Decision Tree – Based Algorithms – Neural Network Based Algorithms – Rule Based Algorithms – Combining Techniques.

UNIT IV: CLUSTERING   (15 HRS)

Introduction – Similarity and Distance Measures – Outliers – Hierarchical Algorithms. – Partitional Algorithms.

UNIT V: ASSOCIATION RULES   (15 HRS)

Introduction – Large Item Sets – Basic Algorithms – Parallel & Distributed Algorithms – Comparing Approaches – Incremental Rules – Advanced Association Rules Techniques – Measuring the Quality of Rules.

UNIT VI: DYNAMISM

Data Management Aspects – Data Warehousing – Clustering Analysis – Classification and Clustering Algorithms – Outlier Detection – Data Mining Tools.

REFERENCE BOOKS:

1. Margaret H.Dunbam , Data Mining Introductory and Advanced Topics — Pearson Education – 2006 .
2. Jiawei Han & Micheline Kamber , Data Mining Concepts & Techniques

WEB REFERNCES :

1. https://en.wikipedia.org/wiki/Data_mining
2. https://www.geeksforgeeks.org/data–mining/
3. https://www.javatpoint.com/data–mining

OER REFERNCES :

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: INTRODUCTION				
1.1	Basic Data Mining Tasks	5	Chalk & Talk	Black Board
1.2	Data Mining Versus Knowledge Discovery in Data Bases	5	Chalk & Talk	LCD
1.3	Data Mining Issues – Data Mining Matrices	5	Lecture	PPT & White board
1.4	Social Implications of Data Mining	5	Lecture	Smart Board
1.5	Data Mining from Data Base Perspective.	5	Lecture	Smart Board
UNIT 2: DATA MINING TECHNIQUE				
2.1	A Statistical Perspective on data mining	5	Chalk & Talk	Black Board
2.2	Similarity Measures	5	Chalk & Talk	LCD
2.3	Decision Trees	5	Lecture	PPT & White board
2.4	Neural Networks	5	Lecture	Smart Board
2.5	Genetic Algorithms.	5	Lecture	Smart Board

	UNIT -3 CLASSIFICATION			
3.1	Introduction – Statistical – Based Algorithms	3	Chalk & Talk	Black Board
3.2	Distance Based Algorithms	2	Chalk & Talk	LCD
3.3	Decision Tree – Based Algorithms	3	Lecture	PPT & White board
3.4	Neural Network Based Algorithms	3	Lecture	Smart Board
3.5	Rule Based Algorithms	2	Chalk & Talk	Black Board
3.6	Combining Techniques	2	Chalk & Talk	Black Board
	UNIT -4 CLUSTERING			
4.1	Introduction	5	Chalk & Talk	Black Board
4.2	Similarity and Distance Measures	5	Chalk & Talk	LCD
4.3	Outliers	5	Lecture	PPT & White board
4.4	Hierarchical Algorithms.	5	Lecture	Smart Board
4.5	Partitional Algorithms	5	Lecture	Black Board
	UNIT -5 ASSOCIATION RULES			
5.1	Introduction – Large Item Sets	3	Chalk & Talk	Black Board
5.2	Basic Algorithms – Parallel & Distributed Algorithms	2	Chalk & Talk	LCD
5.3	Comparing Approaches	3	Lecture	PPT &

5.4	Incremental Rules	3	Lecture	Smart Board
5.5	Advanced Association Rules Techniques	2	Lecture	Smart Board
5.6	Measuring the Quality of Rules	2	Lecture	Smart Board

INTERNAL - UG

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

END SEMESTER - UG

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

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

CIA

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

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into ccount

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	Analyze data mining algorithms, methods, and tools	K1 & K2	PSO1, PSO2
CO 2	Identify business applications of data mining	K1 & K2	PSO1, PSO2,PSO3
CO 3	Predict quantitative analysis report to make decisions	K1, K2 & K3	PSO3, PSO4
CO 4	Outline the developing areas web mining, text mining, and ethical aspects of data mining	K1, K2, K3 & K4	PSO4, PSO5
CO 5	Compare the various applications of Data Mining	K2, K3 & K4	PSO5, PSO6

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	1	2	1	1	2	1	1
CO2	3	3	3	2	1	2	1	2	1	1
CO3	2	1	3	3	2	1	2	2	2	1
CO4	2	2	2	3	3	1	2	2	1	2
CO5	2	2	2	2	2	2	2	2	1	1

Mapping of C0s with POs

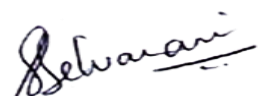| CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	3	1	1	1
CO2	1	1	1	1	2
CO3	1	3	1	1	1
CO4	1	1	1	1	3
CO5	1	1	1	1	1

Note:

ɸ Strongly Correlated – **3**

ɸ Moderately Correlated – **2**

ɸ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name : Ms. A. Punitha Rosline**

Forwarded By

(S.Selvarani)

III B.C.A

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J6ME5	INTERNET OF THINGS (IoT)	LECTURE	5	5

COURSE DESCRIPTION

This helps to connect things to the internet which provide many advantages and also to understand the characteristics of IoT.

COURSE OBJECTIVES

1. To assess the vision and introduction of IoT.
2. To learn the evolution, principles, communications of internet
3. To understand building blocks of Internet of Things and characteristics
4. To discover the devices used in IoT.

UNITS

UNIT I: THE INTERNET OF THINGS(15 HRS)

An Overview – TheFlavor of the Internet of Things – The "Internet" of "Things" – The Technology of the Internet of Things – Enchanted Objects – Who is making the Internet of Things? Design Principles for Connected Devices – Calm and Ambient Technology – Magic as Metaphor – Privacy – Keeping Secrets – Who's Data Is It Anyway? – Web Thinking for Connected Devices – Small Pieces, Loosely Joined – First – Class Citizens on the Internet – Graceful Degradation Affordances.

UNIT II:INTERNET PRINCIPLES(15 HRS)

Internet Communications: An Overview – IP – TCP – The IP Protocol Suite

(TCP/IP) – UDP – IP Addresses – DNS – Static IP Address Assignment – Dynamic IP Address Assignment – IPv6 MAC Addresses – TCP and UDP Ports – An Example: HTTP Ports – Other Common Ports – Application Layer Protocols – HTTP – HTTPS: Encrypted HTTP – Other Application Layer Protocols.

UNIT III: THINKING ABOUT PROTOTYPING(15 HRS)

Sketching – Familiarity – Costs versus Ease of Prototyping – Prototypes and Production – Changing Embedded Platform – Physical Prototypes and Mass Personalization – Climbing into the Cloud – Open Source versus Closed Source – Why Closed? – Why Open? – Mixing Open and Closed Source – Closed Source for Mass Market Projects – Tapping into the Community.

UNIT IV:PROTOTYPING EMBEDDED DEVICES(15 HRS)

Electronics – Sensors – Actuators – Scaling Up the Electronics – Embedded Computing Basics Microcontrollers – System – on – Chips – Choosing Your Platform – Arduino – Developing on the Arduino – Some Notes on the Hardware – Openness – Raspberry Pi – Cases and Extension Boards – Developing on the Raspberry Pi – Some Notes on the Hardware – Openness.

UNIT V:PROTOTYPING THE PHYSICAL DESIGN(15 HRS)

Preparation – Sketch, Iterate, and Explore – Non digital Methods – Laser Cutting – Choosing a Laser Cutter – Software – Hinges and Joints – 3D Printing – Types of 3D Printing – Software – CNC Milling – Repurposing/Recycling Learning Outcomes: At the end of this course the students, Understand the Communications done through internet – Able to realize the revolution of Internet in Sensor Networks

UNIT VI: DYNAMISM

Rasperry Pi – Edge Computing – Virtual Reality – Augmented Reality – Auto Machine Learning – IoT Security – Real Time Applications in IOT – Case

Study – Mini Project

REFERENCE BOOKS:

1. Arshdeep Bahga, Vijay Madisetti, "Internet of things: A Hands on Approach", Arshdeep Bahga, Vijay Madisetti, 2014 Edition.
2. Marco Schwartz, "Internet of Things with the Arduino Yún", Packt Publishing, 2014.
3. David Boswarthick, Olivier Hersent, Omar Elloumi, "The Internet of Things: Key Applications and Protocols", Wiley Publication, 2015.
4. James Weaver, Stephen Chin, "Raspberry Pi with Java: Programming the Internet of Things (IoT)", McGraw – Hill, 2015.

WEB REFERNCES :

1. https://www.iotforall.com/what–is–iot–simple–explanation/

2. https://internetofthingsagenda.techtarget.com/definition/Internet–of–Things–IoT

3. https://www.ibm.com/blogs/internet–of–things/what–is–the–iot/

OER REFERNCE :

https://nptel.ac.in/courses/106/105/106105166/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	UNIT 1: THE INTERNET OF THINGS			
1.1	An Overview – The Flavour of the Internet of Things	1	Chalk & Talk	Black Board
1.2	The "Internet" of "Things" – The Technology of the Internet	2	Chalk & Talk	LCD

	of Things			
1.3	Enchanted Objects – Who is making the Internet of Things?	2	Lecture	PPT & White board
1.4	Design Principles for Connected Devices	2	Lecture	Smart Board
1.5	Calm and Ambient Technology – Magic as Metaphor	2	Lecture	Smart Board
1.6	Privacy – Keeping Secrets – Who"s Data Is It Anyway?	2	Lecture	Smart Board
1.7	Web Thinking for Connected Devices – Small Pieces, Loosely Joined	2	Lecture	Smart Board
1.8	First – Class Citizens on the Internet – Graceful Degradation Affordances.	2	Lecture	Smart Board
UNIT 2: INTERNET PRINCIPLES				
2.1	An Overview – IP – TCP	2	Chalk & Talk	Black Board
2.2	The IP Protocol Suite (TCP/IP) – UDP	2	Chalk & Talk	LCD
2.3	IP Addresses – DNS	2	Lecture	PPT & White board
2.4	Static IP Address Assignment – Dynamic IP Address Assignment	3	Lecture	Smart Board
2.5	IPv6 MAC Addresses – TCP and UDP Ports	2	Lecture	Smart Board
2.6	IPv6 MAC Addresses – TCP and UDP Ports	2	Chalk & Talk	Black Board
2.7	Encrypted HTTP – Other	2	Lecture	Smart

	Application Layer Protocols.			Board
UNIT -3 THINKING ABOUT PROTOTYPING				
3.1	Sketching – Familiarity	2	Chalk & Talk	Black Board
3.2	Costs versus Ease of Prototyping – Prototypes and Production	2	Chalk & Talk	LCD
3.3	Changing Embedded Platform – Physical Prototypes and Mass Personalization	3	Lecture	PPT & White board
3.4	Climbing into the Cloud – Open Source versus Closed Source	2	Lecture	Smart Board
3.5	Why Closed? – Why Open?	2	Chalk & Talk	Black Board
3.6	Mixing Open and Closed Source	2	Chalk & Talk	Black Board
3.7	Closed Source for Mass Market Projects – Tapping into the Community.	2	Lecture	Smart Board
UNIT -4 PROTOTYPING EMBEDDED DEVICES				
4.1	Electronics – Sensors – Actuators	2	Chalk & Talk	Black Board
4.2	Scaling Up the Electronics – Embedded Computing BasicsMicrocontrollers	2	Chalk & Talk	LCD
4.3	System – on – Chips – Choosing Your Platform	2	Lecture	PPT & White board
4.4	Arduino – Developing on the Arduino	2	Lecture	Smart Board
4.5	Some Notes on the Hardware – Openness	2	Lecture	Black Board
4.6	Raspberry Pi – Cases and	2	Lecture	Black

	Extension Boards			Board
4.7	Developing on the Raspberry Pi – Some Notes on the Hardware – Openness.	2	Lecture	Black Board
UNIT -5 PROTOTYPING THE PHYSICAL DESIGN				
5.1	Preparation – Sketch, Iterate, and Explore	3	Chalk & Talk	Black Board
5.2	Non digital Methods – Laser Cutting – Choosing a Laser Cutter	4	Chalk & Talk	LCD
5.3	Software – Hinges and Joint	3	Lecture	PPT & White board
5.4	3D Printing – Types of 3D Printing – Software CNC Milling	4	Lecture	Smart Board

INTERNAL - UG

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

END SEMESTER - UG

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

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

                                    Nos

C1   -   Test (CIA 1)   1   -   10 Mks

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

*The best out of two will be taken into account

COURSE OUTCOMES

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

NO	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Design IOT based Prototypes	**K1 & K2**	**PSO1, PSO2**
CO 2	Explain how sensors and embedded systems work	**K1 & K2**	**PSO1, PSO2,PSO3**
CO 3	Analyze and visualize sensor data	**K1, K2 & K3**	**PSO3, PSO4**
CO 4	Formulate real World IoT design Constraints and Industrial Automation in IoT	**K1, K2, K3 & K4**	**PSO4, PSO5**
CO 5	Work with IoT	**K2, K3 & K4**	**PSO5, PSO6**

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	2	1	1	1	2	1	1
CO2	3	3	3	1	1	1	1	2	1	1
CO3	2	2	3	3	2	1	2	2	2	1
CO4	2	2	2	3	3	1	2	2	1	1
CO5	2	2	2	2	3	3	2	2	1	1

Mapping of C0s with POs

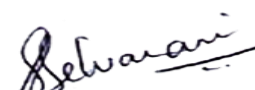| CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	3	1	1	1
CO2	1	1	1	1	2
CO3	1	3	1	1	1
CO4	1	1	1	1	3
CO5	1	1	1	1	1

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

COURSE DESIGNER:

1. **Staff Name : Dr. G. Preetha**

Forwarded By

(S.Selvarani)

III B.C.A

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J6ME6	HUMAN COMPUTER INTERACTION	LECTURE	5	5

COURSE DESCRIPTION

The main purpose is to provide the most fundamental knowledge about Artificial Intelligence, Fuzzy Logic and Virtual Reality.

COURSE OBJECTIVES

1. To learn the methods of solving problems using Artificial Intelligence.
2. To have a basic proficiency in a traditional AI language Search Techniques
3. To provide knowledge on the features of virtual reality.
4. To impart expertise in the technologies of VR environment in real time

UNITS

UNIT I: AI PROBLEMS AND CHARACTERISTICS   (12 HRS)

The AI Problems – The underlying assumption – AI techniques – The level of the model – Criteria for success – Problems – Problem Space and State Space search – Problem Characteristics – System Characteristics – Issues of search programs– Additional problems.

UNIT II: SEARCH TECHNIQUES   (12 HRS)

Heuristic search techniques – Generate and test – Hill climbing – Best first search – Problem Reduction – Constraint Satisfaction – Mean Ends Analysis – Knowledge Representation Issues – Representations and Mappings – Approaches – Issues – The Frame Problem.

UNIT III: INTRODUCTION AND ARCHITECTURE   (12 HRS)

Three I's of Virtual Reality – History – Commercial VR Technology – VR becomes Industry – Classic Components – Architecture – Rendering Pipeline – Graphics Rendering – Haptics Rendering – PC Graphics Architecture

UNIT IV: HUMAN FACTORS IN VR   (12 HRS)

Methodology – Terminology – Data Collection – Analysis – Usability – User Performance Studies – Testbed Evaluation – Feedback Multi Modality – VR Health and Safety Issues – Direct Effects of VR Simulation – Cybersickness – Adaptation and Aftereffects – Guidelines for proper Usage – VR and Society – Impact on Professional Life – Impact on Public Life

UNIT V: EMERGING APPLICATIONS OFVR   (12 HRS)

VR Applications in Manufacturing – Virtual Prototyping – VR in Robotics – Robot Programming – Robot Teleoperation – Information Visualization – Oil Exploration – Well Management – Volumetric Data Visualization

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

AI Filler Structure – Weak Slot and Filler Structure – Game playing – The minimax search procedure – VR and Society – Impact on Professional Life – Impact on Public Life

REFERENCES:

1. Artificial Intelligence – Elaine Rich, Kevin Knight – III Edition
2. Dan Patterson W., Artificial Intelligence and Expert systems, PHI
3. Grigore C.Burdea, Philippe Coiffet, "Virtual Reality Technology", Wiley Student Second Edition, Reprint 2014.

WEB REFERNCES :

1. https://www.u–aizu.ac.jp/~qf–zhao/TEACHING/AI/AI.html

2. https://en.wikipedia.org/wiki/Virtual_reality

3. https://www.marxentlabs.com/what–is–virtual–reality/

OER REFERNCES :

https://nptel.ac.in/courses/106/103/106103115/#

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: AI PROBLEMS AND CHARACTERISTICS				
1.1	The AI Problems – The underlying assumption	2	Chalk & Talk	Black Board
1.2	AI techniques – The level of the model	2	Chalk & Talk	LCD
1.3	Criteria for success - Problems	2	Lecture	PPT & White board
1.4	Problem Space and State Space search	2	Lecture	Smart Board
1.5	Problem Characteristics – System Characteristics	2	Lecture	Smart Board
1.6	Issues of search programs-Additional problems.	2	Lecture	Smart Board
UNIT 2: SEARCH TECHNIQUES				
2.1	Heuristic search techniques	1	Chalk & Talk	Black Board
2.2	Generate and test – Hill climbing	1	Chalk & Talk	LCD
2.3	Best first search – Problem Reduction	2	Lecture	PPT & White board
2.4	Constraint Satisfaction – Mean Ends Analysis	2	Lecture	Smart Board

2.5	Knowledge Representation Issues	2	Lecture	Smart Board
2.6	Representations and Mappings– Approaches	2	Chalk & Talk	Black Board
2.7	Issues– The Frame Problem..	2	Lecture	Smart Board
UNIT -3 INTRODUCTION AND ARCHITECTURE				
3.1	Three I's of Virtual Reality – History	2	Chalk & Talk	Black Board
3.2	Commercial VR Technology – VR becomes Industry	2	Chalk & Talk	LCD
3.3	Classic Components – Architecture	2	Lecture	PPT & White board
3.4	Rendering Pipeline	2	Lecture	Smart Board
3.5	Graphics Rendering – Haptics Rendering	2	Chalk & Talk	Black Board
3.6	PC Graphics Architecture	2	Chalk & Talk	Black Board
UNIT -4 HUMAN FACTORS IN VR				
4.1	Methodology – Terminology	1	Chalk & Talk	Black Board
4.2	Data Collection – Analysis – Usability	1	Chalk & Talk	LCD
4.3	User Performance Studies – Testbed Evaluation	2	Lecture	PPT & White board
4.4	Feedback Multi Modality – VR Health and Safety Issues	2	Lecture	Smart Board
4.5	Direct Effects of VR Simulation – Cybersickness	2	Lecture	Black Board
4.6	Adaptation and Aftereffects –	2	Lecture	Black

	Guidelines for proper Usage			Board
4.7	VR and Society – Impact on Professional Life – Impact on Public Life	2	Lecture	Black Board

UNIT -5 EMERGING APPLICATIONS OF VR

5.1	AI Filler Structure	2	Chalk & Talk	Black Board
5.2	Weak Slot and Filler Structure	2	Chalk & Talk	LCD
5.3	Game playing - The minimax search procedure	2	Lecture	PPT & White board
5.4	VR and Society	2	Lecture	Smart Board
5.5	Impact on Professional Life	2	Chalk & Talk	LCD
5.6	Impact on Public Life	2	Chalk & Talk	LCD

INTERNAL - UG

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

Schola stic									12.5 %
Total	10	10	5	5	5	35	5	40	100 %

END SEMESTER - UG

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

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

Nos

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

*__*The best out of two will be taken into account__*

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Identify problems that are amenable to solution by AI methods	K1 & K2	PSO1, PSO2
CO 2	Formulate search problems and implement search algorithms using admissible heuristics	K1 & K2	PSO1, PSO2,PSO3
CO 3	Analyze on the basics and architecture of VR systems	K1, K2 & K3	PSO3, PSO4
CO 4	Identify the human factors, effects and impact of VR	K1, K2, K3 & K4	PSO5, PSO8
CO 5	Apply the VR technology in different applications	K2, K3 & K4	PSO8

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	1	1	2	1	2	1	1
CO2	3	3	3	2	1	1	1	2	1	1
CO3	2	2	3	3	2	1	2	2	2	1
CO4	2	2	2	2	3	1	2	3	2	1
CO5	2	2	2	2	2	2	2	3	1	2

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	3	1	1	1
CO2	1	1	1	1	2
CO3	1	3	1	1	1
CO4	1	1	1	1	3
CO5	1	1	1	1	1

Note:

ϕ Strongly Correlated – **3**

ϕ Moderately Correlated – **2**

ϕ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name : Ms. S. Selvarani**

Forwarded By

(S.Selvarani)

III B.C.A
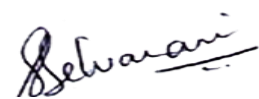
SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
USCA	19J6SB5	SKILL BASED - V LAB IN PHP	PRACTICAL	2	2

COURSE DESCRIPTION

To be familiar with the structured approach by identifying the needs, interests and functionalities that helps in creating dynamic websites

COURSE OBJECTIVES

1. To develop web programming skills through the use of PHP.
2. To Understand POST and GET method in form submission.
3. To receive and process form submission data.
4. To build dynamic website using server side scripting PHP programming and database connectivity

UNITS

UNIT I: INTRODUCTION TO PHP   (6 HRS)

What does PHP do? – History – Installing PHP – Language basics – Data types – Variables – Expressions & Operators – Control flow statements – Including code – Embedding PHP in web pages.

UNIT II: FUNCTIONS   (6 HRS)

Calling & Defining functions – Variable scope – Parameters – Anonymous functions.

UNIT III: STRINGS   **(6 HRS)**

String constants – Printing strings – Cleaning stings – Encoding & Escaping – Comparing strings – Searching strings – Regular expressions – Arrays – Storing data in arrays – Converting between arrays and variables – Traversing arrays – Sorting – Using Arrays

UNIT IV: OBJECTS AND WEB TECHNIQUES   **(6 HRS)**

Terminology – Creating an object – Accessing properties and methods – Declaring a class – Introspection – Serialization – Web techniques – HTTP Basics – Variables – Server information –Processing forms – Setting response headers – Maintaining state – SSL

UNIT V: DATABASE CONNECTIVITY   **(6 HRS)**

Introduction – Connecting Database – Retrieving data – Updating Data – Deleting Data.

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

Create dynamic web pages for shopping – payment systems – payroll and social network.

REFERENCES:

1. Larry Ullman, Learn MySQL the Quick and Easy Way, II Edition, Pearson Education, 2006
2. Larry Ullman, PHP6 and MySQL 5, Pearson Education, 2008.
3. Rambus Lerdorf, Kevin Tatore & Peter Macintyre, Programming PHP, II Endition, SPD Pvt. Ltd, 2006

WEB REFERNCES :

1. https://www.w3schools.com/PHP/DEfaULT.asP
2. https://www.tutorialspoint.com/php/index.htm
3. https://www.w3schools.com/php/php_mysql_intro.asp

OER REFERNCES :

http://www.nptelvideos.com/php/php_video_tutorials.php

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: INTRODUCTION TO PHP				
1.1	What does PHP do? – History	1	Chalk & Talk	Black Board
1.2	Installing PHP – Language basics – Data types	1	Chalk & Talk	LCD
1.3	Variables – Expressions & Operators	1	Lecture	PPT & White board
1.4	Control flow statements	1	Lecture	Smart Board
1.5	Including code	1	Lecture	Smart Board
1.6	Embedding PHP in web pages.	1	Lecture	Smart Board
UNIT 2: FUNCTIONS				
2.1	Calling & Defining functions	1	Chalk & Talk	Black Board
2.2	Variable scope	1	Chalk & Talk	LCD
2.3	Parameters	2	Lecture	PPT & White board
2.4	Anonymous functions.	2	Lecture	Smart Board

UNIT -3 STRINGS				
3.1	String constants – Printing strings	1	Chalk & Talk	Black Board
3.2	Cleaning stings – Encoding & Escaping	1	Chalk & Talk	LCD
3.3	Comparing strings – Searching strings	1	Lecture	PPT & White board
3.4	Regular expressions – Arrays	1	Lecture	Smart Board
3.5	Storing data in arrays – Converting between arrays and variables	1	Chalk & Talk	Black Board
3.6	Traversing arrays – Sorting – Using Arrays	1	Chalk & Talk	Black Board
UNIT -4 OBJECTS AND WEB TECHNIQUES				
4.1	Terminology – Creating an object	1	Chalk & Talk	Black Board
4.2	Accessing properties and methods	1	Chalk & Talk	LCD
4.3	Declaring a class – Introspection	1	Lecture	PPT & White board
4.4	Serialization – Web techniques – HTTP Basics	1	Lecture	Smart Board
4.5	Variables – Server information –Processing forms	1	Lecture	Black Board
4.6	Setting response headers – Maintaining state – SSL	1	Lecture	Black Board

UNIT -5 DATABASE CONNECTIVITY				
5.1	Introduction	1	Chalk & Talk	Black Board
5.2	Connecting Database	2	Chalk & Talk	LCD
5.3	Retrieving data	1	Lecture	PPT & White board
5.4	Updating Data	1	Lecture	Smart Board
5.5	Deleting Data.	1	Chalk & Talk	LCD

INTERNAL - UG

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

END SEMESTER - UG

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

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Demonstrate how server – side programming works on the web	K1	PSO1& PSO2
CO 2	Use PHP built – in functions and creating custom functions	K1, K2	PSO2, PSO3
CO 3	Create a database in phpMyAdmin	K1 & K3	PSO3, PSO5
CO 4	Create dynamic web pages	K1, K2 & K3	PSO5, PSO8
CO 5	Design websites for various applications	K3 & K4	PSO8

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	1	1	1	1	2	1	1
CO2	2	3	3	1	2	1	1	2	1	1
CO3	2	2	3	2	3	1	2	2	2	2
CO4	2	2	2	2	3	1	2	3	2	1
CO5	2	2	2	2	2	1	2	3	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	1	3	1	1	1	1	3
CO2	1	1	1	1	2	3	1
CO3	1	3	1	1	1	3	1
CO4	1	1	1	1	3	1	3
CO5	1	1	1	1	1	3	1

Note:

φ Strongly Correlated – **3**

φ Moderately Correlated – **2**

φ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name : Ms. A. Punitha Rosline**

Forwarded By

Selvarani

(S.Selvarani)

III B.C.A

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J6SB6	SKILL BASED - VI LAB IN LINUX	PRACTICAL	2	2

COURSE DESCRIPTION

This course gives basic knowledge on Linux operating system and to execute the code written in other languages.

COURSE OBJECTIVES

1. To have a in – depth knowledge about the functionalities of the operating systems and have a thorough knowledge about the Linux programming.

2. To understand the basic set of commands and utilities in Linux systems.

3. To learn the importance of Linux library functions and system calls.

UNITS

UNIT I: GETTING STARTED WITH LINUX(6 HRS)

Introduction to Linux – History – Difference between Linux and Windows – Difference between Linux and Unix.

UNIT II: BASIC COMMANDS   (6 HRS)

 Introduction –mkdir – touch – ls – pwd – cd – chmod – df – du – dd – adduser – sort – rm/rmdir – date – tar – gzip – top.

 UNIT III: INTERPROCESS COMMUNICATION(6 HRS)

Introduction – Message Queues – Pipes – Fork – Editors – working with vi editor.

UNIT IV: CONDITIONAL STATEMENTS(6 HRS)

Introduction Shell Programming – Variables – Conditional Statements – strings, su, tree, umount, unzip, vdir, vi, view, wc, who, whoami, zip.

UNIT V: FILE SYSTEMS(6 HRS)

File systems: – fsconf and other related commands, cat, cd, chmod, chown, chroot, cp, cpio, dc, dir, fdformat, find, finger, grep, gunzip, gv, gvim, hostname, ipconfig, kill, logout, lpc, lpd, lp, rm, man, mcopy, mformat, mkdir, more, mount, mt, mv, passwd, ping, ps, pwd,route, set, shut down.

UNIT –VI DYNAMISM (Evaluation Pattern – CIA only)

Working with Security commands – Changing the modes of files – case studies on Linux based applications

REFERENCES:

1. Red hat Linux & fedora unlashed Authors Bill Ball & Hoyt Dust.
2. Bill Ball, David Pitts, "Red Hat Linux 7 Unleashed", Techmedia SAMS Publication

WEB REFERENCES :

1. https://www.geeksforgeeks.org/linux–commands/

2. https://ubuntu.com/tutorials/command–line–for–beginners

OER REFERENCES :

   https://nptel.ac.in/courses/117/106/117106113/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: GETTING STARTED WITH LINUX				
1.1	Introduction to Linux	2	Chalk & Talk	Black Board
1.2	History – Difference between Linux and Windows	2	Chalk & Talk	LCD
1.3	Difference between Linux and Unix.	2	Lecture	PPT & White board
UNIT 2: BASIC COMMANDS				
2.1	Introduction –mkdir – touch	1	Chalk & Talk	Black Board
2.2	– ls – pwd – cd	1	Chalk & Talk	LCD
2.3	chmod – df – du	1	Lecture	PPT & White board
2.4	dd – adduser – sort	1	Lecture	Smart Board
2.5	rm/rmdir – date	1	Chalk & Talk	Black Board
2.6	tar – gzip – top	1	Chalk & Talk	Black Board
UNIT -3 INTERPROCESS COMMUNICATION				
3.1	Introduction	1	Chalk & Talk	Black Board
3.2	Message Queues	1	Chalk & Talk	LCD

3.3	Pipes – Fork	2	Lecture	PPT & White board
3.4	Editors –	1	Lecture	Smart Board
3.5	working with vi editor.	1	Chalk & Talk	Black Board
UNIT -4 CONDITIONAL STATEMENTS				
4.1	Introduction Shell Programming	1	Chalk & Talk	Black Board
4.2	Variables	1	Chalk & Talk	LCD
4.3	Conditional Statements	1	Lecture	PPT & White board
4.4	strings, su,who, whoami, zip	1	Lecture	Smart Board
4.5	tree, umount, unzip	1	Lecture	Black Board
4.6	, vdir, vi, view, wc	1	Lecture	Black Board
UNIT -FILE SYSTEMS				
5.1	fsconf and other related commands, cat	1	Chalk & Talk	Black Board
5.2	cd, chmod, chown, chroot,mt, mv, passwd, ping, ps	1	Chalk & Talk	LCD
5.3	cp, cpio, dc, dir, fdformat,pwd,route, set, shut down	1	Lecture	PPT & White board
5.4	find, finger, grep, gunzip, gv, gvim	1	Lecture	Smart Board
5.5	hostname, ipconfig, kill, logout, lpc, lpd	1	Chalk & Talk	LCD

5.6	lp, rm, man, mcopy, mformat, mkdir, more, mount	1	Chalk & Talk	LCD

INTERNAL - UG

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

END SEMESTER - UG

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

CIA

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

EVALUATION PATTERN

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

UG CIA Components

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

*The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Analyze the inner workings of LINUX operating systems	K1	PSO1& PSO2
CO 2	Utilize Linux system to accomplish typical personal, office, technical, and softwaredevelopment tasks	K1, K2	PSO2, PSO3
CO 3	Use Linux utilities to create and manage simple file processing	K1 & K3	PSO3, PSO5
CO 4	Use operations, organizeddirectory structures with appropriate security	K1, K2 & K3	PSO5, PSO8
CO 5	Formulate shell scripts to perform more complex tasks	K3 & K4	PSO8

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	1	1	1	1	2	1	1
CO2	2	3	3	1	2	1	1	2	1	1
CO3	2	2	3	2	3	1	2	2	2	2
CO4	2	2	2	2	3	1	2	3	2	1
CO5	2	2	2	2	2	1	2	3	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	1	1	1	1
CO2	1	1	1	1	3
CO3	1	3	1	1	1
CO4	1	1	1	1	3
CO5	1	1	1	1	1

Note:
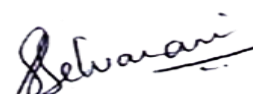
ɸ Strongly Correlated – **3**

ɸ Moderately Correlated – **2**

ɸ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name : Dr. G. Preetha**

Forwarded By

(S.Selvarani)

III B.C.A

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19UGVA J2	CRASH COURSE E-CONTENT DEVELOPMENT	PRACTICAL	30	-

CRASH COURSE (offered for III UG)

COURSE DESCRIPTION

This course helps to promote content generation, adaptation and distribution of e–content through electronic media

COURSE OBJECTIVES

- To identify the multimedia principles and elements for E–Learning

- To Understand the techniques to create customized lessons

- To work on the audio and video editing tools

UNITS

UNIT I: INTRODUCTION TO E–LEARNING   (6 HRS)

Introduction–Need for e–learning – Objectives–Trends – Benefits – Challenges–Phases of E–Content– Characteristics–Components–Elements of e–content–Content Generation–Adaptation

UNIT II: MULTIMEDIA IN E–CONTENT DEVELOPMENT   (6 HRS)

Electronic Content (E–content)– Designing and Development of E–content– Standards of E–content– Learning Objects and Re–usability of E–content

UNIT III: E–CONTENT TOOL   (6 HRS)

Tools– Freeware– Open Source Software (OSS)– Proprietary software– Public domain software

UNIT IV: GRAPHICS, AUDIO AND VIDEO EDITING TOOLS   (6 HRS)

Wevideo –Magisto–DrawPad–Inkscape–GIMP –WavePad– Audacity–Case Study

UNIT V:E- CONTENT APPS and SOFTWARES   (6 HRS)

Filmigo – KineMaster – Stop Motion Animation – Screencast – 0- Matic – Active Presenter

REFERENCE BOOKS:

 1. Critical Understanding of ICT, Unit 12: E–Content and Open Educational Resources (OER)

WEB REFERENCES:

1. E–Learing for Beginners
2. E–Learning Swayam Portal

OER REFERENCE:

https://sites.google.com/site/bethanycollegeofteacheredn/e-content-and-open-educational-resources

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: INTRODUCTION TO E–LEARNING				
1.1	Introduction–Need for e–learning	1	Chalk & Talk	Black Board
1.2	Objectives–Trends	1	Chalk & Talk	LCD

1.3	Benefits – Challenges	1	Lecture	PPT
1.4	Phases of E–Content–Characteristics	1	Lecture	PPT & White board
1.5	Components–Elements of e–content	1	Lecture	Smart Board
1.6	Content Generation–Adaptation	1	Chalk & Talk	Black Board
UNIT 2: MULTIMEDIA IN E–CONTENT DEVELOPMENT				
2.1	Electronic Content (E–content)	1	Chalk & Talk	Black Board
2.2	Designing and Development of E–content	2	Chalk & Talk	LCD
2.3	Standards of E–content	2	Lecture	Smart Board
2.4	Learning Objects and Re–usability of E–content	1	Lecture	PPT & White board
UNIT -3 E–CONTENT TOOL				
3.1	Tools– Freeware	2	Chalk & Talk	Black Board
3.2	Open Source Software (OSS)	1	Chalk & Talk	LCD
3.3	Proprietary software	2	Lecture	PPT & White board
3.4	Public domain software	1	Lecture	Smart Board
UNIT -4 GRAPHICS, AUDIO AND VIDEO EDITING TOOLS				
4.1	Wevideo	1	Chalk & Talk	Black Board

4.2	Magisto	1	Chalk & Talk	LCD
4.3	DrawPad–Inkscape	1	Lecture	PPT & White board
4.4	GIMP –WavePad	1	Lecture	Smart Board
4.5	Audacity	1	Lecture	Black Board
4.6	Case Study	1	Lecture	Black Board
UNIT 5 - E- CONTENT APPS and SOFTWARES				
5.1	Filmigo	1	Chalk & Talk	Black Board
5.2	KineMaster	2	Chalk & Talk	LCD
5.3	Stop Motion Animation	1	Lecture	PPT & White board
5.4	Screencast – 0- Matic	1	Lecture	Smart Board
5.5	Active Presenter	1	Chalk & Talk	LCD

CIA

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

EVALUATION PATTERN

SCHOLASTIC	NON - SCHOLASTIC	MARKS

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand E-Learning with respect to its needs, challenges and benefits	K1	PSO1& PSO2
CO 2	Explain the components of Authoring tools and E-learning standards	K1, K2	PSO2, PSO3
CO 3	Apply Audio editing techniques for creating podcasts	K1 & K3	PSO3, PSO5

| CO 4 | Understand the techniques of creating customized lessons | K1, K2 & K3 | PSO5, PSO8 |
| CO 5 | Create videos using online tools | K3 & K4 | PSO8 |

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	3	1	1	1	1	1	2	1	1
CO2	2	3	3	1	1	1	1	2	1	1
CO3	2	2	3	2	3	1	2	2	2	1
CO4	2	2	2	1	3	1	2	3	3	1
CO5	2	2	2	2	2	2	2	3	1	2

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	1	1	1	1	1	3	2
CO2	1	1	1	1	3	1	1
CO3	1	3	1	1	1	3	1
CO4	1	1	1	1	3	1	3
CO5	1	1	1	1	1	3	3

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

COURSE DESIGNER:

1. **Staff Name : Dr. G. Preetha**

Forwarded By

(signature)

(S.Selvarani)

I B.C.A

SEMESTER – I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY
USCA	21J1SL1	OPEN SOURCE ANIMATION TOOLS	SELF-LEARNING (DEPT.OF BCA)

COURSE DESCRIPTION:

This course enables the students to develop animation skills using open source animation tool.

COURSE OBJECTIVES:

- To Work with images and its properties.
- To Create, manipulate, and edit text and graphics to obtain desired graphical outcomes.
- To Design, edit and manipulate animation using several animation tools and techniques.

UNITS:

UNIT 1: INTRODUCTION

Installation – Features and Capabilities - Main window- Tool box – Tool Option – Image Window – Layers Dialog – Brushes – Patterns – Gradients - Palettes - Docking Bars – Creating and Saving the File

UNIT 2: SELECTION OF IMAGES

Working with images – Layer Properties – Selection – Feathering - Rectangular Select - Elliptical Select - Free Select - Fuzzy Select - Select by Color - Scissors Select - Foreground Select - Partial Transparent – Free Selection - Paths and Selections – Paths and Text – Text and Fonts – Transforming Paths

UNIT 3 :EDITING PROCESSES

Rotating – Cropping – Unblurring – Softening – Reducing Grainness – Despeckling – Scaling - Flipping - Scissors Tool - Opacity – Alpha Channel – Layer Mask – Sharpening – Compensate the color levels – Adjusting colors - Color Balance – Auto Adjust

UNIT 4 : TEXT AND IMAGE EDITING

Photo Text – Effects – Shear Effect – Patterns – Check Board Effects – Gradient Text – Layers – Transparent Layers – Image crystallization – Mosaic Effects.

UNIT 5 : EASY ANIMATION

Selecting Images – Transition by Opacity - Use Animation option - playback the animation - Save as GIF animation – View in Browsers

WEB REFERENCES:

- **www.pencil2d.com**
- **www.learn.g2.com**

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the Installation and Windows Setup	K1	PSO1& PSO2
CO 2	Explain the components used for Image Selection	K1, K2	PSO2, PSO3
CO 3	Apply editing techniques and masking	K1 & K3	PSO3, PSO5
CO 4	Understand the different types of Effects	K1, K2 & K3	PSO5, PSO8

CO 5	Create animated videos using Open Source Tools	**K3 & K4**	**PSO8**

INTERNAL - UG

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

END SEMESTER - UG

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

Total	5	5	8	12	20	10	60	100 %

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	1	2	2	2	1	1	1	1	1
CO2	1	3	1	2	2	2	2	1	2	1
CO3	1	2	1	1	3	2	2	2	2	2
CO4	1	1	1	3	2	1	2	2	2	2
CO5	1	2	3	1	1	1	1	1	1	1

Mapping of C0s with POs

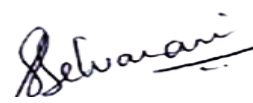| CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	1	1	1	1
CO2	1	1	1	1	3
CO3	1	3	1	1	1
CO4	1	1	1	1	3
CO5	1	1	1	1	1

Note:

ɸ Strongly Correlated – **3**

ɸ Moderately Correlated – **2**

ɸ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name : Dr. G. Preetha**

Forwarded By

(S.Selvarani)

II B.C.A
SEMESTER – IV
For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY
USCA	21J2SLST2	STATISTICAL DATA SCIENCE USING PYTHON	INTER-DISCIPLINARY SELF-LEARNING (WITH DEPT.OF STATISTICS)

COURSE DESCRIPTION:

This course enables the students to become familiar with data science and its tools using Python.

COURSE OBJECTIVES:

- To understand the concept of data science and scientists
- To implement python for data analysis
- To explore and visualize data using Python programming.

UNITS:

UNIT I: DATA SCIENCE AND DATA SCIENTISTS   (6 HRS)

Introduction – Different Sectors of Data Science – Data Scientists – Skill Sets

UNIT II: PYTHON ENVIRONEMENT   (6 HRS)

 Installation – Environment Variables – Command Options for Executing

UNIT III: PYTHON LIBRARIES FOR DATA SCIENCE   (6 HRS)

Pandas – NumPy – SciPy – Matplotlib – Importing Libraries – Using Data Frames – Analysing Data

UNIT IV: PYTHON DATA PROCESSING   (6 HRS)

Data Operations – Data Cleansing – Processing CSV Data – Relational

Databases

UNIT V: PYTHON VISUALIZATION   **(6 HRS)**

Line Properties – Plots – Sub Plots – Box Plots – Scatter Plots - Chart Properties – Chart Styling – Graph Data

REFERENCES:

1. Python for Data Science for Dummies 2nd Edition by John Paul Mueller (Author), Luca Massaron.

2. Data Science Projects with Python: A case study approach to gaining valuable insights from real data with machine learning, 2nd Edition 2nd ed. Edition by Stephen Klosterman.

WEB REFERENCES:

1. https://www.tutorialspoint.com/python_data_science/python_data_science_introduction.htm

2. https://www.w3schools.com/datascience/ds_python.asp

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand about Data Science & Data Scientists	K1	PSO1& PSO2
CO 2	Work on the installation of Python Environment	K1, K2	PSO2, PSO3
CO 3	Apply and use the Libraries available	K1 & K3	PSO3, PSO5
CO 4	Understand the different types of Data Processing	K1, K2 & K3	PSO5, PSO8
CO 5	Create charts using visualization	K3 & K4	PSO8

INTERNAL - UG

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

END SEMESTER - UG

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

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	1	2	2	2	1	1	1	1	1
CO2	1	3	1	2	2	2	2	1	2	1
CO3	1	2	1	1	3	2	2	2	2	2
CO4	1	1	1	3	2	1	2	2	2	2
CO5	1	2	3	1	1	1	1	1	1	1

Mapping of C0s with POs

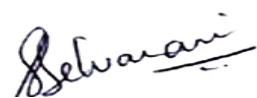| CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	1	1	1	1
CO2	1	1	1	1	3
CO3	1	3	1	1	1
CO4	1	1	1	1	3
CO5	1	1	1	1	1

Note:

ɸ Strongly Correlated – **3**

ɸ Moderately Correlated – **2**

ɸ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name : Dr. G. Preetha**

Forwarded By

(S.Selvarani)

II B.C.A

SEMESTER – VI

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY
USCA	21J3SLST3	STATISTICS USING R	INTER-DISCIPLINARY SELF-LEARNING (WITH DEPT.OF STATISTICS)

COURSE DESCRIPTION:

This course enables the students to become familiar with data science and its tools.

COURSE OBJECTIVES:

- To understand the concept of data science and scientists
- To implement data analysis using different tools
- To disseminate knowledge in R programming.

UNITS:

UNIT I: DATA SCIENCE AND DATA SCIENTISTS **(6 HRS)**

Introduction – Need of Data Science – Business Intelligence Vs Data Analysis – Features – Life Cycle – Discovery – Data Preparation – Model Planning – Model Building – Operationalize – Communicate Results – Who are Data Scientists? – Skills needed for Data Scientists

UNIT II: TOOLS FOR DATA SCIENCE **(6 HRS)**

EXCEL – R Tool - Apache Hadoop – BigML – SaS – MATLAB – WEKA– Tableau – QlikView

UNIT III: R TOOL **(6 HRS)**

Startup – The Workspace – Variable – Constants – Data Types – R Operators

UNIT IV : R STATEMENTS AND FUNCTIONS   (6 HRS)

Control Statements – If – If… Else – Switch – Looping Statements – Functions – Strings

UNIT V : R INTERFACES AND VISUALIZATION   (6 HRS)

CSV Files – Excel Files – XML Files – R Database – Pie Chart – Bar Chart – Histograms – Line Graphs – Statistical Display of Results

REFERENCES:

Statistics Using R: An Integrative Approach, Sharon Lawner Weinberg, Daphna Harel, Sarah Knapp Abramowitz, Cambridge University Press, 2020.

WEB REFERENCES:

1. https://www.geeksforgeeks.org/r-statistics/
2. https://www.w3schools.com/r/r_stat_intro.asp

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand about Data Science & Data Scientists	K1	PSO1& PSO2
CO 2	Work on the Tools used for Data Science	K1, K2	PSO2, PSO3
CO 3	Apply and use R Tools	K1 & K3	PSO3, PSO5
CO 4	Understand the different types of Statements and functions	K1, K2 & K3	PSO5, PSO8
CO 5	Create charts using Interfaces and	K3 & K4	PSO8

	visualization		

INTERNAL - UG

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

END SEMESTER - UG

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

Total	5	5	8	12	20	10	60	100 %

CIA

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

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	1	2	2	2	1	1	1	1	1
CO2	1	3	1	2	2	2	2	1	2	1
CO3	1	2	1	1	3	2	2	2	2	2
CO4	1	1	1	3	2	1	2	2	2	2
CO5	1	2	3	1	1	1	1	1	1	1

Mapping of C0s with POs

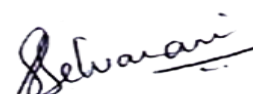| CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	1	1	1	1
CO2	1	1	1	1	3
CO3	1	3	1	1	1
CO4	1	1	1	1	3
CO5	1	1	1	1	1

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

COURSE DESIGNER:

1. **Staff Name : Dr. G. Preetha**

Forwarded By

(S.Selvarani)

II B.C.A

SEMESTER – IV

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY
USCA	21J4SLJM4	CONTENT WRITING & VIDEO MAKING	INTER-DISCIPLINARYSELF-LEARNING (BCA WITH DEPT.OF JMC)

COURSE DESCRIPTION:

This course enables the students to develop content-writing and video-making skills for media.

COURSE OBJECTIVES:

- To enable students to acquire skills in designing and developing content for the media
- To give the students hand on experience in video-editing, Storyboard creating
- To offer practical knowledge in Animation creation

UNIT-1 - CONTENT WRITING INTRODUCTION

Need and Importance Skills of a content writer&Types of Content-writing - Creative perspective of content Choosing Headlines – Writing Contents Matching with Head Lines Proof Reading - Step by Step Process Writing – Making it Trustworthy Quoting in Social Media.

UNIT-2 - E-CONTENT DEVELOPMENT

Electronic Content Designing -Development E–content–Standards Learning Objects -Re–usability of E–content

UNIT-3 STORY BOARD AND FILMING

Storyboard ideas to plan and organize movies -Techniques for creating film characters -Filming - Learn and use controls for filming and editing - creation and importing audio tracks and controls - creating loops, changing start and end points -Animation project wrap up -Audio and Video Compression.

UNIT-4 - ANIMATION CREATION

Stop Motion Animation - Principles of Animation -Calculate and Apply appropriate frame rates -Manipulate animation - Characteristics of well-designed Animation -Past and Current Animation Trends –Stop motion Set-up - Animation Execution.

UNIT-5 – VIDEO EDITING

Kine Master – Main View – Options -Ratio Aspects – Project Settings - Loading Videos – Working with Timeline -Layers – Clip Options – Trim and Split Audio, Video – Insert Text – Merge Videos -Export the Videos.

REFERENCES:

1. Joseph Robinson - Content Writing Step-By-Step

2. mark Simon - Storyboards: Motion in Art

3. Giuseppe Cristiano - The Storyboard Artist: A Guide to Freelancing in Film, TV, and Advertising

WEB REFERENCES:

1. https://backlinko.com/hub/content/writing

2. https://www.digitalvidya.com/blog/how-to-start-content-writing/

3. https://www.studiobinder.com/blog/storyboard-examples-film/

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL	PSOs ADDR

		(ACCORDING TO REVISED BLOOM'S TAXONOMY)	ESSED
CO 1	Understand Content Writing and Proof Reading	K1	PSO1& PSO2
CO 2	Explain the basics of E-Content Development	K1, K2	PSO2, PSO3
CO 3	Apply the techniques used for story board creation and Filming	K1 & K3	PSO3, PSO5
CO 4	Understand the different types of animations	K1, K2 & K3	PSO5, PSO8
CO 5	Create animated videos	K3 & K4	PSO8

INTERNAL - UG

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

END SEMESTER - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	

K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

                                            Nos

C1 - Test (CIA 1) 1 - 10 Mks

C2 - Test (CIA 2) 1 - 10 Mks

C3 - Assignment 1 - 5 Mks

C4 - Open Book Test/PPT 2 * - 5 Mks

C5 - Quiz 2 * - 5 Mks

C6 - Attendance - 5 Mks

The best out of two will be taken into account

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	1	2	2	2	1	1	1	1	1
CO2	1	3	1	2	2	2	2	1	2	1
CO3	1	2	1	1	3	2	2	2	2	2
CO4	1	1	1	3	2	1	2	2	2	2
CO5	1	2	3	1	1	1	1	1	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	1	1	1	1
CO2	1	1	1	1	3
CO3	1	3	1	1	1
CO4	1	1	1	1	3
CO5	1	1	1	1	1

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

COURSE DESIGNER:

1. **Staff Name : Dr. G. Preetha**

Forwarded By

(S.Selvarani)

III B.C.A

SEMESTER – V

For those who joined in 2021 onwards

PROGRAMME CODE	*COURSE CODE*	*COURSE TITLE*	*CATEGORY*
USCA	21J5SLAC5	EMERGING TRENDS AND TECHNOLOGIES	INTER-DISCIPLINARY SELF-LEARNING (WITH DEPT.OF COM SF)

COURSE DESCRIPTION:

This course enables the students to acquire knowledge on recent trends and technologies.

COURSE OBJECTIVES:

- To gain knowledge in the new technologies used in various fields.
- To learn about blockchain and its uses.
- To understand various web services used and security mechanisms followed in internet.

UNITS:

UNIT I : THE BIRTH OF A NEW PARADIGM

Analyze Interactions – Resource Utilization – Changing Patterns – tracking tools - Healthcare and safety monitors - procure-to-pay (P2P) - real-time updates on goods ordered, delivered

UNIT II : BLOCKCHAIN

History – Versions - BitCoin – Miners - Working - Uses – Need – Building Bitcoin Block Chain – Block Chain- Bit Coin Cash – Wallets

UNIT III : EDGE COMPUTING

AWS (Amazon Web Services) - Microsoft Azure - Google Cloud Platform - Customer Data Platforms (CDP)

UNIT IV : 5G

Mobile gamers - Reliable Telecommunication - Internet-connected 3D printing - augmented reality - virtualized copy - Business Benefits of Digital Twins

UNIT V : SECURITY MECHANISMS

General Data Protection Regulation (GDPR) - Thwarting Cyber Criminals - Internet of Behaviors (IoB) - Location Tracking - Bigdata - Facial Recognition - Digital Security Asset - Privacy and Confidential Computing

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Foresee the birth of new paradigms	K1	PSO1& PSO2
CO 2	Compare Bitcoins and Miners	K1, K2	PSO2, PSO3
CO 3	Analyze the Azure & Google Cloud	K1 & K3	PSO3, PSO5
CO 4	Implement the 5G Technological features	K1, K2 & K3	PSO5, PSO8
CO 5	Use the concepts of case study	K3 & K4	PSO8

	mechanisms		

INTERNAL - UG

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

END SEMESTER - UG

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

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

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

C6 - Attendance   -   5 Mks

The best out of two will be taken into account

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	1	2	2	2	1	1	1	1	1
CO2	1	3	1	2	2	2	2	1	2	1
CO3	1	2	1	1	3	2	2	2	2	2
CO4	1	1	1	3	2	1	2	2	2	2
CO5	1	2	3	1	1	1	1	1	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	1	1	1	1
CO2	1	1	1	1	3
CO3	1	3	1	1	1
CO4	1	1	1	1	3
CO5	1	1	1	1	1

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

COURSE DESIGNER:

1. **Staff Name :Ms. R. Ramya**

Forwarded By

Selvarani

(S.Selvarani)

III BCA
SEMESTER – VI
For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY
USCA	21J6SL6	DATA SCIENCE	SELF-LEARNING (BCA WITH DEPT.OF IT)

COURSE DESCRIPTION:

This course enables the students to become familiar with data science and its tools.

COURSE OBJECTIVES:

- To understand the concept of data science and scientists
- To implement data science using different tools
- To disseminate knowledge in R programming.

UNITS:

UNIT I : DATA SCIENCE AND DATA SCIENTISTS   (6 HRS)

Introduction – Need of Data Science – Business Intelligence Vs Data Analysis – Features – Life Cycle – Discovery – Data Preparation – Model Planning – Model Building – Operationalize – Communicate Results – Who are Data Scientists? – Skills needed for Data Scientists

UNIT II : TOOLS FOR DATA SCIENCE   **(6 HRS)**

EXCEL – R Tool - Apache Hadoop – BigML – SaS – MATLAB – WEKA – Tableau – QlikView

UNIT III : R TOOL   **(6 HRS)**

Startup – The Workspace – Variable – Constants – Data Types – R Operators

UNIT IV : R STATEMENTS AND FUNCTIONS   **(6 HRS)**

Control Statements – If – If.. Else – Switch – Looping Statements – Functions – Strings

UNIT V : R INTERFACES AND VISUALIZATION   **(6 HRS)**

CSV Files – Excel Files – XML Files – R Database – Pie Chart – Bar Chart – Histograms – Line Graphs – Statistical Display of Results

WEB REFERENCES:
- **www.simplilearn.com**
- **www.mygreatlearning.com**

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Foresee the life cycle of data science and the skills of data scientists.	K1	PSO1& PSO2

CO 2	Compare the pros and cons of the tools of data science	K1, K2	PSO2, PSO3
CO 3	Analyze the methodologies R Tool	K1 & K3	PSO3, PSO5
CO 4	Implement the programming erect of R.	K1, K2 & K3	PSO5, PSO8
CO 5	Design the code for the problems related to data science using R	K3 & K4	PSO8

INTERNAL - UG

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

END SEMESTER - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	

K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

UG CIA Components

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

C5 - Quiz   2 * - 5 Mks

C6 - Attendance   - 5 Mks

The best out of two will be taken into account

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	3	1	2	2	2	1	1	1	1	1
CO2	1	3	1	2	2	2	2	1	2	1
CO3	1	2	1	1	3	2	2	2	2	2
CO4	1	1	1	3	2	1	2	2	2	2
CO5	1	2	3	1	1	1	1	1	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	1	1	1	1
CO2	1	1	1	1	3
CO3	1	3	1	1	1
CO4	1	1	1	1	3
CO5	1	1	1	1	1

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

COURSE DESIGNER:

1. Staff Name :Ms. A. Punitha Rosline

Forwarded By

(S.Selvarani)