FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with "A++" Grade by NAAC (4th 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 : 2023 - 2024

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 2023 onwards

PROGRAMME CODE : USCA

S. NO	SEM	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	**I**	23J1CC1	PYTHON PROGRAMMING	5	5	40	60	100
2.	**I**	23J1CC2	PYTHON PROGRAMMING LAB	5	5	40	60	100
3.	**I**	23G1GEJ1	DISCRETE MATHEMATICS	5	3	40	60	100
4.	**I**	23J1FC	STRUCTUREDPROGRAMMING IN C	2	2	40	60	100
5.	**I**	23J1SE1	ANIMATION TOOLS ANDTECHNIQUES	2	2	40	60	100
6.	**I**	23G1VE	PERSONAL VALUES	1	1	40	60	100
7.	**II**	23J2CC3	OBJECT ORIENTED PROGRAMMING IN C++	5	5	40	60	100
8.	**II**	23J2CC4	LAB IN C++ PROGRAMMING	5	5	40	60	100
9.	**II**	23G2GEJ2	OPERATIONS RESEARCH	5	3	40	60	100
10.	**II**	23J2SE2	ANIMATION TOOLS AND TECHNIQUES	2	2	40	60	100
11.	**II**	23J2SE3	INTRODUCTION TO HTML	2	2	40	60	100
12.	**II**	23G2VE	VALUES FOR LIFE	1	1	40	60	100

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.	III	19J3CC5	OPERATING SYSTEMS	6	4	40	60	100
2.		19J3CC6	LAB IN RELATIONAL DATABASE MANAGEMENT SYSTEMS	6	3	40	60	100
3.	IV	19J4CC7	DATA STRUCTURESAND ALGORITHMS	6	4	40	60	100
4.		19J4CC8	LAB IN WEB PROGRAMMING	6	3	40	60	100
5.	V	19J5CC9	SOFTWAREENGINEERING	5	5	40	60	100
6.		19J5CC10	JAVA PROGRAMMING	5	5	40	60	100
7.		19J5CC11	LAB IN JAVA PROGRAMMING	5	3	40	60	100
8.		19J5CC12	LAB IN DOT NETPROGRAMMING	5	3	40	60	100
9.	VI	19J6CC13	PYTHON	5	5	40	60	100
10.		19J6CC14	COMPUTER NETWORKS	5	5	40	60	100
11.		19J6CC15	LAB IN PYTHON	5	3	40	60	100
12.		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.	III	19AC3ACJ3	PRINCIPLES OF FINANCIAL ACCOUNTING AND ACCOUNTING PACKAGE	5	5	40	60	100
2.	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	TOT Mks
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 OFTHINGS / 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.	III	19G3EE	ENVIRONMENTAL EDUCATION	1	1	40	60	100
2.		19J3SB1	SKILL BASED – I LOGICAL REASONING AND DATA INTERPRETATION	2	2	40	60	100
3.	IV	19G4EE	ENVIRONMENTAL EDUCATION	1	1	40	60	100
4.		19J4SB2	SKILL BASED – II DATA ANALYSIS USING SPREADSHEETS	2	2	40	60	100
5.	V	19J5SB3	SKILL BASED –III LAB IN ANIMATIONTECHNIQUES	2	2	40	60	100
6.		19J5SB4	SKILL BASED – IVLAB IN E –CONTENT DEVELOPMENT	2	2	40	60	100
7.	VI	19J6SB5	SKILL BASED – V LAB IN PHP	2	2	40	60	100
8.		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 LEARNING COURSE- Foundation Course for Science	40	2	II	40	60	100
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	100	3	V & VI	100	-	100

COURSE CODE	COURSE TITLE	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA Mks	ESE Mks	TOTAL Mks
	through Action**ROSA**						
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
21UG2SLJ	OPEN SOURCE ANIMATION TOOLS	-	2	II	40	60	100
21J2SLST2	STATISTICAL DATA SCIENCE USING PYTHON	-	2	II	40	60	100
21J3SLST3	STATISTICS USING R	-	2	II	40	60	100
21UG4SLJ	CONTENT WRITING AND VIDEO MAKING	-	2	IV	40	60	100
21J5SLAC5	EMERGING TRENDS AND TECHNOLOGIES	-	2	VI	40	60	100
21UG6SLJ	DATA SCIENCE	-	2	VI	40	60	100
	MOOC COURSES / International Certified online Courses	-	Minimum 2 Credit	I – VI	-	-	

	(Department Specific Courses/any other courses) * Students can opt other than the listed course from UGC-SWAYAM UGC / CEC		s				

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

For those who joined in 2023 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	23J1CC1	PYTHON PROGRAMMING	CORE THEORY	5	5

COURSE DESCRIPTION

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

COURSE OBJECTIVES

1. To makestudents understandthe concepts of Python programming.
2. ToapplytheOOPsconceptinPYTHONprogramming.
3. To impart knowledge on demand and supply concepts
4. To make the students learn best practices in PYTHON programming
5. To know the costs and profit maximization

UNITS

UNIT I: BASICS OF PYTHON PROGRAMMING (15 HRS)

HistoryofPython – FeaturesofPython – Literal – Constants – Variables – Identifiers–Keywords – Built – inDataTypes – OutputStatements –Input Statements – Comments –Indentation – Operators-Expressions – Typeconversions – PythonArrays:DefiningandProcessingArrays – Arraymethods.

UNIT II: CONTROL STATEMENTS (15 HRS)

Selection/Conditional Branchingstatements – if –if-else – nestedifand if-elif – else statements – Iterative Statements: whileloop – forloop – elsesuiteinloop&nested loops – Jump Statements:break – continue&passstatements.

UNIT III: FUNCTIONS (15 HRS)

Function Definition – Function Call – Variable Scope & its Lifetime – return Statement.FunctionArguments:RequiredArguments – Keyword Arguments, Default Arguments and Variable LengthArguments – Recursion – PythonStrings:Stringoperations – ImmutableStrings – Built-in String Methods and Functions – String Comparison – Modules: import statement – Python module – dir()function – ModulesandNamespace– Definingourownmodules.

UNIT IV: LISTS (15 HRS)

Creatingalist – Access valuesin List – Updating values in Lists – Nestedlists – Basic list operations – List Methods – Tuples: Creating – Accessing – UpdatingandDeletingElements–Nestedtuples– Differencebetweenlistsandtuples – Dictionaries:Creating – Accessing – Updating andDeleting – ElementsinaDictionary– DictionaryFunctionsandMethods – DifferencebetweenListsandDictionaries.

UNIT V: PYTHON FILE HANDLING (15 HRS)

Typesof files in Python – Opening and Closingfiles – Reading and Writing files: write () and writelines() methods – append()method– read()andreadlines()methods–withkeyword–Splittingwords –File Methods – FilePositions – Renaminganddeletingfiles.

TEXT BOOK:

1. ReemaThareja,PythonProgrammingusingproblemsolvingapproach, FirstEdition, 2017,Oxford UniversityPress.
2. Dr.R.NageswaraRao, CorePythonProgramming,FirstEdition,2017, Dreamtech Publishers.

REFERENCE BOOKS:

1. VamsiKurama,PythonProgramming:AModernApproachPearsonEducation.
2. MarkLutz,LearningPython,Orielly.
3. AdamStewarts,PythonProgramming,Online.
4. FabioNelli,PythonDataAnalytics,APress.

5. KennethA. Lambert,FundamentalsofPython–FirstPrograms,CENGAGEPublication.

WEB REFERNECES :

https://www.programiz.com/python-programming

https://www.guru99.com/python-tutorials.html

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

https://www.geeksforgeeks.org/python-programming-language/

https://en.wikipedia.org/wiki/Python_(programming_language)

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
PYTHON PROGRAMMING				
UNIT I: BASICS OF PYTHON PROGRAMMING				
1.1	HistoryofPython – FeaturesofPython	2	Chalk & Talk	Black Board
1.2	Literal – Constants – Variables – Identifiers	2	Chalk & Talk	LCD
1.3	Keywords – Built-inDataTypes	2	Lecture	PPT & White board
1.4	OutputStatements –Input Statements – Comments	2	Lecture	Smart Board
1.5	Indentation – Operators –Expressions	2	Lecture	Black Board
1.6	Typeconversions	1	Discussion	Google classro

				om
1.7	Python Arrays:DefiningandProcessingArrays	2	Lecture	Black Board
1.8	Array Methods	2	Discus sion	Black Board
UNIT-2 CONTROL STATEMENTS				
2.1	Selection/Conditional Branching statements: if	3	Chalk & Talk	Black Board
2.2	if-else – nestedifand if-elif…else statements	3	Chalk & Talk	LCD
2.3	Iterative Statements: while loop	3	Lecture	PPT & White board
2.4	forloop – elsesuiteinloopand nested loops.	2	Lecture	Smart Board
2.5	Jump Statements: break	2	Lecture	Black Board
2.6	Continueand Passstatements.	2	Discus sion	Google classro om
UNIT -3 FUNCTION				
3.1	Function Definition – Function Call	3	Chalk & Talk	Black Board
3.2	Variable Scope and its Lifetime – returnStatement	2	Chalk & Talk	LCD
3.3	FunctionArguments:RequiredArguments – Keyword, Arguments – Default Arguments and Variable LengthArguments – Recursion	2	Lecture	PPT & White board
3.4	PythonStrings:Stringoperations – ImmutableStrings	3	Lecture	Smart Board
3.5	Built-in String Methods and Functions – String Comparison	2	Lecture	Black Board
3.6	Modules: import statement– The Python module – dir() function –	3	Lecture	Black Board

	ModulesandNamespace– Definingourownmodules			
UNIT -4 LISTS				
4.1	Lists: Creatingalist-Accessvalues in List	2	Chalk & Talk	Black Board
4.2	Updating values in Lists-Nestedlists- Basiclistoperations-List Methods.	3	Chalk & Talk	LCD
4.3	Tuples: Creating,Accessing,UpdatingandDeletingElementsin a tuple	2	Lecture	PPT & White board
4.4	Nestedtuples– Differencebetweenlistsandtuples.	3	Lecture	Smart Board
4.5	Dictionaries:Creating,Accessing,UpdatingandDeletingElementsina Dictionary	3	Lecture	Black Board
4.6	DictionaryFunctionsandMethods- DifferencebetweenListsandDictionaries.	2	Discussion	Google classroom
UNIT -5 PYTHON FILE HANDLING				
5.1	Types of files in Python	2	Chalk & Talk	Black Board
5.2	Opening and Closingfiles-Reading and Writing files: write() and writelines() methods.	3	Chalk & Talk	LCD
5.3	append()method–read()andreadlines()methods	2	Lecture	PPT & White board
5.4	withkeyword–Splittingwords	3	Lecture	Smart Board
5.5	Filemethods-File Positions	3	Lecture	Black Board
5.6	Renaminganddeletingfiles	2	Discussion	Google classroom

EVALUATION PATTERN

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

CIA	
Scholastic	35
Non Scholastic	5
TOTAL	40

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

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

	SCHOLASTIC	NON - SCHOLASTIC	MARKS

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

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Learn the basics of python, Do simple programs on python, Learn how to use an array.	**K1 & K2**	**PSO1, PSO2**
CO 2	Developprogramusingselectionstatement,WorkwithLoopingandjumpstatements,DoprogramsonLoopsandjumpstatements.	**K1 & K2**	**PSO1, PSO2,PSO3**
CO 3	Concept of function, function arguments, Implementing theconceptstringsinvariousapplication,SignificanceofModules,Workwithfunctions,Stringsandmodules.	**K1, K2, K3 & K4**	**PSO3, PSO4**
CO 4	WorkwithList,tuplesanddictionary, Writeprogramusinglist,tuplesanddictionary.	**K1, K2 & K3**	**PSO3, PSO4**
CO 5	UsageofFilehandlingsinpython,Conceptofreadingandwritingfiles,Doprogramsusingfiles.	**K1, K3 & K4**	**PSO3, PSO5**

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

Mapping of COs 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	2	1
CO5	1	3	1	1	1

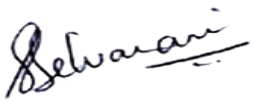
Note:

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

COURSE DESIGNER:

1. **Staff Name : Ms. MAHESWARI K P**

Forwarded By



(S.Selvarani)

I B.C.A

SEMESTER – I

For those who joined in 2023 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	23J1CC2	PYTHON PROGRAMMING LAB	CORE PRACTICALS	5	5

COURSE DESCRIPTION

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

COURSE OBJECTIVES

1. Beabletodesignandprogram Pythonapplications.
2. Beable tocreateloopsanddecisionstatementsinPython.
3. Beabletoworkwithfunctionsandpassargumentsin Python.
4. Beabletobuildandpackage Pythonmodulesfor reusability.
5. Beabletoreadandwritefilesin Python.

PROGRAM LIST:

1. Programusingvariables,constants,I/OstatementsinPython.
2. ProgramusingOperatorsinPython.
3. ProgramusingConditionalStatements.
4. ProgramusingLoops.
5. ProgramusingJumpStatements.
6. ProgramusingFunctions.
7. ProgramusingRecursion.
8. ProgramusingArrays.
9. ProgramusingStrings.
10. Program using Modules.
11. ProgramusingLists.
12. ProgramusingTuples.

13. ProgramusingDictionaries.

14. ProgramforFileHandling.

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
PYTHON PROGRAMMING LAB				
1.1	Program using variables, constants, I/O statements in Python	4	Demo & Lab	LCD
1.2	Program using Operators in Python	4	Demo & Lab	LCD
1.3	Program using Conditional Statements	4	Demo & Lab	LCD
1.4	Program using Loops	4	Demo & Lab	LCD
1.5	Program using Jump Statements	4	Demo & Lab	LCD
1.6	Program using Function	4	Demo & Lab	LCD
1.7	Program using Recursion	4	Demo & Lab	LCD
1.8	Program using Arrays	4	Demo & Lab	LCD
1.9	Program using Strings	4	Demo & Lab	LCD
1.10	Program using Modules	4	Demo & Lab	LCD
1.11	Program using Lists	5	Demo & Lab	LCD
1.12	Program using Tuples	5	Demo & Lab	LCD
1.13	Program using Dictionaries	5	Demo & Lab	LCD
1.14	Program for File Handling	5	Demo & Lab	LCD

EVALUATION PATTERN

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

CIA	
Scholastic	35
Non Scholastic	5
TOTAL	40

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

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

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

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Demonstratetheunderstandingofsyntaxandsemanticsof Python	**K1 & K2**	**PSO1, PSO2**
CO 2	IdentifytheproblemandsolveusingPYTHONprogrammingtechniques.	**K1 & K2**	**PSO1, PSO2,PSO3**
CO 3	Identifysuitableprogrammingconstructsforproblemsolving.	**K1, K2, K3 & K4**	**PSO3, PSO4**
CO 4	AnalyzevariousconceptsofPYTHONlanguagetosolvetheprobleminanefficient way.	**K1, K2 & K3**	**PSO3, PSO4**
CO 5	DevelopaPYTHONprogramfor a givenproblemandtestforitscorrectness.	**K1, K3 & K4**	**PSO3, PSO5**

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

Mapping of COs 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	3	1	1	2	1
CO5	1	2	1	1	1

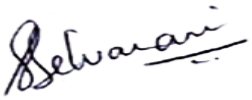
Note:

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

COURSE DESIGNER:

1. **Staff Name : Ms. MAHESWARI K P**

Forwarded By



(S.Selvarani)

I B.C.A

SEMESTER – II

For those who joined in 2023 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	23J2CC3	OBJECT ORIENTED PROGRAMMING IN C++	CORE THEORY	5	5

COURSE DESCRIPTION

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

COURSE OBJECTIVES

1. Describe the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects
2. Understand dynamic memory management techniques using pointers, constructors, destructors, etc
3. Describe the concept of function overloading, operator overloading, virtual functions and polymorphism
4. Classify inheritance with the understanding of early and late binding, usage of exception handling, generic programming
5. Demonstrate the use of various OOPs concepts with the help of programs

UNITS

UNIT I: INTRODUCTION TO C++ (15 HRS)

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

UNIT II: CLASSES AND OBJECTS (15 HRS)

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

UNIT III: OPERATOR OVERLOADING & INHERITANCE (15 HRS)

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

UNIT IV: POINTERS & ARRAYS (15 HRS)

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

UNIT V: FILES (15 HRS)

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

TEXT BOOK:

1. E. Balagurusamy, “Object-Oriented Programming with C++”, TMH 2013, 7th Edition

REFERENCE BOOKS:

1. Ashok N Kamthane, “Object-Oriented Programming with ANSI and Turbo C++”, Pearson Education 2003.
2. Maria Litvin& Gray Litvin, “C++ for you”, Vikas publication 2002.
3. Object-Oriented Programming Using C++ by Alok Kumar Jagadev , Amiya Kumar Rath , SatchidanandaDehuri , PHI Learning, 2017

WEB REFERNECES :

https://alison.com/course/introduction-to-c-plus-plus-programming

https://www.geeksforgeeks.org/object-oriented-programming-in-cpp/

https://www.w3schools.com/cpp/cpp_oop.asp

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
OBJECT ORIENTED PROGRAMMING CONCEPTS USING C++				
UNITI: INTRODUCTION TO C++				
1.1	Introduction to C++ - key concepts of Object-Oriented Programmi	2	Chalk & Talk	Black Board
1.2	Advantages – Object Oriented Languages – I/O in C++- C++ Declarations	1	Chalk & Talk	LCD
1.3	Control Structures: - Decision Making and Statements	2	Lecture	PPT & White board
1.4	If..else, jump, goto, break, continue	2	Lecture	Smart Board
1.5	Switch case statements	1	Lecture	Black Board

1.6	Loops in C++ :for, while, do	1	Discussion	Google classroom
1.7	functions in C++ - inline functions	2	Lecture	Black Board
1.8	Function Overloading	1	Discussion	Black Board
UNIT-IICLASSES AND OBJECTS				
2.1	Classes and Objects: Declaring Objects	2	Chalk & Talk	Black Board
2.2	Defining Member Functions	2	Chalk & Talk	LCD
2.3	Static Member variables and functions	2	Lecture	PPT & White board
2.4	array of objects - friend functions	2	Lecture	Smart Board
2.5	Overloading member functions - Bit fields and classes	2	Lecture	Black Board
2.6	Constructor and destructor with static members.	2	Discussion	Google classroom
UNIT -IIIOPERATOR OVERLOADING & INHERITANCE				
3.1	Operator Overloading: Overloading unary, binary operators	2	Chalk & Talk	Black Board
3.2	Overloading Friend functions	2	Chalk & Talk	LCD
3.3	type conversion – Inheritance: Types of Inheritance	2	Lecture	PPT & White board
3.4	Single, Multilevel, Multipleinheritance	2	Lecture	Smart Board
3.5	Hierarchal, Hybrid, Multi path inheritance	2	Lecture	Black Board

3.6	Virtual base Classes – Abstract Classes.	2	Lecture	Black Board
UNIT -IVPOINTERS & ARRAYS				
4.1	Pointers – Declaration	2	Chalk & Talk	Black Board
4.2	Pointer to Class , Object	2	Chalk & Talk	LCD
4.3	this pointer – Pointers to derived classes and Base classes	2	Lecture	PPT & White board
4.4	Arrays – Characteristics - array of classes	2	Lecture	Smart Board
4.5	Memory models – new and delete operators	2	Lecture	Black Board
4.6	Dynamic object – Binding, Polymorphism and Virtual Functions.	2	Discussion	Google classroom
UNIT -V FILES				
5.1	Files – File stream classes – file modes.	2	Chalk & Talk	Black Board
5.2	Sequential Read / Write operations	2	Chalk & Talk	LCD
5.3	Binary and ASCII Files – Random Access Operation –	2	Lecture	PPT & White board
5.4	Templates – Exception Handling	2	Lecture	Smart Board
5.5	String – Declaring and Initializing string objects –	2	Lecture	Black Board
5.6	String Attributes – Miscellaneousfunctions	2	Discussion	Google classroom

EVALUATION PATTERN

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

CIA	
Scholastic	35
Non Scholastic	5
TOTAL	40

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

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

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

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Assess the object – oriented concepts in C++	**K1 & K2**	**PSO1, PSO2**
CO 2	Illustrate the usage of classes and objects in C++	**K1 & K2**	**PSO1, PSO2,PSO3**
CO 3	Analyze polymorphic feature of C++	**K1, K2, K3 & K4**	**PSO3, PSO4**
CO 4	Demonstrate on pointers and arrays	**K1, K2 & K3**	**PSO3, PSO4**
CO 5	Outline the file operations in C++	**K1, K3 & K4**	**PSO3, PSO5**

Mapping COs Consistency with PSOs

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

Mapping of COs with POs

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

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

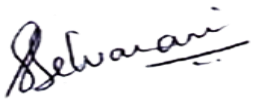
Note:

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

COURSE DESIGNER:

1. **Staff Name : Ms. MAHESWARI K P**

Forwarded By



(S.Selvarani)

I B.C.A

SEMESTER – II

For those who joined in 2023 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	23J2CC4	C++ PROGRAMMING LAB	CORE PRACTICALS	5	5

COURSE DESCRIPTION

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

COURSE OBJECTIVES

1. Describe the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects
2. Understand dynamic memory management techniques using pointers, constructors, destructors, etc
3. Describe the concept of function overloading, operator overloading, virtual functions and polymorphism
4. Classify inheritance with the understanding of early and late binding, usage of exception handling, generic programming
5. Demonstrate the use of various OOPs concepts with the help of programs

PROGRAM LIST:

1. Write a C++ program to demonstrate function overloading, Default Arguments and Inline function.
2. Write a C++ program to demonstrate Class and Objects
3. Write a C++ program to demonstrate the concept of Passing Objects to Functions
4. Write a C++ program to demonstrate the Friend Functions.
5. Write a C++ program to demonstrate the concept of Passing Objects to Functions

6. Write a C++ program to demonstrate Constructor and Destructor
7. Write a C++ program to demonstrate Unary Operator Overloading
8. Write a C++ program to demonstrate Binary Operator Overloading
9. Write a C++ program to demonstrate:
    - Single Inheritance
    - Multilevel Inheritance
    - Multiple Inheritance
    - Hierarchical Inheritance
    - Hybrid Inheritance
10. Write a C++ program to demonstrate Virtual Functions.
11. Write a C++ program to manipulate a Text File.
12. Write a C++ program to perform Sequential I/O Operations on a file.
13. Write a C++ program to find the Biggest Number using Command Line Arguments
14. Write a C++ program to demonstrate Class Template
15. Write a C++ program to demonstrate Function Template.
16. Write a C++ program to demonstrate Exception Handling.

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	**No. of Lectures**	**Teaching Pedagogy**	**Teaching Aids**
C++ PROGRAMMING LAB				
1.1	Function overloading	4	Demo & Lab	LCD
1.2	Class and Objects	4	Demo & Lab	LCD
1.3	Objects to Functions	4	Demo & Lab	LCD
1.4	Constructor and Destructor	4	Demo & Lab	LCD
1.5	Unary Operator Overloading	4	Demo & Lab	LCD

1.6	Binary Operator Overloading	4	Demo & Lab	LCD
1.7	Single Inheritance	4	Demo & Lab	LCD
1.8	Multilevel Inheritance	4	Demo & Lab	LCD
1.9	Multiple Inheritance	4	Demo & Lab	LCD
1.10	Hierarchical Inheritance	4	Demo & Lab	LCD
1.11	Hybrid Inheritance	4	Demo & Lab	LCD
1.12	Virtual Functions	4	Demo & Lab	LCD
1.13	File Manipulations	4	Demo & Lab	LCD
1.14	Command Line Arguments	4	Demo & Lab	LCD
1.15	Class Template	4	Demo & Lab	LCD

EVALUATION PATTERN

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

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

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

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

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

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

COURSE OUTCOMES

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

NO.	**COURSE OUTCOMES**	**KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)**	**PSOs ADDRESSED**
CO 1	Read, understand and trace the execution of programs written in C++ language	**K1**	**PSO1, PSO2**
CO 2	Demonstrate class and object	**K1 & K2**	**PSO1,**

	functions		**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**	**PSO4, PSO5**
CO 5	Write C++ code to demonstrate Template&Exception Handling 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	2	2	1	2	1	1
CO2	3	3	3	1	2	1	1	1	1	1
CO3	2	2	3	2	2	1	2	1	1	1
CO4	2	1	3	2	1	1	2	2	1	1
CO5	2	1	3	2	3	1	2	2	1	1

Mapping of COs with POs

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

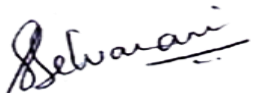
Note:

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

COURSE DESIGNER:

1. **Staff Name : Ms. MAHESWARI K P**

Forwarded By



(S.Selvarani)

HOD'S Signature& Name

I B.C.A

SEMESTER – I

For those who joined in 2023 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	23J1SE1	ANIMATION TOOLS AND TECHNIQUES	SKILL ENHANCEMENT COURSE (NON MAJOR ELECTIVE I) PRACTICALS	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, Methods
7. 3D and billboards (Create 3D Text, Billboards)

TEXT BOOK :

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

REFERENCE BOOK:

1. 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
ANIMATION TOOLS AND TECHNIQUES				
1.1	Exploring the Alice interface	4	Demo & Working in Lab	LCD
1.2	Setting the scene (Addinganobject, setobjectproperties, setspecialeffects)	4	Demo & Working in Lab	LCD
1.3	Learning to programthroughAlice (Doinorder , Dotogether)	4	Demo & Working in Lab	LCD
1.4	Branching: Conditionalexecution, RelationalOperators, Randomness	4	Demo & Working in Lab	LCD
1.5	Looping : Repetition,Whileloops,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	3dand billboards (Create 3DText, Billboards)	3	Demo & Working in Lab	LCD

EVALUATION PATTERN

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

CIA	
Scholastic	35
Non Scholastic	5
TOTAL	40

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

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

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

COURSE OUTCOMES

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

NO.	COURSE 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	1	1	1	1	2	1	1
CO2	3	3	3	1	1	1	1	2	1	1
CO3	2	1	3	3	1	1	2	2	1	1
CO4	2	1	3	3	1	2	2	2	1	1
CO5	2	2	3	2	3	2	2	1	1	1

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4	PO5

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

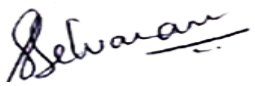
Note:

- Strongly Correlated – **3**
- ModeratelyCorrelated –**2**
- WeaklyCorrelated -**1**

COURSE DESIGNER:

1. **Staff Name : Ms. AROCKIA JACKULINE JONI**

Forwarded By



(S.Selvarani)

HOD'S Signature& Name

I B.C.A

SEMESTER – II

For those who joined in 2023 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	23J2SE2	ANIMATION TOOLS AND TECHNIQUES	SKILL ENHANCEMENT COURSE (NON MAJOR ELECTIVE II) PRACTICALS	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, Methods
7. 3D and billboards (Create 3D Text, Billboards)

TEXT BOOK :

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

REFERENCE BOOK:

1. 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				
1.1	Exploring the Alice interface	4	Demo & Working in Lab	LCD
1.2	Setting the scene (Addinganobject, setobjectproperties, setspecialeffects)	4	Demo & Working in Lab	LCD
1.3	Learning to programthroughAlice (Doinorder , Dotogether)	4	Demo & Working in Lab	LCD
1.4	Branching: Conditionalexecution, RelationalOperators, Randomness	4	Demo & Working in Lab	LCD
1.5	Looping : Repetition,Whileloops,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	3dand billboards (Create 3DText, Billboards)	3	Demo & Working in Lab	LCD

EVALUATION PATTERN

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

CIA	
Scholastic	35
Non Scholastic	5
TOTAL	40

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

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

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

COURSE OUTCOMES

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

NO.	COURSE 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	1	1	1	1	2	1	1
CO2	3	3	3	1	1	1	1	2	1	1
CO3	2	1	3	3	1	1	2	2	1	1
CO4	2	1	3	3	1	2	2	2	1	1
CO5	2	2	3	2	3	2	2	1	1	1

Mapping of COs with POs

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

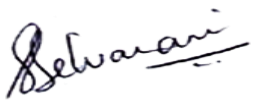
Note:

- Strongly Correlated – **3**
- ModeratelyCorrelated –**2**
- WeaklyCorrelated -**1**

COURSE DESIGNER:

1. **Staff Name : Ms. AROCKIA JACKULINE JONI**

Forwarded By



(S.Selvarani)

HOD'S Signature& Name

I B.C.A

SEMESTER – II

For those who joined in 2023 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	23J2SE3	INTRODUCTION TO HTML	PRACTICALS	2	2

COURSE DESCRIPTION

To understand in the basic web designing Concept and to have basic knowledge in writing programs using HTML Programming.

COURSE OBJECTIVES

1. Understand to inserta graphicwithinawebpage.
2. Describe the concept of link creation in a webpage.
3. Describe the procedure to createatablewithinawebpage.
4. Demonstrate the use of headinglevelswithinawebpage.
5. Classify orderedandunorderedlistswithina webpage.

UNITS

UNIT I: INTRODUCTION TO HTML (6 HRS)

WebBasics:What isInternet–Webbrowsers–WhatisWebpage – HTMLBasics:Understandingtags.

UNIT II: TAGS (6 HRS)

TagsforDocumentstructure(HTML,Head,Body Tag).Blockleveltextelements:Headingsparagraph(<p>tag)–Font style elements:(bold,italic, font,small,strong,strike,bigtags)

UNIT III: LISTS (6 HRS)

Lists:Types oflists:Ordered,Unordered–NestingLists – Othertags:Marquee,HR,BR-UsingImages–Creating Hyperlinks.

UNIT IV: TABLES **(6 HRS)**

Tables:CreatingbasicTable,Tableelements,Caption–Tableandcellalignment–Rowspan,Colspan –Cellpadding.

UNIT V: FRAMES **(6 HRS)**

Frames:Frameset–TargetedLinks–Noframe–

Forms:Input,Textarea,Select,Option.

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
C++ PROGRAMMING LAB				
UNIT I – INTRODUCTION TO HTML				
1.1	WebBasics:What is Internet	1	PPT	LCD
1.2	Web browsers	1	PPT	LCD
1.3	WhatisWebpage	1	PPT	LCD
1.4	HTMLBasics:	1	PPT	LCD
1.5	Understandingtags.	2	Demo & Lab	LCD
UNIT II - TAGS				
2.1	TagsforDocumentstructure(HTML,Head,Body Tag).	1	PPT	LCD

2.2	Blockleveltextelements:	1	PPT	LCD
2.3	Headingsparagraph(<p>tag)	2	Demo & Lab	LCD
2.4	Font style elements:(bold,italic, font,small,strong,strike,bigtags	2	PPT	LCD
UNIT III: LISTS				
3.1	Lists:Types oflists:Ordered, Unordered	1	PPT	LCD
3.2	NestingLists	1	Demo & Lab	LCD
3.3	Othertags:Marquee, HR, BR	1	PPT	LCD
3.4	Using Images	1	Demo & Lab	LCD
3.5	CreatingHyperlinks.	2	PPT	LCD
UNIT IV: TABLES				
4.1	Tables:Creatingbasic Table	1	PPT	LCD
4.2	Table elements	1	Demo & Lab	LCD
4.3	Caption–Tableandcell alignment	2	PPT	LCD
4.4	Rowspan,Colspan –Cellpadding	2	Demo & Lab	LCD
UNIT V: FRAMES				
5.1	Frames: Frameset	2	PPT	LCD
5.2	TargetedLinks–Noframe	2	Demo & Lab	LCD

5.3	Forms:Input,Textarea,Select,Option.	2	PPT	LCD

EVALUATION PATTERN

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

CIA	
Scholastic	35
Non Scholastic	5
TOTAL	40

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

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

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

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Knows the basic concept in HTML conceptof resourcesinHTML	**K1**	**PSO1, PSO2**
CO 2	Usageof Tags in Webpage creation	**K1 & K2**	**PSO1, PSO2,PSO3**
CO 3	Understand the page formatting using the concept of list	**K1 & K2**	**PSO3, PSO4**
CO 4	Analyze the table creation with its various attributes	**K1, K2 & K3**	**PSO4, PSO5**
CO 5	Developa framesand understand its various formats.	**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	1	1	2	2	1	1
CO4	2	2	3	3	1	1	2	2	1	1
CO5	2	2	3	2	3	1	2	2	1	1

Mapping of COs 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**	**2**	**1**
CO5	**1**	**3**	**1**	**1**	**1**

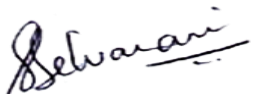
Note:

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

COURSE DESIGNER:

2. **Staff Name : Ms. MAHESWARI K P**

Forwarded By



(S.Selvarani)

HOD'S Signature& Name

I B.C.A

SEMESTER – I

For those who joined in 2023 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	23J1FC	STRUCTURED PROGRAMMING IN C	FOUNDATION COURSE - THEORY	2	2

COURSE DESCRIPTION

To get better understanding in Programming concepts in C.

COURSE OBJECTIVES

1. TofamiliarizethestudentswiththeProgrammingbasicsandthefundamentalsof C
2. DatatypesinC,Mathematicalandlogicaloperations.
3. Tounderstandtheconceptusingifstatementsandloops
4. ThisunitcoverstheconceptofArrays
5. ThisunitcoverstheconceptofFunctions
6. Tounderstandtheconceptofimplementingpointers.

UNITS

UNIT I: OVERVIEW OF C (6 HRS)

ImportanceofC – sampleCprogram – Cprogramstructure – executingCprogram – Constants – Variables and Data Types: Character set – Ctokens – keywordsandidentifiers – constants – variables – datatypes – declarationofvariables – Assigningvaluestovariables – Assignmentstatement – declaringavariableasconstant – asvolatile – OperatorsandExpression.

UNIT II:DECISION MAKING AND BRANCHING(6 HRS)

Decision making with If –simpleIF,IFELSE,nestedIFELSE,ELSEIFladder –

switch,GOTOstatement – DecisionMakingand Looping – While, Do-While,For,Jumpsinloops.

UNIT III: ARRAYS (6 HRS)

Declarationandaccessingofone&two – dimensionalarrays –initializingtwo – dimensionalarrays – multidimensionalarrays.

UNIT IV: FUNCTIONS (6 HRS)

The form of C functions – Return values and types – calling a function – categories of functions – Nested functions – Recursion – functionswitharrays – callbyvalue – callbyreference – storageclasses – characterarraysandstringfunctions.

UNIT V: POINTERS (6 HRS)

Definition – declaringandinitializingpointers – accessing avariablethroughaddressandthroughpointer – pointer expressions – pointer increments and scale factor – pointers and arrays – pointers and functions –pointers and structures.

TextBook

1. E.Balagurusamy,ProgramminginANSIC,FifthEdition,TataMcGraw-Hill,2010

ReferenceBooks

1. ByronGottfried,Schaum'sOutlineProgrammingwithC,FourthEdition, TataMcGraw-Hill,2018.

2. KernighanandRitchie,TheCProgrammingLanguage,SecondEdition,Prentice Hall, 1998

3. YashavantKanetkar,LetUsC,EighteenthEdition,BPBPublications,2021

Web Resources :

1. https://codeforwin.org/
2. https://www.geeksforgeeks.org/c-programming-language/

3. http://en.cppreference.com/w/c
4. http://learn-c.org/
5. https://www.cprogramming.com/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
STRUCTURED PROGRAMMING LANGUAGE IN C				
UNIT I: OVERVIEW OF C				
1.1	Importance of C – Sample C program	1	Chalk & Talk	Black Board
1.2	C program structure – Executing C program	1	Chalk & Talk	LCD
1.3	Constants, Variables and Data Types: Character Set, C tokens, keywords and identifiers, constants	1	Lecture	PPT & White board
1.4	variables, data types, declaration of variables,	1	Lecture	Smart Board
1.5	Assigning values to variables- Assignment statement,	1	Lecture	Black Board
1.6	Declaring a variable as constant, as volatile. Operators and Expression.	1	Discussion	Google classroom
UNIT-IIDECISION MAKING AND BRANCHING				
2.1	Decision making with If,simpleIF	1	Chalk & Talk	Black Board
2.2	IFELSE, nested IFELSE, ELSEIF ladder	1	Chalk & Talk	LCD
2.3	switch, GOTO statement.	1	Lecture	PPT & White

				board
2.4	Decision Making and Looping: While	1	Lecture	Smart Board
2.5	Do-While, For	1	Lecture	Black Board
2.6	Jumps in loops	1	Discussion	Google classroom
UNIT -IIIARRAYS				
3.1	Declaration of one & two – dimensional arrays	1	Chalk & Talk	Black Board
3.2	Accessing of one & two – dimensional arrays	1	Chalk & Talk	LCD
3.3	Initializing two- dimensional arrays	2	Lecture	PPT & White board
3.4	Multidimensional arrays.	2	Lecture	Smart Board
UNIT -IVFUNCTIONS				
4.1	The form of C functions, Return values and types	1	Chalk & Talk	Black Board
4.2	calling a function, categories of functions, Nested functions,	1	Chalk & Talk	LCD
4.3	Recursion,functionswith arrays	1	Lecture	PPT & White board
4.4	Callbyvalue	1	Lecture	Smart Board
4.5	Callby reference	1	Lecture	Black Board
4.6	storageclasses-characterarraysandstringfunctions	1	Discussion	Google classroom
UNIT -VPOINTERS				

5.1	Definition,declaring pointers	1	Chalk & Talk	Black Board
5.2	Initializing pointers	1	Chalk & Talk	LCD
5.3	Accessingavariablethroughaddres sandthroughpointer,	1	Lecture	PPT & White board
5.4	pointer expressions, pointer increments and scale factor	1	Lecture	Smart Board
5.5	pointers and arrays, pointers and functions	1	Lecture	Black Board
5.6	pointers and structures.	1	Discussio n	Google classroom

EVALUATION PATTERN

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

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

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

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

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

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	RemembertheprogramstructureofCwithitssyntaxandsemantics	**K1 & K2**	**PSO1, PSO2**
CO 2	UnderstandtheprogrammingprinciplesinC(datatypes, operators, branching and looping, arrays,functions,structures, pointersandfiles)	**K1 & K2**	**PSO1, PSO2,PSO3**
CO 3	Applytheprogrammingprinciplesearntinreal-timeproblems	**K1, K2, K3 & K4**	**PSO3, PSO4**
CO 4	Analyzethevariousmethodsofsolvingaproblemandchoosethebestmethod	**K1, K2**	**PSO3,**

		& K3	**PSO4**
CO 5	Code,debugandtesttheprogramswithappropriate Testcases	**K1, K3 & K4**	**PSO3, PSO5**

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

Mapping of COs 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	2	1
CO5	1	3	1	1	1

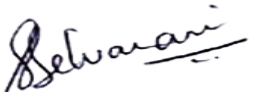
Note:

- Strongly Correlated – **3**
- ModeratelyCorrelated –**2**
- WeaklyCorrelated -**1**

COURSE DESIGNER:

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

Forwarded By



(S.Selvarani)

HOD'S Signature& Name

I B.C.A

SEMESTER – I

For those who joined in 2023 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY
USCA	21UG2SLJ	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:

- T
  o Work with images and its properties.
- T
  o 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

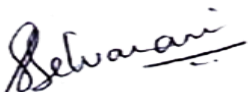
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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 2023 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:

- T
  o understand the concept of data science and scientists
- T
  o 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**

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 COs 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**

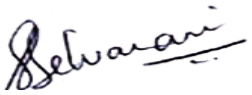
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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 2023 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:

- T
  o understand the concept of data science and scientists
- T
  o 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 visualization	**K3 & K4**	**PSO8**

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 COs 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

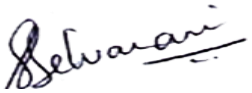
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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 2023 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY
USCA	21UG4SLJ	CONTENT WRITING & VIDEO MAKING	SELF LEARNING

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 (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
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 COs 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

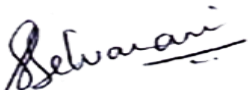
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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 2023 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 mechanisms	**K3 & K4**	**PSO8**

INTERNAL - UG

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

	10 Mks.	10 Mks.	5 Mks.	t 5 Mks	5 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 COs 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

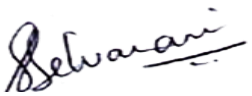
Note:

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

COURSE DESIGNER:

1. **Staff Name :Ms. R. Ramya**

Forwarded By



(S.Selvarani)

III BCA
SEMESTER – VI

For those who joined in 2023 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY
USCA	21UG6SLJ	DATA SCIENCE	SELF-LEARNING

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**

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**

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

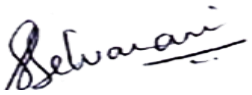
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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	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	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	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**

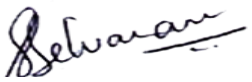
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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. h

ttps://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 TAXONOMY)	PSOs ADDRESSED
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	**K1, K2, K3 &**	**PSO3, PSO5, PSO6**

	implementation usage	**K4**	
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 COs 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

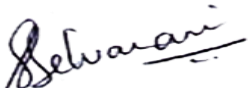
Note:

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

COURSE DESIGNER:

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

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	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 COs 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

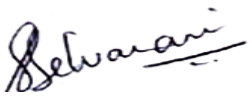
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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 REASONING 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 Completion	3	Chalk & Talk	Black Board
1.10	Mirror Images	2	Lecture	Black Board

INTERNAL - UG

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

							C6		ment
	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	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 COs 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

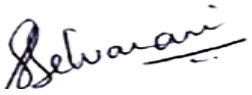
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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 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. T
   o understand about writing algorithms and step by step approach in solving problems with the help of fundamental data structures
2. T
   o 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 & Talk	LCD
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 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

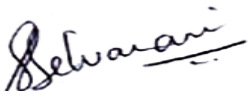
Note:

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

COURSE DESIGNER:

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

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 / 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. T o impart the practical aspects in the development of web pages.
2. T o 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

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	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 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

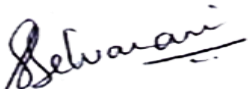
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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. A lexis Leon & Mathews Leon, Introduction to Computers
2. T homas 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 & Talk	Black 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	2	Lecture	Black

	Disks			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 systems – Binary number complements	2	Lecture	Black Board
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 –	2	Chalk &	LCD

	complementation and inverters		Talk	
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

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 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

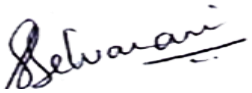
Note:

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

COURSE DESIGNER:

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

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 / 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	CIA Total	% of Assess

							C6		ment
	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 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

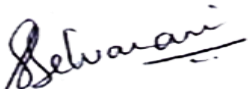
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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	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. T
   o 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. T
   o 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 accunt***

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 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

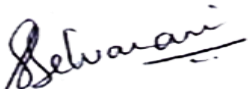
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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 classes	3	Lecture	Smart 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 COs 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

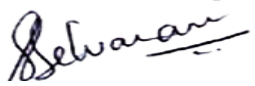
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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 Board
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 COs 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

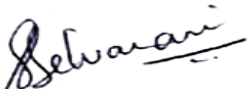
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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 - add,editandmodifyrecords	10	Demo & Lab	Smart 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

IA

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

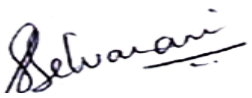
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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 computing characteristics	2	Lecture	PPT & White 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	2	Lecture	Smart

	Management			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 & Talk	Black 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	2	Discussion	Google classroom

	Virtualization			
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 board
5.4	Cloud performance Data Collection	3	Lecture	Smart 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 COs 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

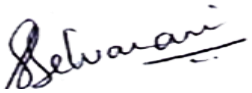
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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	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 COMPUTTING 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	2	Chalk &	Black Board

	Entities		Talk	
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 COs 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

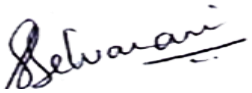
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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 & Talk	Black 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

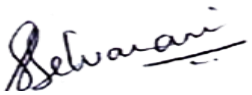
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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 DEVELOPMENT	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)	Section A (ii)	Section B	Section C	Section D	Section E	Total	

	5 Mks.	5 Mks	8 Mks.	12 Mks	20 Mks.	10 Mks.	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**

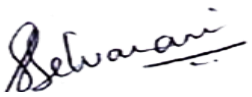
Mapping of C0s with POs

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



(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	2	Chalk &	Black

	functions		Talk	Board
3.2	Organizing python projects into modules	2	Chalk & Talk	LCD
3.3	Importing own module as well as external modules	3	Lecture	PPT & 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	3	Lecture	PPT & White

	functions			board
5.4	Understanding read functions, read(), readline() and readlines()	2	Lecture	Smart Board
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**

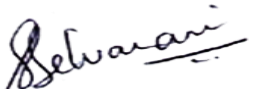
Mapping of COs with POs

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**

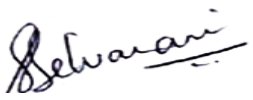
Mapping of C0s with POs

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

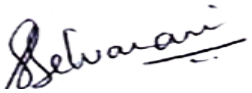
Mapping of C0s with POs

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	T2	Quiz	Assig	OBT/	35 Mks.	5 Mks.	40	

	10 Mks.	10 Mks.	5 Mks.	nmen t 5 Mks	PPT 5 Mks			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	K1 & K2	PSO1, PSO2

	cryptography		
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

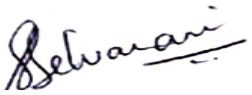
Note:

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

https://www.oercommons.org/authoring/7053-data-mining/view

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 &	LCD

			Talk	
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 & White board
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 COs 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

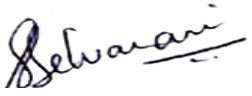
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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	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 of Things	2	Chalk & Talk	LCD
1.3	Enchanted Objects – Who is	2	Lecture	PPT &

	making the Internet of Things?			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 Application Layer Protocols.	2	Lecture	Smart 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 Extension Boards	2	Lecture	Black 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,	3	Chalk &	Black

	and Explore		Talk	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 COs 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

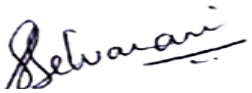
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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 – Guidelines for proper Usage	2	Lecture	Black 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	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 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 COs 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

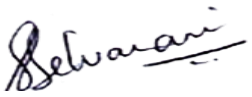
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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	1	Chalk &	Black

	strings		Talk	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 &	LCD

			Talk	
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.	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 ADDRESSED

		TO REVISED BLOOM'S TAXONOMY)	
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

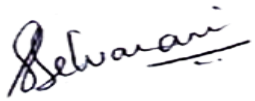
Note:

- Strongly Correlated – **3**
- Moderately Correlated – **2**
- 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	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, organizedirectory 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 COs 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

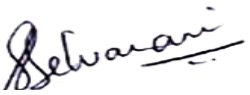
Note:

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

COURSE DESIGNER:

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

Forwarded By



(S.Selvarani)