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

FATIMA COLLEGE (AUTONOMOUS), MADURAI - 625018

THE MINUTES OF THE BOARD OF STUDIES

DEPARTMENT OF COMPUTER APPLICATIONS [BCA & PGDCA]

TO BE IMPLEMENTED FROM 2023-2024 ONWARDS

The board of Studies meet for Framing the Syllabus for Department of Computer Applications [BCA & PGDCA] was held on 03.04.2023 at 10.00.Am.

The members of the board were,

UNIVERSITY NOMINEE (BCA):

Dr. K. SUNDARAVADIVELU,
ASSISTANT PROFESSOR,
DEPARTMENT OF COMPUTER SCIENCE,
MADURAI KAMARAJ UNIVERSITY,
MADURAI.

UNIVERSITY NOMINEE (PGDCA):

Dr. R. RATHINASABAPATHY,
ASSOCIATE PROFESSOR,
DEPARTMENT OF COMPUTER APPLICATIONS,
SCHOOL OF INFORMATION TECHNOLOGY,
MADURAI KAMARAJ UNIVERSITY,
MADURAI.

SUBJECT EXPERT :

Dr. M. PUSHPARANI,
PROFESSOR & HEAD,
DEPARTMENT OF COMPUTER SCIENCE,
MOTHER TERESA UNIVERSITY,
RESEARCH EXTENSION CENTRE,
MADURAI.

3/4/2023

SUBJECT EXPERT :

Mr. V. NEETHIDEVAN,
ASSISTANT PROFESSOR,
DEPARTMENT OF MCA,
MEPCO ENGINEERING COLLEGE,
SIVAKASI

3.4.23

INDUSTRIALIST :

Dr. S. BALAMURUGAN,
MANAGING DIRECTOR,
ESHA TECHNOLOGIES,
MADURAI.

3/4/23

ALUMNA :

Mr. A. DIVYASRI,
SOFTWARE DEVELOPER,
BRICKSTEEL TECHNOLOGIES PVT LTD,
MADURAI-16

A. Divyasri
3.4.23

STAFF MEMBERS :

Ms. S. SELVARANI,
ASSISTANT PROFESSOR & HEAD,
DEPARTMENT OF COMPUTER APPLICATIONS,
FATIMA COLLEGE,
MADURAI - 18.

3/4/23

Ms. RAMYA. R,
ASSISTANT PROFESSOR,
DEPARTMENT OF COMPUTER APPLICATIONS,
FATIMA COLLEGE,
MADURAI - 18.

3/4/23

Ms. J. AROCKIA JACKULINE JONI,
ASSISTANT PROFESSOR,
DEPARTMENT OF COMPUTER APPLICATIONS,
FATIMA COLLEGE,
MADURAI - 18.

3/4/23

Ms. K. P. MAHESWARI,
ASSISTANT PROFESSOR,
DEPARTMENT OF COMPUTER APPLICATIONS,
FATIMA COLLEGE,
MADURAI - 18.

3/4/23

Ms. P. RENGANAYAGI,
ASSISTANT PROFESSOR,
DEPARTMENT OF COMPUTER APPLICATIONS,
FATIMA COLLEGE,
MADURAI - 18.

3/4/23

DEAN OF ACADEMIC AFFAIRS :

Dr. K. SANGEETHA,
ASSISTANT PROFESSOR,
DEAN OF ACADEMIC AFFAIRS,
FATIMA COLLEGE,
MADURAI. -18

In the beginning of the meeting the Head of the Department Mrs. S. Selvarani welcomed all the members of the board and briefed them about the current updations and progress of the department.

The members of the board expressed their high appreciation and satisfaction about the department.

Action Taken Report for 2022-2023

S. No.	COMMON SUGGESTIONS OFFERED IN THE PREVIOUS BOARD	ACTION TAKEN FOR THE ACADEMIC YEAR 2021-2022
1.	The Non-Major Elective courses, 21IJNME and 21IJ2NME - Animation Tools and Techniques was introduced for other major students.	To develop animation techniques and create motion movies using Alice.
2.	The Self Learning course 21IJ2SLI - Open Source Animation Tools was introduced for the first-year BCA students	To develop animation techniques and create motion movies using Alice.
3.	The Self Learning course 21IJ4SLIJ192 Content Writing and Video Making was introduced for the second-year BCA and IMC students.	To create appropriate content while designing webpages and enhance the ability to develop creative videos.
4.	The Self Learning course 21IJ6SL16- Data Science was introduced for the final-year BCA and IT students.	To know about 'R' Language that is widely used to do analysis and focus on research
	For Diploma	
5.	The lab course 21PDB106 - Design Techniques was introduced.	To get skill in designing and to improve employability skills.
6.	The course 21PDB202 - Python Programming was introduced.	To gain knowledge in python programming and to create real time applications.

Minutes of The Board Of Studies

CORE COURSES INTRODUCED (PART-III)

S. No.	Course Code	Course Title with Semester	Relevance To *				Scope for #			Need for Introduction
			L	R	N	G	Emp	Entrepreneurship	S D	
1.	23J1CC1	Object Oriented Programming Concepts using C++				*	#		#	All courses are introduced as per the JANSCHE syllabus
2.	23J1CC2	C++ Programming (Pr)				*	#		#	
3.	23J2CC3	Python Programming				*	#			To gain knowledge in Realtime applications of python
4.	23J2CC4	Python Programming (Pr)				*		#		
5.	23J3CC5	Operating Systems				*			#	
6.	23J3CC6	Relational DataBase Management System (Pr)				*	#			To gain knowledge on online Query executors.
7.	23J4CC7	Data Structures				*	#		#	
8.	23J4CC8	Web Designing (Pr)				*	#			
9.	23J5CC9	Java Programming				*	#			To meet the current trends

10.	23J5CC10	Java Programming (Pr)				*			#		
11.	23J5CC11	Software Engineering				*		#			To create dynamic projects & Applications
12.	23J5CC12	Project with Viva voce				*	#		#		
13.	23J6CC13	R Programming				*	#		#		To know about R-Libraries and implementing projects
14.	23J6CC14	R Programming (Pr)				*	#		#		
15.	23J6CC15	Computer Networks				*		#			

ELECTIVE COURSES INTRODUCED (PART-III)

S. No.	Generic/ Discipline Specific	Course Code	Course Title	Relevance To *				Scope For #			Need for Introduction
				L	R	N	G	Emp	Enter	SD	
1.	Generic	23J1EC1G1	Programming in C				*	#		#	To meet the future trends of object oriented programming
2.	Generic	23J2EC2G2	Object Oriented Programming in C++				*	#		#	
3.	Generic	23J3EC3AC3	Data Analysis using Spread sheet				*		#		To create awareness on Analysis

4.	Generic	23J4EC4JM4	Web Security			*		#	To get awareness on Security practices
5.	Discipline Specific	23J5EC51/ 23J5EC52/	Security Practices/ Data Mining/			* #			
		23J5EC53	Cloud Computing			* #			
6.	Discipline Specific	23J5EC61/	DotNet Programming/			*		#	To know about the
		23J5EC62/	Android Programming/			*		#	Latest Framework
		23J5EC63	UAX Framework Design			*		#	designs
7.	Discpline Specific	23J6EC71/	Human Computer Interaction/			* #			To incorpo -rate AI trends and tools
		23J6EC72/	Internet of Things /			* #			
		23J6EC73	Mobile Computing			* #			
8.	Discipline Specific	23J6EC81/	Open Source Tools			*		#	To use free and public license tools

Skill Enhancement / Foundation / Ability Enhancement Course (PSOs-IV)

S. No.	SEC / FC / AECC	Course Code	Course Title	Relevance To * L R N G	Scope For # E M P In C V S D	Need for Introduction
1.	SEC	23J1SEC1	Animation Tools And Techniques (Lab)		*	To learn about animations
2.	FC	23J1FC	Problem Solving Using C (Lab)		*	To prepare for competitive Exams.
3.	AECC	23J1AECC1	Non Verbal Reasoning		*	
4.	SEC	23J2SEC2	Animation Tools And Techniques (Lab)		*	To learn and work on frames, Audio & video processing.
5.	SEC	23J2SEC3	Animation Techniques (Lab)		*	
6.	AECC	23J2AECC2	Verbal Reasoning		*	
7.	SEC	23J3SEC4	Spread Sheet (Lab)		*	To work on Analysis
8.	SEC	23J3SEC5	Photo Editing Techniques (Lab)		*	To create and edit images

9.	AECC	23J3AECC3	Technical Interview Skills			*		To prepare with the skills to face interview
10.	SEC	23J4SEC6	E-Content Creation			*		
11.	SEC	23J4SEC7	Linux (Lab)			*		To get about open source Software
12.	AECC	23J4AECC4	Non-Technical Interview skills.			*		To train the students and create problem solving awareness
13.	SEC	23J6SEC8	Problem Solving Skills			*		

1. Introduction of Value-Added Course - Certificate / Diploma / Advanced Diploma

S. No.	Course Code	Course Title	MoU with Industry / Organisation	Skill Sharpened	Course Outcome
	NIL				

2. Introduction of Purely Skill-Embedded Certificate / Diploma / Advanced Diploma Course

S. No.	Course Code	Course Title	MoU with Industry / Organisation	Skills sharpend	Course Outcome
	NIL				

Revision Of Courses

S. No.	Course Code	Course Title	No. & Title of Units Revised with The Revised Content specified if it is not the whole unit	% of Revision	Need For Revision	Relevant To *				Scope For #		
						L	R	N	G	Emp	Ent	S
1.	19J3CC6	Lab in Relational Database Management System	Include Lab programs based on DDL, DML & DCL Queries, PL/SQL programming concepts which comprises of a minimum of 15 Lab Excercises.	10%	To get deeper knowledge in the Database Concepts					#	#	
2.	19J4CC8	Lab in Web Programming	Include Lab programs based on Scripting, CSS and PHP Server side Programming which comprises of a minimum of 15 Lab Excercises	10%	To expertise in the concept of creating dynamic web pages.					#		#
3.	19J5CC9	Software Engineering	IV & V - Testing was given as a seperate unit which comprises of Online &	10%	To acquire knowlege about Software					*	#	

			Manual Testing Tools.	Testing			
4.	19J5CC12	Lab in Dot Net Programming	Programs related to dynamic Website creation using VB.Net & ASP.Net which comprises of 15 Lab programs.	10%	To expertise in the Concept of Dynamic WebPages.	*	#
5.	19J619E5	Internet of Things	Domain specific IoT concepts are added and Machine To Machine ideologies are implemented	10%	To adapt to the latest Technologies	*	#
6.	19J61966	Human Computer Interaction	Latest Searching Algorithms are replaced with the existing algorithms and concepts of Virtual Reality are implemented.	10%	To get knowledge on Current Algorithms.	*	#

For Diploma:

S. No.	Course Code	Course Title	No. & Titles of Units Revised with the Revised Content Specified if it is not the whole unit.	% of Revision	Need for Revision	Scope for # L	R	N	G	Scope for # Enr	Emp	SD
1.	19PDB102	Problem Solving Using C	IV & V - Object Oriented Programming in C++ Concepts of classes, objects, Inheritance will be included	20%	To gain the knowledge of OOPS concepts				*	#		#
2.	19PDB104	Lab-I Programming in C	Object Oriented Programming concepts with class, objects, Inheritance Exercises will be included.	20%	To gain knowledge in OOPS Concept				*			#
3.	19PDB103	Web Designing	Include PHP with DataBase Programming	10%	To acquire knowledge about Dynamic web pages				*		#	
4.	19PDB105	Lab-II Web Programming	Include lab programs based on scripting, CSS and PHP server side Programming.	10%	To acquire knowledge about Dynamic Web Pages.				*		#	

Other Suggestions:

1. Computer Fundamentals & Architecture can be given as seperate course.
2. Data Mining & Human Computer Interaction courses can be replaced by Digital Principles and Computer Organization.
3. Open Source Tools can be included for programming concepts.
4. Minimum of 15 lab exercises can be included for practical courses.

Commandations:

1. Python can be shifted to II year C III or IV Semester
2. Frameworks like React / Angular Js etc. can be included in web designing.
3. For Software Engineering course Roger. S. Pressman book can be followed. Testing Manual Automated Tools can be included.
4. Online courses like MOOC, SWAYAM, NPTEL.. courses should be completed by the students.
5. Text Books utilization to be given for all courses.

1. Dr. K. SUNDARAVADIVELU

2. Dr. R. RATHINASABAPATHY

3. Dr. M. PUSHPARANI

4. Mr. V. NEETHIDEVAN

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10. Ms. K. P. MAHESWARI

11. Ms. P. RENGHANAYAGI

12. Dr. K. SANGEETHA
DEAN OF ACADEMIC AFFAIRS

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.Aprogramme 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 entrepreneurs and become employees of trans-national societies
GA 20	Excellence in Local and Global Job Markets
GA 21	Effectiveness in Time Management
GA 22	Efficiency in taking up Initiatives
GA 23	Eagerness to deliver excellent service
GA 24	Managerial Skills to Identify, Commend and tap Potentials
III. ETHICAL COMPETENCE	
GA 25	Integrity and be disciplined in bringing stability leading a systematic life promoting good human behaviour to build better society
GA 26	Honesty in words and deeds
GA 27	Transparency revealing one's own character as well as self-esteem to lead a genuine and authentic life
GA 28	Social and Environmental Stewardship
GA 29	Readiness to make ethical decisions consistently from the galore of conflicting choices paying heed to their conscience
GA 30	Right life skills at the right moment

PROGRAMME OUTCOMES (PO)

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

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

PROGRAMME SPECIFIC OUTCOMES (PSO)

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

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

FATIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF COMPUTER APPLICATIONS (BCA)

For those who joined in June 2021 onwards

PROGRAMME CODE :USCA

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

PART – I – TAMIL

Offered by The Research Centre of Tamil

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19TL1C1	Language-Modern Literature nghJj;jkpo; - ,f;fhy ,yf;fpak;	5	3	40	60	100
2.	II	19TL2C2	Language - Bakthi Literature nghJj;jkpo; - gf;jp ,yf;fpak;	5	3	40	60	100
3.	III	19TL3C3	Language- Epic Literature nghJj;jkpo; - fhg;gpa ,yf;fpak;	5	3	40	60	100
4.	IV	19TL4C4	Language-Sangam Literature nghJj;jkpo; - rq;f ,yf;fpak;	5	3	40	60	100
			Total	20	12	160	240	400

PART – I – FRENCH

Offered by The Department of French

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19RL1C1	PART 1 LANGUAGE FRENCH	5	3	40	60	100
2.	II	19RL2C2	PART 1 LANGUAGE FRENCH	5	3	40	60	100

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
3.	III	19RL3C3	PART 1 LANGUAGE FRENCH	5	3	40	60	100
4.	IV	19RL4C4	PART 1 LANGUAGE FRENCH	5	3	40	60	100
			Total	20	12	160	240	400

PART – I – HINDI

Offered by The Department of Hindi

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

PART – II -ENGLISH – 12 CREDITS

Offered by The Research Centre of English

S. NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19EL1WB	BASIC COMMUNICATIVE ENGLISH	5	3	40	60	100
2.		19EL1WI	INTERMEDIATE COMMUNICATIVE	5	3	40	60	100

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

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

MAJOR CORE COURSES INCLUDING PRACTICALS : 60 CREDITS

S. NO	SEM	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	I	19J1CC1	PROGRAMMINGIN C	6	4	40	60	100
2.		19J1CC2	LAB IN CPROGRAMMING	6	3	40	60	100
3.	II	19J2CC3	OBJECT ORIENTED PROGRAMMING IN C++	6	4	40	60	100
4.		19J2CC4	LAB IN C++ PROGRAMMING	6	3	40	60	100
5.	III	19J3CC5	OPERATING SYSTEMS	6	4	40	60	100

6.		19J3CC6	RELATIONAL DATABASE MANAGEMENT SYSTEMS	6	3	40	60	100
7.	III	21AC3ACJ3	PRINCIPLES OF FINANCIAL A/C & A/C PACKAGE	5	5	40	60	100
8.	IV	19J4CC7	DATA STRUCTURESAND ALGORITHMS	6	4	40	60	100
9.		19J4CC8	WEB PROGRAMMING	6	3	40	60	100
10.	V	19J5CC9	SOFTWAREENGINEERING	5	5	40	60	100
11.		19J5CC10	JAVA PROGRAMMING	5	5	40	60	100
12.		19J5CC11	LAB IN JAVA PROGRAMMING	5	3	40	60	100
13.		19J5CC12	DOT NET PROGRAMMING	5	3	40	60	100
14.	VI	19J6CC13	PYTHON	5	5	40	60	100
15.		19J6CC14	LAB IN PYTHON	5	5	40	60	100
16.		19J6CC15	COMPUTER NETWORKS	5	3	40	60	100
17.		21J6PR	PROJECT	1	3	40	60	100

ALLIEDCOURSES- 20 CREDITS

S.NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	21G1ACJ1	DISCRETE MATHEMATICS	5	5	40	60	100
2.	II	21G2ACJ2	OPERATIONS RESEARCH	5	5	40	60	100
3.	III	21AC3ACJ3	PRINCIPLES OF FINANCIAL ACCOUNTING AND ACCOUNTING PACKAGE	5	5	40	60	100

4.	IV	19P4ACJ4	DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION	5	5	40	60	100

ELECTIVES-15 CREDITS

S. No	SEM	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	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.	I	19G1VE	PERSONAL VALUES	1	1	40	60	100
2.		21J1NME	NON MAJOR ELECTIVE – I ANIMATIONTOOLS ANDTECHNIQUES	2	2	40	60	100
3.	II	19G2VE	VALUES FOR LIFE	1	1	40	60	100
4.		21J2NME	NON MAJOR ELECTIVE – II	2	2	40	60	100

S. No	SEM	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
			ANIMATIONTOOLS ANDTECHNIQUES					
5.	III	19G3EE	ENVIRONMENTAL EDUCATION	1	1	40	60	100
6.		19J3SB1	SKILL BASED – I LOGICAL REASONING AND DATA INTERPRETATION	2	2	40	60	100
7.	IV	19G4EE	ENVIRONMENTAL EDUCATION	1	1	40	60	100
8.		19J4SB2	SKILL BASED – II DATA ANALYSIS USING SPREADSHEETS	2	2	40	60	100
9.	V	19J5SB3	SKILL BASED –III LAB IN ANIMATIONTECHNIQUES	2	2	40	60	100
10.		19J5SB4	SKILL BASED – IVLAB IN E –CONTENT DEVELOPMENT	2	2	40	60	100
11.	VI	19J6SB5	PHP	2	2	40	60	100
12.		19J6SB6	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 through Action**ROSA**	100	3	V & VI	100	-	100
19UADPR	**PROJECT**	30	4	VI	40	60	100
19UADRC	**READING CULTURE**	10/ Semester	1	II-VI	-	-	-
	TOTAL		**20**				

EXTRA CREDIT COURSES

COURSE CODE	SELF LEARNING COURSES for ADVANCED LEARNERS	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA MKS	ESE MKS	TOTAL MARKS
21J1SL1	OPEN SOURCEANIMATIONTOOLS	-	2	II	40	60	100
21J2SLST2	STATISTICALDATASCIENCE USING PYTHON	-	2	II	40	60	100
21J3SLST3	STATISTICSUSINGR	-	2	II	40	60	100
21J4SLJM4	CONTENT WRITINGANDVIDEO EDITING	-	2	IV	40	60	100
21J5SLAC5	EMERGING TRENDSAND TECHNOLOGIES	-	2	VI	40	60	100
21J6SLI6	DATA SCIENCE	-	2	VI	40	60	100
	MOOC COURSES / International Certified online Courses (Department Specific Courses/any other courses) * Students can opt other than the listed course from UGC-SWAYAM UGC / CEC	-	Minimum 2 Credits	I – VI	-	-	

OFF CLASS PROGRAMMES

19UGVAJ1 - Value Added Crash Course
Android Application Development

19UGVAJ2 - Crash Course
E-Content Development

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

II B.C.A

OLD-10%

SEMESTER – III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
USCA	19J3CC6	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 SELECT commands
3. Implement Queries using Set operations
4. Implement Queries using Joins.
5. Implement Queries using Grouping Functions.
6. Implement Queries using Sequence.
7. Implement Queries using Views and Indexes
8. Implement Date Functions.
9. Implement String Functions.

WEB REFERENCES :

1. https://www.tutorialspoint.com/sql/sql–rdbms–concepts.htm
2. https://www.tutorialspoint.com/ruby/index.htm
3. https://www.javatpoint.com/ruby–tutorial

OER RESOURCES :

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

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
RELATIONAL DATABASE MANAGEMENT SYSTEMS				
1.1	DDL commands	10	Demo & Lab	LCD
1.2	DML commands	10	Chalk & Talk	PPT & White board
1.3	Normalization Techniques	10	Lecture	PPT & White board
1.4	SELECT commands			
1.5	Set operations	10	Demo & Lab	LCD
1.6	Joins	10	Chalk & Talk	PPT & White board
1.7	Grouping Functions	8	Lecture	PPT & White board
1.8	Sequence	5	Demo & Lab	LCD
1.9	Views and Indexes	5	Chalk &Talk	PPT & White board
1.10	Cursors, Packages and Triggers	3	Lecture	PPT & White board
1.11	Date Functions	3		
1.12	String Functions	3	Chalk & Talk	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 implementation usage	**K1, K2, K3 & K4**	**PSO3, PSO5, PSO6**
CO 5	Write dynamic queries to demonstrate the concepts of RDBMS	**K2, K3 & K4**	**PSO4, PSO5, PSO6**

Mapping COs Consistency with PSOs

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

Mapping of 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

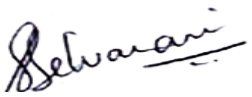
Note:

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

COURSE DESIGNER:

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

Forwarded By



(S.Selvarani)

NEW

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	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 Normalization Techniques.
4. Implement Queries using SELECT commands
5. Implement Queries using Set operations
6. Implement Queries using Joins.
7. Implement Queries using Grouping Functions.
8. Implement Queries using Sequence.
9. Implement Queries using Views and Indexes
10. Implement Queries using Cursors.
11. Implement Packages and Triggers.

12. Implement Stored Procedures.
13. Implement Cursors using PL/SQL program
14. Implement Packages and Triggers using PL/SQL program
15. Implement Date and String Functions.
16. Implement Constraints – Primary Key and Foreign Key.

WEB REFERENCES :

1. https://www.tutorialspoint.com/sql/sql–rdbms–concepts.htm
2. https://www.tutorialspoint.com/ruby/index.htm
3. https://www.javatpoint.com/ruby–tutorial

OER RESOURCES :

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

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
RELATIONAL DATABASE MANAGEMENT SYSTEMS				
1.1	DDL commands	10	Demo & Lab	LCD
1.2	DML commands	10	Chalk & Talk	PPT & White board
1.3	Normalization Techniques	10	Lecture	PPT & White board
1.4	SELECT commands			
1.5	Set operations	10	Demo & Lab	LCD
1.6	Joins	10	Chalk & Talk	PPT & White board
1.7	Grouping Functions	8	Lecture	PPT & White board
1.8	Sequence	5	Demo &	LCD

			Lab	
1.9	Views and Indexes	5	Chalk & Talk	PPT & White board
1.10	Cursors, Packages and Triggers	3	Lecture	PPT & White board
1.11	Date Functions	3		
1.12	String Functions	3	Chalk & Talk	PPT & White board
1.13	Primary Key and Foreign Key	3	Chalk & Talk	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 implementation usage	**K1, K2, K3 & K4**	**PSO3, PSO5, PSO6**
CO 5	Write dynamic queries to demonstrate the concepts of RDBMS	**K2, K3 & K4**	**PSO4, PSO5, PSO6**

Mapping COs Consistency with PSOs

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

Mapping of 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

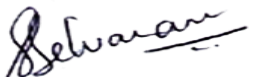
Note:

- 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

OLD-10%

SEMESTER – IV

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

COURSE DESCRIPTION

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

COURSE OBJECTIVES

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

PROGRAM LIST:

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

WEB REFERENCES :

1. https://www.w3schools.com/html/
2. https://www.tutorialspoint.com/vbscript/index.htm

OER REFERENCES :

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

COURSE CONTENTS & LECTURE SCHEDULE:

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

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 C0s with POs

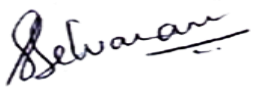
CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	3	1	1	1
CO2	1	1	3	1	2
CO3	1	1	3	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

Note:

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

COURSE DESIGNER:

1. **Staff Name : Ms. S. Selvarani**
2. **Forwarded By**



(S.Selvarani)

NEW

II B.C.A

SEMESTER – IV

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

COURSE DESCRIPTION

To provide the student with foundational programming knowledge and skills for application development on the Internet.

UNITS

UNIT I: STATIC WEB PAGE DEVELOPMENT

Basics of HTML: What is Internet Language?, Understanding HTML, Create a Web page, Linking to other Web Pages, Publishing HTML Pages, Text Alignment and Lists, Text Formatting Fonts Control, Email Links and link within a Page, Creating a Table, Creating HTML Forms, Custom Backgrounds and Colors.

UNIT II: CASCADING STYLE SHEETS

Introduction : CSS, Defining Style with HTML Tags, Features of Style Sheet, Style Properties, Style Classes, External Style Sheet

UNIT III: JAVASCRIPT

Introduction to JavaScript: Writing First Java Script, External JavaScript, Variables: Rules for variable names, Declaring the variable, Assign a value to a variable, Scope of variable, Using Operators, Control Statements, JavaScript loops, JavaScript Functions: Defining a Function, Returning value from function, User define function.

UNIT IV: 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 V: (6HRS)

DATABASE CONNECTIVITY: Introduction – Connecting Database – Retrieving data – Updating Data –Deleting Data.

List of Programmes:

1. Develop simple HTML pages using HTML lists
2. Develop simple HTML pages using HTML Links
3. Develop simple HTML pages using images
4. Develop simple HTML pages using Tables
5. Develop simple HTML pages using frames
6. Develop web pages with user interface using CSS
7. Develop web pages with Forms and its controls
8. Implement functions with JavaScript
9. Implement Event Handling using JavaScript
10. Implement form validation using JavaScript
11. Design and develop simple php applications
12. Illustrate Form Data Retrieval using PHP
13. Implement session & cookie management using PHP
14. Illustrate database and table creation using mysql
15. Develop web pages for data handling using PHP (Insert, Delete and Update)

TEXT BOOK:

1. "Web enabled commercial Application development using HTML, JAVA Script, DHTML and PHP" Ivan Bayross, 4thEdition, BPB Publications.

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
1.9	Implement Event Handling using JavaScript	10	Demo & Lab	PPT & White board
1.10	Implement form validation using JavaScript	10	Demo & Lab	Smart Board
1.11	Design and develop simple php applications	10	Lecture	LCD
1.12	Illustrate Form Data Retrieval using PHP	10	Discussion	Google classroom

1.13	Implement session & cookie management using PHP	10	Demo & Lab	LCD
1.14	Illustrate database and table creation using mysql	10	Demo & Lab	LCD
1.15	Develop web pages for data handling using PHP (Insert, Delete and Update)	10	Demo & Lab	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:

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

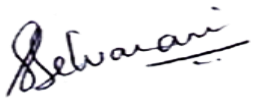
CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	3	1	1	1
CO2	1	1	3	1	2
CO3	1	1	3	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

Note:

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

COURSE DESIGNER:

1. **Staff Name : Ms. S. Selvarani**
2. **Forwarded By**



(S.Selvarani)

III B.C.A

OLD-10%

SEMESTER – V

For those who joined in 2019 onwards

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

COURSE DESCRIPTION

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

COURSE OBJECTIVES

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

UNITS

UNIT I: INTRODUCTION TO SOFTWARE ENGINEERING (12 HRS)

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

UNIT II: COST ESTIMATION (12 HRS)

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

UNIT III: SOFTWARE REQUIREMENTS DEFINITION (12 HRS)

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

UNIT IV: SOFTWARE TESTING (12 HRS)

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

UNIT V: TESTING TOOLS (12 Hrs)

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

UNIT VI: DYNAMISM

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

REFERENCE BOOKS:

1. Software Engineering Concepts, Richard Fairley, 2012, TMH.
2. Software Engineering Project Management, 2nd Edition**,** 2006,Wiley India.
3. Software testing principles , techniques and tools, M.G. LIMAYE , Tata McGraw Hill , 2009.
4. Software Testing Tools, Dr. K. V. K. K. Prasad, Dream Tech press, Edition 2012

WEB REFERENCES:

1. https://en.wikipedia.org/wiki/Software_engineering
2. https://www.tutorialspoint.com/software_engineering/index.htm
3. https://www.softwaretestingmaterial.com/software–testing/

OER REFERENCES:

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

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1: INTRODUCTION TO SOFTWARE ENGINEERING				
1.1	Definitions – Size Factors	3	Chalk & Talk	Black Board
1.2	Quality and Productivity Factors	3	Chalk & Talk	LCD
1.3	Planning the Development Process	3	Lecture	PPT & White board
1.4	Planning an Organizational Structure	3	Lecture	Smart Board
UNIT 2: COST ESTIMATION				
2.1	Software cost Factors	3	Chalk & Talk	Black Board
2.2	Software Cost Estimation Techniques	3	Chalk & Talk	LCD
2.3	Staffing-Level Estimation	3	Lecture	PPT & White board
2.4	Estimating Software Estimation Costs	3	Lecture	Smart Board
UNIT -3 SOFTWARE REQUIREMENTS DEFINITION				
3.1	The Software Requirements specification	3	Chalk & Talk	Black Board
3.2	Formal Specification Techniques	3	Chalk & Talk	LCD
3.3	Fundamental Design Concepts-Modules	2	Lecture	PPT
3.4	Modularization Criteria	2	Lecture	PPT

3.5	Data Flow Diagram – 0 LevelDFD – 1 Level DFD – 2 Level DFD.	2		
UNIT -4 SOFTWARE TESTING				
4.1	Introduction: Purpose–Productivity and Quality in Software	2	Chalk & Talk	Black Board
4.2	Testing Vs Debugging	2	Chalk & Talk	LCD
4.3	Model for Testing	2	Lecture	PPT & White board
4.4	Bugs–Types of Bugs	3	Lecture	Smart Board
4.5	Testing and Design Style.	3	Lecture	Black Board
UNIT -5 TESTING TECHNIQUES				
5.1	Software Testing tools an Overview: Need for automated Testing tools	2	Chalk & Talk	Black Board
5.2	Taxonomy of Testing tools–Functional – Regression testing tools	2	Chalk & Talk	LCD
5.3	Performance Testing Tools–Testing Management tools	3	Lecture	PPT & White board
5.4	Source code testing tools– How to select a testing tool	3	Lecture	Smart Board

INTERNAL – UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks	CIA Total	

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

END SEMESTER - UG

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

CIA

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

EVALUATION PATTERN

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

UG CIA Components

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

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

COURSE OUTCOMES

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

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

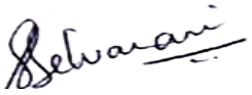
CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	3	1	1	1
CO2	1	1	3	1	2
CO3	1	1	3	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

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

COURSE DESIGNER:

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

Forwarded By



(S.Selvarani)

NEW

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	THEORY	5	5

COURSE DESCRIPTION

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

COURSE OBJECTIVES

6. To impart fundamental knowledge and skills in Software Engineering.
7. To think critically, clearly identifying and using evidence, criteria, and values in decision making process.
8. To develop Software engineering skills that will enable them to create high quality of software.
9. To gain the techniques and skills on how to use modern software testing tools to support software testing projects.
10. 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 and SOFTWARE COST FACTORS(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 – Data Flow Diagram – 0 Level DFD – 1 Level DFD – 2 Level DFD.

UNIT IV: SOFTWARE TESTING (12 HRS)

Introduction: Purpose–Productivity and Quality in Software–Testing Vs Debugging – Model for Testing–Bugs–Types of Bugs – Testing and Design Style.

UNIT V: TESTING TECHNIQUES (12 Hrs)

Flow Graphs and Path Testing – Achievable paths – Path instrumentation Application Transaction Flow Testing Techniques.

TEXT BOOKS:

1. Richard Fairley, ”Software Engineering Concepts”, 2012, TMH.
2. B.Beizer,“SoftwareTestingTechniques”,IIEdn.,DreamTechIndia,NewDelhi,2003.
3. K.V.K.Prasad,“SoftwareTestingTools”,DreamTech.India,NewDelhi,2005.

REFERENCE BOOKS:

1. “Software Engineering Project Management”, 2nd Edition**,** 2006, Wiley India.
2. Dr. K. V. K. K. Prasad, “Software Testing Tools”, Dream Tech press, 2012, Edition.

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https://en.wikipedia.org/wiki/Software_engineering
https://www.tutorialspoint.com/software_engineering/index.htm
https://www.softwaretestingmaterial.com/software%E2%80%93testing/

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	2	Lecture	PPT
3.4	Modularization Criteria	2	Lecture	PPT
3.5	Data Flow Diagram – 0 Level DFD – 1 Level DFD – 2 Level	2		

	DFD.			
UNIT -4 SOFTWARE TESTING				
4.1	Introduction: Purpose–Productivity and Quality in Software	2	Chalk & Talk	Black Board
4.2	Testing Vs Debugging	2	Chalk & Talk	LCD
4.3	Model for Testing	2	Lecture	PPT & White board
4.4	Bugs–Types of Bugs	3	Lecture	Smart Board
4.5	Testing and Design Style.	3	Lecture	Black Board
UNIT -5 TESTING TECHNIQUES				
5.1	Flow Graphs and Path Testing	2	Chalk & Talk	Black Board
5.2	Achievable paths	2	Chalk & Talk	LCD
5.3	Path instrumentation	3	Lecture	PPT & White board
5.4	Application Transaction Flow Testing Techniques.	3	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	Assignment	OBT/ PPT	35 Mks.	5 Mks.	40 Mks.	

	10 Mks.	10 Mks.	5 Mks.	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 %**

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

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

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

Mapping COs Consistency with PSOs

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

Mapping of C0s with POs

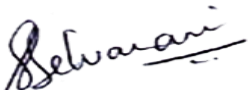
CO/ PSO	PO1	PO2	PO3	PO4	PO5
CO1	1	3	1	1	1
CO2	1	1	3	1	2
CO3	1	1	3	3	1
CO4	1	1	1	1	1
CO5	1	1	1	1	1

Note:
- 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

OLD-10%

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS /WEEK	CREDITS
USCA	19J5CC12	DOT NET PROGRAMMING	ELECTIVE 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

OER REFERENCE:

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

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	DOT NET PROGRAMMING			
1.1	simple web page using forms and controls	8	Demo & Lab	LCD
1.2	Create web pages with links and Custom Controls	8	Demo & Lab	LCD
1.3	Develop a web application with Validators	5	Lecture	PPT & White board
1.4	Develop a web application to demonstrate File upload control	5	Demo & Lab	Smart Board
1.5	Develop a web application to demonstrate Calendar control	5	Demo & Lab	LCD
1.6	Create login page to accept user name and password, check for authentication of the user.	5	Lecture	LCD
1.7	Develop a database application to view the details of students	2	Demo & Lab	LCD
1.8	Develop a database application to insert, modify, update and delete operations for Employee Payment	3	Demo & Lab	Smart Board
1.9	Develop an application using Datagrid to display records.	3	Demo & Lab	LCD
1.10	Create a web application for Room Reservations.	2	LCD	Demo & Lab

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	PSOs ADDRESSED

		BLOOM'S TAXONOMY)	
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

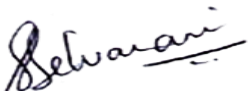
Note:

- 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

NEW

SEMESTER – V

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS /WEEK	CREDITS
USCA	19J5CC12	DOT NET PROGRAMMING	ELECTIVE 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. Create a simple web page using forms and controls
2. Create web pages with links and Custom Controls
3. Develop a web application with Validators
4. Develop a web application to demonstrate File upload control
5. Develop a web application to demonstrate Calendar control
6. Create login page to accept user name and password, check for authentication of the user.
7. Develop a database application to view the details of students
8. Develop a database application to insert, modify, update and delete operations for Employee Payment
9. Develop an application using Datagrid to display records.
10. Develop an application using Datagrid to add, edit and modify records
11. Create a web application for Room Reservations.
12. Develop a web application to create online newspaper

13. Develop a web application to create online Quiz
14. Develop a web application for E–Shopping.
15. Develop a web application for Feedback Form for Students.

WEB REFERENCES:

1. https://dotnet.microsoft.com/languages
2. https://www.tutorialspoint.com/asp.net/index.htm

OER REFERENCES:

https://nptel.ac.in/courses/106/125/1061789084/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	DOT NET PROGRAMMING			
1.1	simple web page using forms and controls	8	Demo & Lab	LCD
1.2	Create web pages with links and Custom Controls	8	Demo & Lab	LCD
1.3	Develop a web application with Validators	5	Lecture	PPT & White board
1.4	Develop a web application to demonstrate File upload control	5	Demo & Lab	Smart Board
1.5	Develop a web application to demonstrate Calendar control	5	Demo & Lab	LCD
1.6	Create login page to accept user name and password, check for authentication of the user.	5	Lecture	LCD
1.7	Develop a database application to view the details of students	2	Demo & Lab	LCD
1.8	Develop a database application to insert,	3	Demo & Lab	Smart

	modify, update and delete operations for Employee Payment			Board
1.9	Develop an application using Datagrid to display records.	3	Demo & Lab	LCD
1.10	Create a web application for Room Reservations.	2	LCD	Demo & Lab
1.11	Develop a web application to create online newspaper	2	LCD	Demo & Lab
1.12	Develop a web application to create online Quiz	3	PPT & White board	Lecture
1.13	Develop a web application for E–Shopping.	4	Smart Board	Demo & Lab
1.14	Develop a web application for Feedback Form for Students.	5	LCD	Demo & Lab

CIA

Scholastic **35**

Non Scholastic **5**

40

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

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

Mapping COs Consistency with PSOs

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

Mapping of C0s with POs

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

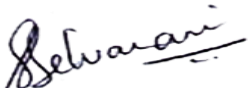
Note:

- 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

OLD-10%

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J6ME5	INTERNET OF THINGS	ELECTIVE	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: INTRODUCTION TO INTERNET OF THINGS(15 HRS)

Introduction –Definition & Characteristics of IOT - Physical Design of IoT – Things in IoT- IoT Protocols - Logical Design of IoT – IoT Functional Blocks – IoT Communication models – IoT Communication APIs - IoT enabling Technologies – Wireless sensor Networks – Cloud Computing – Big Data Analytics- Communication Protocols – Embedded Systems - IoT levels and deployment templates – IoT Level–1 - IoT Level–2 - IoT Level–3 - IoT Level–4 - IoT Level–5 - IoT Level–6

UNIT II: DOMAIN SPECIFIC IOTs(15 HRS)

Home Automation – Smart Lighting – Smart Appliances – Intrusion Detection – Smoke / Gas detectors - Cities – Smart parking – Smart Lighting – Smart Roads – Structural Health Monitoring – Surveillance – Emergency response- Environment – Weather monitoring – Air pollution monitoring – Noise pollution monitoring – Forest fire detection – River Flood detection - Energy – Smart Grids – Renewable energy system – prognostics-Retail – Inventory Management – smart Payments – Smart vending machines- Logistics- Route Generation & Scheduling – Fleet Tracking - Shipment monitoring – Remote vehicle Diagnostics - Agriculture – Smart Irrigation – Greenhouse Control - Industry – Machine Diagnosis & Prognosis – Indoor Air Quality Monitoring - Health & lifestyle- Health & Fitness Monitoring – Wearable Electronics.

UNIT III: **IOT AND M2M(15 HRS)**

Introduction – M2M – Difference between IoT and M2M – SDN and NFV for IoT – Software Defined Network – Network Function Virtualization – IoT System Management with NETCONF- YANG – Need for IoT Systems Management – Simple Network Management Protocol (SNMP) – Limitations of SNMP – Network Operator requirement – NETCONF – IoT systems Management with NETCONF – YANG – NETOPEER.

UNIT IV: **IOT PHYSICAL DEVICES &ENDPOINTS(15 HRS)**

What is an IoT Device - Basic building blocks of an IoT Device – Exemplary Device: Raspberry Pi – About the board – Linux on Raspberry Pi – Raspberry Pi interfaces – Serial – SPI - I2C - Programming Raspberry Pi with Python – Controlling LED with Raspberry Pi .

UNIT V:**PROTOTYPING &DATA ANALYTICS (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 Introduction – Apache Hadoop – MapReduce Programming Model - HadoopMapReduce Job Execution – MapReduce Job Execution Workflow - Hadoop Cluster Setup

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. ArshdeepBahga, Vijay Madisetti, "Internet of things: A Hands on Approach", ArshdeepBahga, Vijay Madisetti, 2014 Edition.
2. Marco Schwartz, "Internet of Things with the ArduinoYún", 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:INTRODUCTION TO INTERNET OF THINGS				

1.1	Introduction –Definition & Characteristics of IOT - Physical Design of IoT	1	Chalk & Talk	Black Board
1.2	Things in IoT- IoT Protocols - Logical Design of IoT – IoT Functional Blocks	2	Chalk & Talk	LCD
1.3	IoT Communication models – IoT Communication APIs - IoT enabling Technologies	2	Lecture	PPT & White board
1.4	Wireless sensor Networks – Cloud Computing – Big Data Analytics	2	Lecture	Smart Board
1.5	Communication Protocols – Embedded Systems - IoT levels and deployment templates	2	Lecture	Smart Board
1.6	IoT Level–1 - IoT Level–2	2	Lecture	Smart Board
1.7	IoT Level–3 - IoT Level–4	2	Lecture	Smart Board
1.8	IoT Level–5 - IoT Level–6	2	Lecture	Smart Board
UNIT 2: DOMAIN SPECIFIC IOTs				
2.1	Home Automation – Smart Lighting – Smart Appliances – Intrusion Detection – Smoke / Gas detectors - Cities – Smart parking	2	Chalk & Talk	Black Board
2.2	Smart Lighting – Smart Roads – Structural Health Monitoring – Surveillance – Emergency response- Environment – Weather monitoring	2	Chalk & Talk	LCD
2.3	Air pollution monitoring – Noise	2	Lecture	PPT &

	pollution monitoring – Forest fire detection – River Flood detection - Energy – Smart Grids – Renewable energy system			White board
2.4	prognostics-Retail – Inventory Management – smart Payments – Smart vending machines- Logistics- Route Generation & Scheduling	3	Lecture	Smart Board
2.5	Fleet Tracking - Shipment monitoring – Remote vehicle Diagnostics - Agriculture	2	Lecture	Smart Board
2.6	Smart Irrigation – Greenhouse Control - Industry – Machine Diagnosis & Prognosis – Indoor Air Quality Monitoring	2	Chalk & Talk	Black Board
2.7	Health & lifestyle- Health & Fitness Monitoring – Wearable Electronics.	2	Lecture	Smart Board
UNIT -3 IOT and M2M				
3.1	Introduction – M2M – Difference between IoT and M2M –	2	Chalk & Talk	Black Board
3.2	SDN and NFV for IoT – Software Defined Network - Network Function Virtualization	2	Chalk & Talk	LCD
3.3	IoT System Management with NETCONF- YANG – Need for IoT Systems Management	3	Lecture	PPT & White board
3.4	Simple Network Management	2	Lecture	Smart Board

	Protocol (SNMP) – Limitations of SNMP			
3.5	Network Operator requirement – NETCONF	2	Chalk & Talk	Black Board
3.6	IoT systems Management with NETCONF	2	Chalk & Talk	Black Board
3.7	YANG – NETOPEER.	2	Lecture	Smart Board
UNIT -4 IOT PHYSICAL DEVICES AND END POINTS				
4.1	What is an IoT Device - Basic building blocks of an IoT Device	2	Chalk & Talk	Black Board
4.2	Exemplary Device: Raspberry Pi	2	Chalk & Talk	LCD
4.3	About the board – Linux on Raspberry Pi	2	Lecture	PPT & White board
4.4	Raspberry Pi interfaces – Serial – SPI	2	Lecture	Smart Board
4.5	I2C - Programming Raspberry Pi with Python	3	Lecture	Black Board
4.6	Controlling LED with Raspberry Pi .	3	Lecture	Black Board
UNIT -5 DATA ANALYTICS FOR IOT				
5.1	Introduction – Apache Hadoop	3	Chalk & Talk	Black Board
5.2	MapReduce Programming Model	4	Chalk & Talk	LCD
5.3	HadoopMapReduce Job Execution	3	Lecture	PPT & White board
5.4	MapReduce Job Execution	4	Lecture	Smart Board

	Workflow - Hadoop Cluster Setup			

INTERNAL - UG

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

END SEMESTER - UG

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

CIA

Scholastic **35**

Non Scholastic **5**

40

EVALUATION PATTERN

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

UG CIA Components

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

The best out of two will be taken into account

COURSE OUTCOMES

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

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

Mapping COs Consistency with PSOs

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

Mapping of C0s with POs

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

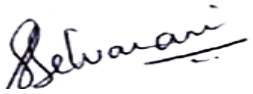
Note:

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

COURSE DESIGNER:

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

Forwarded By



(S.Selvarani)

NEW

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	ELECTIVE	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

5. To assess the vision and introduction of IoT.
6. To learn the evolution, principles, communications of internet
7. To understand building blocks of Internet of Things and characteristics
8. To discover the devices used in IoT.

UNITS

UNIT I: INTRODUCTION TO INTERNET OF THINGS(15 HRS)

Introduction –Definition & Characteristics of IOT - Physical Design of IoT – Things in IoT- IoT Protocols - Logical Design of IoT – IoT Functional Blocks – IoT Communication models – IoT Communication APIs - IoT enabling Technologies – Wireless sensor Networks – Cloud Computing – Big Data Analytics- Communication Protocols – Embedded Systems - IoT levels and deployment templates – IoT Level–1 - IoT Level–2 - IoT Level–3 - IoT Level–4 - IoT Level–5 - IoT Level–6

UNIT II: DOMAIN SPECIFIC IOTs(15 HRS)

Home Automation – Smart Lighting – Smart Appliances – Intrusion Detection – Smoke / Gas detectors - Cities – Smart parking – Smart Lighting – Smart

Roads – Structural Health Monitoring – Surveillance – Emergency response- Environment – Weather monitoring – Air pollution monitoring – Noise pollution monitoring – Forest fire detection – River Flood detection - Energy – Smart Grids – Renewable energy system – prognostics-Retail – Inventory Management – smart Payments – Smart vending machines- Logistics- Route Generation & Scheduling – Fleet Tracking - Shipment monitoring – Remote vehicle Diagnostics - Agriculture – Smart Irrigation – Greenhouse Control - Industry – Machine Diagnosis & Prognosis – Indoor Air Quality Monitoring - Health & lifestyle- Health & Fitness Monitoring – Wearable Electronics.

UNIT III: **IOT AND M2M(15 HRS)**

Introduction – M2M – Difference between IoT and M2M – SDN and NFV for IoT – Software Defined Network – Network Function Virtualization – IoT System Management with NETCONF- YANG – Need for IoT Systems Management – Simple Network Management Protocol (SNMP) – Limitations of SNMP – Network Operator requirement – NETCONF – IoT systems Management with NETCONF – YANG – NETOPEER.

UNIT IV: **IOT PHYSICAL DEVICES &ENDPOINTS(15 HRS)**

What is an IoT Device - Basic building blocks of an IoT Device – Exemplary Device: Raspberry Pi – About the board – Linux on Raspberry Pi – Raspberry Pi interfaces – Serial – SPI - I2C - Programming Raspberry Pi with Python – Controlling LED with Raspberry Pi .

UNIT V: **DATA ANALYTICS FOR IOT** **(15 HRS)**

Introduction – Apache Hadoop – MapReduce Programming Model - HadoopMapReduce Job Execution – MapReduce Job Execution Workflow - Hadoop Cluster Setup

TEXT BOOK:

1. ArshdeepBahga, Vijay Madisetti, “Internet of things: A Hands on Approach”,
2014 Edition.
Unit I – Chapter 1, Unit II – Chapter 2, Unit III - Chapter 3 & 4,

Unit IV – Chapter 7.1 to 7.6.1, Unit V – Chapter 10.1 to 10.2.4

REFERENCE BOOKS:

1. Marco Schwartz, "Internet of Things with the ArduinoYún", Packt Publishing, 2014.
2. David Boswarthick, Olivier Hersent, Omar Elloumi, "The Internet of Things: Key Applications and Protocols", Wiley Publication, 2015.
3. 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 REFERENCE :

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

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT 1:INTRODUCTION TO INTERNET OF THINGS				
1.1	Introduction –Definition & Characteristics of IOT - Physical Design of IoT	1	Chalk & Talk	Black Board
1.2	Things in IoT- IoT Protocols - Logical Design of IoT – IoT Functional Blocks	2	Chalk &Talk	LCD

1.3	IoT Communication models – IoT Communication APIs - IoT enabling Technologies	2	Lecture	PPT & White board
1.4	Wireless sensor Networks – Cloud Computing – Big Data Analytics	2	Lecture	Smart Board
1.5	Communication Protocols – Embedded Systems - IoT levels and deployment templates	2	Lecture	Smart Board
1.6	IoT Level–1 - IoT Level–2	2	Lecture	Smart Board
1.7	IoT Level–3 - IoT Level–4	2	Lecture	Smart Board
1.8	IoT Level–5 - IoT Level–6	2	Lecture	Smart Board
UNIT 2: DOMAIN SPECIFIC IOTs				
2.1	Home Automation – Smart Lighting – Smart Appliances – Intrusion Detection – Smoke / Gas detectors - Cities – Smart parking	2	Chalk & Talk	Black Board
2.2	Smart Lighting – Smart Roads – Structural Health Monitoring – Surveillance – Emergency response- Environment – Weather monitoring	2	Chalk & Talk	LCD
2.3	Air pollution monitoring – Noise pollution monitoring – Forest fire detection – River Flood detection - Energy – Smart Grids – Renewable energy system	2	Lecture	PPT & White board
2.4	prognostics-Retail – Inventory	3	Lecture	Smart

	Management – smart Payments – Smart vending machines- Logistics- Route Generation & Scheduling			Board
2.5	Fleet Tracking - Shipment monitoring – Remote vehicle Diagnostics - Agriculture	2	Lecture	Smart Board
2.6	Smart Irrigation – Greenhouse Control - Industry – Machine Diagnosis & Prognosis – Indoor Air Quality Monitoring	2	Chalk & Talk	Black Board
2.7	Health & lifestyle- Health & Fitness Monitoring – Wearable Electronics.	2	Lecture	Smart Board
UNIT -3 IOT and M2M				
3.1	Introduction – M2M – Difference between IoT and M2M –	2	Chalk & Talk	Black Board
3.2	SDN and NFV for IoT – Software Defined Network - Network Function Virtualization	2	Chalk & Talk	LCD
3.3	IoT System Management with NETCONF- YANG – Need for IoT Systems Management	3	Lecture	PPT & White board
3.4	Simple Network Management Protocol (SNMP) – Limitations of SNMP	2	Lecture	Smart Board
3.5	Network Operator requirement – NETCONF	2	Chalk & Talk	Black Board
3.6	IoT systems Management with	2	Chalk &	Black

	NETCONF		Talk	Board
3.7	YANG – NETOPEER.	2	Lecture	Smart Board
UNIT -4 IOT PHYSICAL DEVICES AND END POINTS				
4.1	What is an IoT Device - Basic building blocks of an IoT Device	2	Chalk & Talk	Black Board
4.2	Exemplary Device: Raspberry Pi	2	Chalk & Talk	LCD
4.3	About the board – Linux on Raspberry Pi	2	Lecture	PPT & White board
4.4	Raspberry Pi interfaces – Serial – SPI	2	Lecture	Smart Board
4.5	I2C - Programming Raspberry Pi with Python	3	Lecture	Black Board
4.6	Controlling LED with Raspberry Pi .	3	Lecture	Black Board
UNIT -5 DATA ANALYTICS FOR IOT				
5.1	Introduction – Apache Hadoop	3	Chalk & Talk	Black Board
5.2	MapReduce Programming Model	4	Chalk & Talk	LCD
5.3	HadoopMapReduce Job Execution	3	Lecture	PPT & White board
5.4	MapReduce Job Execution Workflow - Hadoop Cluster Setup	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

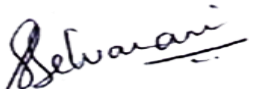
Note:

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

COURSE DESIGNER:

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

Forwarded By



(S.Selvarani)

III B.C.A

OLD-10%

SEMESTER – VI

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J6ME6	HUMAN COMPUTER INTERACTION	ELECTIVE	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: VIRTUAL REALITY AND AUGMENTED REALITY (12 HRS)

Human Factors in VR–Cybersickness in VR –Testbed Evaluation – VR Safety and Healthy Issues – Effects of VR on Society – Augmented Reality – Applications of AR – How AR Works – AR's Key Capabilities – Combining AR and VR.

TEXTBOOKS:

1. Artificial Intelligence – Elaine Rich, Kevin Knight – III Edition
   UNIT I – Chapter 1 and Chapter 2
   UNIT II – Chapter 3 and Chapter 4
2. GrigoreC.Burdea, Philippe Coiffet, "Virtual Reality Technology", Wiley Student Second Edition, Reprint 2014. ***(Study Material)***
   UNIT III – Chapter 1 and Chapter 4.1 & 4.2
   UNIT IV – Chapter 7
   UNIT V – Chapter 9

REFERENCES:

1. Dan Patterson W., Artificial Intelligence and Expert systems, PHI

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	VR Applications in Manufacturing	2	Chalk & Talk	Black Board

5.2	Virtual Prototyping	2	Chalk & Talk	LCD
5.3	VR in Robotics – Robot Programming	2	Lecture	PPT & White board
5.4	Robot Teleoperation – Information Visualization	2	Lecture	Smart Board
5.5	Oil Exploration – Well Management	2	Chalk & Talk	LCD
5.6	Volumetric Data Visualization	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. P.Renganayagi**

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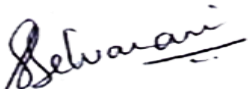

(S.Selvarani)

NEW

III B.C.A

SEMESTER – VI

For those who joined in 2021 onwards

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

COURSE DESCRIPTION

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

COURSE OBJECTIVES

5. To learn the methods of solving problems using Artificial Intelligence.
6. To have a basic proficiency in a traditional AI language Search Techniques
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UNITS

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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.

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UNIT V: EMERGING APPLICATIONS OF VR (12 HRS)

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

TEXTBOOKS:

3. Artificial Intelligence – Elaine Rich, Kevin Knight – III Edition
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2.7	Issues– The Frame	2	Lecture	Smart

	Problem..			Board
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3.2	Commercial VR Technology – VR becomes Industry	2	Chalk & Talk	LCD
3.3	Classic Components – Architecture	2	Lecture	PPT & White board
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INTERNAL - UG

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END SEMESTER - UG

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

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COURSE OUTCOMES

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CO 5	Apply the VR technology in different applications	**K2, K3 & K4**	**PSO8**

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

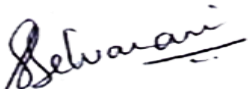
Note:

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

COURSE DESIGNER:

1. **Staff Name : Ms. P.Renganayagi**

Forwarded By



(S.Selvarani)