

# **FATIMA COLLEGE (AUTONOMOUS)**



**Re-Accredited with “A” Grade by NAAC (3<sup>rd</sup> Cycle)  
74<sup>th</sup> Rank in India Ranking 2020 (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 : 2020 - 2021**

## **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 94<sup>th</sup> in the All India NIRF Ranking in 2019 by MHRD.

## **VISION**

### **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**

- 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 21<sup>st</sup> 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 train in the cutting edge technologies in order to adapt the dynamic information technology world and to craft responsible computer professionals with headship traits and strong moral values.

## **MISSION OF THE DEPARTMENT**

To empower women by providing them unparalleled learning experience and to strengthen the strategic linkage with the industry

## **PROGRAMME EDUCATIONAL OBJECTIVES (PEO)**

A graduate of B.C.A programme after three years will be

<b>PEO 1</b>	Our graduates will be academic, digital and information literates, creative, inquisitive, innovative and desirous for the “more” in all aspects.
<b>PEO 2</b>	They will be efficient individuals and team performers, exhibiting progress, flexibility, transparency and accountability in their professional work
<b>PEO 3</b>	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
<b>PEO 4</b>	They will engage locally and globally evincing social and environmental stewardship, demonstrating civic responsibilities and employing right skills at the right

	moment
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## 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:

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

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

<b>GA 24</b>	Managerial Skills to Identify, Commend and tap Potentials
<b>III. ETHICAL COMPETENCE</b>	
<b>GA 25</b>	Integrity and be disciplined in bringing stability leading a systematic life promoting good human behaviour to build better society
<b>GA 26</b>	Honesty in words and deeds
<b>GA 27</b>	Transparency revealing one's own character as well as self-esteem to lead a genuine and authentic life
<b>GA 28</b>	Social and Environmental Stewardship
<b>GA 29</b>	Readiness to make ethical decisions consistently from the galore of conflicting choices paying heed to their conscience
<b>GA 30</b>	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

<b>PO 1</b>	Understand, analyze and apply the concepts of latest technologies to bring solutions to the problems in the areas of computer applications.
<b>PO 2</b>	Analyze and synthesize computing systems through quantitative and qualitative techniques along with effective verbal and non-verbal communication.
<b>PO 3</b>	Apply technical and professional skills practically to excel in providing solutions for solving complex real life problems satisfying industrial and societal needs.

<b>PO 4</b>	Understand & analyze the technical data through innovative methodologies with legal ethics to reach out actionable conclusions.
<b>PO 5</b>	To promote leadership skills and also as an individual on working with multi disciplinary projects using Modern computing tools and Open Source Technologies.
<b>PO 6</b>	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 to

<b>PSO 1</b>	To achieve significant understanding of theoretical and programming concepts in key areas of Computer Applications.
<b>PSO 2</b>	To expand and sharpen practical and problem solving skills to provide solutions to industry, society and business problems.
<b>PSO 3</b>	To apply modern practices and strategies in software project development using open source and other programming environments.
<b>PSO 4</b>	To inculcate the ability to analyze and interpret problems, make inferences from the resulting data and apply technical skills to solve real time problems.
<b>PSO 5</b>	To make graduates understand various professional, technical and ethical issues prevailing in the industry
<b>PSO 6</b>	To gain exposure in preventive, ethical hacking and security technologies in recent trends
<b>PSO 7</b>	To equip the students to meet the requirement of Corporate world and Industry standards



<b>PSO 8</b>	To engage in professional development and to pursue post graduate education in the fields of Information Technology and Computer Applications
<b>PSO 9</b>	To generate ideas of innovation and to identify, formulate and solve problems in software solutions, outsourcing services, public and private sectors
<b>PSO 10</b>	To engage the students technically on par with the societal and environmental responsibilities added with professional ethics

**FATIMA COLLEGE (AUTONOMOUS), MADURAI-18**

**DEPARTMENT OF BCA**

*For those who joined in June 2019 onwards*

**PROGRAMME CODE :USCA**

**PART - I - TAMIL / FRENCH / HINDI- 12 CREDITS**

**PART - I - TAMIL**

**Offered by The Research Centre of Tamil**

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRE DIT	CIA Mks	ESE Mks	TOT . MKs
1.	I	19TLC1	Language-Modern Literature nghJj;jkpo; - ,f;fhy ,yf;fpak;	5	3	40	60	100
2.	II	19TLC2	Language - Bakthi Literature nghJj;jkpo; - gf;jp ,yf;fpak;	5	3	40	60	100
3.	III	19TLC3	Language- Epic Literature nghJj;jkpo; - fhg;gpa ,yf;fpak;	5	3	40	60	100
4.	IV	19TLC4	Language-Sangam Literature nghJj;jkpo; - rq;f ,yf;fpak;	5	3	40	60	100

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRE DIT	CIA Mks	ESE Mks	TOT MKs
			<b>Total</b>	<b>20</b>	<b>12</b>	<b>160</b>	<b>240</b>	<b>400</b>

**PART - I - FRENCH**

**Offered by The Department of French**

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRE DIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19RLC1	PART 1 LANGUAGE FRENCH	5	3	40	60	100
2.	II	19RLC2	PART 1 LANGUAGE FRENCH	5	3	40	60	100
3.	III	19RLC3	PART 1 LANGUAGE FRENCH	5	3	40	60	100
4.	IV	19RLC4	PART 1 LANGUAGE FRENCH	5	3	40	60	100
			<b>Total</b>	<b>20</b>	<b>12</b>	<b>160</b>	<b>240</b>	<b>400</b>

**PART - I - HINDI**

**Offered by The Department of Hindi**

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRE DIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19DLC1	PART 1 LANGUAGE HINDI	5	3	40	60	100
2.	II	19DLC2	PART 1 LANGUAGE HINDI	5	3	40	60	100
3.	III	19DLC3	PART 1 LANGUAGE HINDI	5	3	40	60	100
4.	IV	19DLC4	PART 1 LANGUAGE HINDI	5	3	40	60	100

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRE DIT	CIA Mks	ESE Mks	TOT. MKs
			<b>Total</b>	<b>20</b>	<b>12</b>	<b>160</b>	<b>240</b>	<b>400</b>

**PART – II -ENGLISH – 12 CREDITS**

**Offered by The Research Centre of English**

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CRE DIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19E1LB1	BASIC COMMUNICATIVE ENGLISH	5	3	40	60	100
2.		19E1LI1	INTERMEDIATE COMMUNICATIVE ENGLISH	5	3	40	60	100
3.		19E1LA1	ADVANCED COMMUNICATIVE ENGLISH	5	3	40	60	100
4.	II	19E2LB2	ENGLISH COMMUNICATION SKILLS (BASIC)	5	3	40	60	100
5.		19E2LI2	ENGLISH FOR EMPOWERMENT (INTERMEDIATE)	5	3	40	60	100
6.		19E2LA2	ENGLISH FOR CREATIVE WRITING (ADVANCED)	5	3	40	60	100
7.	III	19ELC3	ENGLISH FOR DIGITAL ERA	5	3	40	60	100
8.	IV	19ELC4	ENGLISH FOR INTEGRATED	5	3	40	60	100

S. NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
			DEVELOPMENT					
			<b>Total</b>	<b>20</b>	<b>12</b>	<b>160</b>	<b>240</b>	<b>400</b>

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

**MAJOR CORE COURSES INCLUDING PRACTICALS : 60 CREDITS**

S. NO	SEM	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	I	19J1CC1	PROGRAMMING IN C	6	4	40	60	100
2.		19J1CC2	LAB IN C	6	3	40	60	100
3.	II	19J2CC3	OBJECT ORIENTED PROGRAMMING IN C++	6	4	40	60	100
4.		19J2CC4	LAB IN C++	6	3	40	60	100
5.	III	19J3CC5	OPERATING SYSTEMS	6	4	40	60	100
6.		19J3CC6	LAB IN RELATIONAL DATABASE MANAGEMENT SYSTEMS	6	3	40	60	100
7.	IV	19J4CC7	DATA STRUCTURES AND ALGORITHMS	6	4	40	60	100
8.		19J4CC8	LAB IN WEB	6	3	40	60	100

			PROGRAMMING					
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**ALLIED COURSES- 20 CREDITS**

S.NO	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	19J1ACG1	DISCRETE MATHEMATICS	5	5	40	60	100
2.	II	19J2ACG2	OPERATIONS RESEARCH	5	5	40	60	100
3.	III	19AC3ACJ3	PRINCIPLES OF FINANCIAL ACCOUNTING AND ACCOUNTING PACKAGE	5	5	40	60	100
4.	IV	19J4AC4	DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION	5	5	40	60	100

**PART – IV – 20 CREDITS**

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

S. No	SEM.	COURSE CODE	COURSE TITLE	HR S	CRE DIT	CIA Mks	ESE Mks	TOT. Mks
1.	I	19G1VE	Value Education (Including Meditation in Action Movement)	1	1	40	60	100
2.		19J1NME	NON MAJOR ELECTIVE – I MULTIMEDIA LAB – FLASH	2	2	40	60	100
3.	II	19G2VE	Value Education	1	1	40	60	100
4.		19J2NME	NON MAJOR ELECTIVE – II MULTIMEDIA LAB – FLASH	2	2	40	60	100

<b>S. No</b>	<b>SEM.</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>HR S</b>	<b>CRE DIT</b>	<b>CIA Mks</b>	<b>ESE Mks</b>	<b>TOT. Mks</b>
5.	III	19G3EE	Environmental Education	1	1	40	60	100
6.		19J3SB1	SKILL BASED – I QUANTITATIVE APTITUDE	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

	SUB.CODE	SUBJECT TITLE	H RS	CRE DIT	INTERNAL				EXT.	TOT.
					T	A	Q	AGG		
V	J5CC11	COMPUTER NETWORKS	5	5	15	5	5	25	75	100
	J5CC12	JAVA PROGRAMMING	5	5	15	5	5	25	75	100
	J5CC13	LAB V - JAVA PROGRAMMING	6	4				40	60	100
	J5CC14	LAB VI - DOT NET PROGRAMMING	5	4				40	60	100
	J5ME1 J5ME2	MAJOR ELECTIVE - I DOT NET PROGRAMMING COMPUTER GRAPHICS	5	5	15	5	5	25	75	100
	J5SB3	SKILL BASED - III CORELDRAW	2	2				50	50	100
	J5SB4	SKILL BASED - IV PHP	2	2				50	50	100
		<b>TOTAL</b>	<b>30</b>	<b>27</b>						<b>700</b>
VI	J6CC15	PYTHON	5	5	15	5	5	25	75	100
	J6CC16	LAB VII - PYTHON LAB	6	4				40	60	100
	J6ME3 J6ME4	MAJOR ELECTIVE - II ARTIFICIAL INTELLIGENCE DATA MINING	5	5	15	5	5	25	75	100
	J6ME5 J6ME6	MAJOR ELECTIVE - III CLOUD COMPUTING MOBILE COMPUTING	5	5	15	5	5	25	75	100
	J6SB5	SKILL BASED - V ANIMATION TECHNIQUE - I - ALICE	2	2				50	50	100
	J6SB6	SKILL BASED - VI LINUX	2	2				50	50	100
	J6CC17	PROJECT	5	4				40	60	100
		<b>TOTAL</b>	<b>30</b>	<b>27</b>						<b>700</b>
	<b>GRAND TOTAL</b>		<b>140</b>						<b>1400</b>	

**PART – V – 1CREDIT****OFF-CLASS PROGRAMME****ALL PART-V****Shift I**

- Physical Education
- NSS
- NCC
- Women Empowerment Cell
- AICUF

**Shift II**

- Physical Education
- Rotaract
- Women Empowerment Cell
- AICUF
- Youth Red Cross / NSS

**Kindly retain your respective Part V**

**OFF-CLASS PROGRAMME****ADD-ON COURSES**

<b>COURSE CODE</b>	<b>Courses</b>	<b>Hrs.</b>	<b>Credits</b>	<b>Semester in which the course is offered</b>	<b>CIA Mks</b>	<b>ES E Mks</b>	<b>Total Marks</b>
	<b>COMPUTER APPLICATIONS</b> (offered by The department of PGDCA for Shift I)	40	2	I & II	40	60	100
	<b>ONLINE SELF LEARNING COURSE-</b> Foundation Course for Arts	40	3	I	50	-	50



<b>COUR SE CODE</b>	<b>Courses</b>	<b>Hrs.</b>	<b>Credits</b>	<b>Semester in which the course is offered</b>	<b>CIA Mks</b>	<b>ES E Mk s</b>	<b>Tota l Mar ks</b>
	<b>ONLINE SELF LEARNING COURSE-</b> Foundation Course for Science	40	3	II	50	-	50
	<b>ETHICAL STUDIES-</b> Value Education	15	2	III-VI	50 each Sem este r	-	100
	<b>HUMAN RIGHTS</b>	15	2	V	-	-	100
	<b>OUTREACH PROGRAMME-</b> Reach Out to Society through Action <b>ROSA</b>	100	3	V & VI	-	-	100
	<b>PROJECT</b>	30	4	VI	40	60	100
	<b>READING CULTURE</b>	10/Semes ter	1	II-VI	-	-	-
	<b>MOOC COURSES</b> (Depart ment Specific Courses/any other courses) * Students can opt other than the listed course from UGC-SWAYAM UGC / CEC	-	Minim um 2 Credits	-	-	-	
	<b>TOTAL</b>		22 +				

**EXTRA CREDIT COURSE**

<b>Course Code</b>	<b>Courses</b>	<b>Hrs.</b>	<b>Credits</b>	<b>Semester in which the course is offered</b>	<b>CIA Mks</b>	<b>ESE Mks</b>	<b>Total Marks</b>
19UGSLJ1	<b>SELF LEARNING COURSE for ADVANCED LEARNERS (offered for III UG)</b>	-	-	V	40	60	100

**OFF CLASS PROGRAMMES**

**19UGVAJ1 - Crash Course  
Android Application Development**

**19UGVAJ2 - Crash Course  
E-Content Development**

**19UGVACJ1 - Certificate Course  
Visual Basic – (Only for First Years – Compulsory)**

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

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

**COURSE DESCRIPTION**

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

**COURSE OBJECTIVES**

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

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

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

**UNIT II: CONTROL STATEMENTS AND ARRAYS (18HRS)**

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

**UNIT III: FUNCTIONS AND POINTERS (18HRS)**

Functions – Declaration – Definition – Categories – Pointers Declaration – Passing Pointer to Function – Passing Function to another Function

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

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

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

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

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

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

**REFERENCES:**

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

**WEB REFERNCES :**

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

**COURSE OUTCOMES**

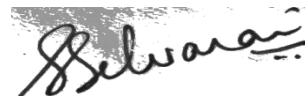
On the successful completion of the course, students will be able to:

<b>NO.</b>	<b>COURSE OUTCOMES</b>
CO 1	Acquire basic understanding of C programming
CO 2	Illustrate how arrays and strings are implemented in C
CO 3	Utilize the knowledge of Functions and Pointers
CO 4	Analyze the memory management concept in C using structure and Unions
CO 5	Outline the file operations in C

**COURSE DESIGNER:**

1. Staff Name : Dr. G. Preetha

**Forwarded By**



**HOD'S Signature  
& Name**

**I B.C.A**  
**SEMESTER – I**

*For those who joined in 2019 onwards*

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

**COURSE DESCRIPTION**

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

**COURSE OBJECTIVES**

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

**PROGRAM LIST:**

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

**WEB REFERENCES :**

1. <https://www.tutorials.com/cprogramming/>
2. <https://www.cprogramming.com/tutorial/c-tutorial.html>

**COURSE OUTCOMES**

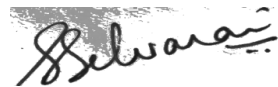
On the successful completion of the course, students will be able to:

<b>NO.</b>	<b>COURSE OUTCOMES</b>
CO 1	Acquire basic understanding of C programming
CO 2	Illustrate how arrays and strings are implemented in C
CO 3	Utilize the knowledge of Functions and Pointers
CO 4	Analyze the memory management concept in C using structure and Unions
CO 5	Outline the file operations in C

**COURSE DESIGNER:**

1. Staff Name : Dr. G. Preetha

**Forwarded By**



**HOD'S Signature  
& Name**

**I B.C.A**  
**SEMESTER – I**

*For those who joined in 2019 onwards*

<b>PROGRAMME CODE</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CATEGORY</b>	<b>HRS/ WEEK</b>	<b>CREDITS</b>
USCA	19J1NME	NON MAJOR ELECTIVE – I MULTIMEDIA LAB – FLASH	PRACTICAL	2	2

**COURSE DESCRIPTION**

This course helps to become familiar with the elements and tools in Flash that is used to create interactive animated media such as motion graphics, videos, presentations and websites.

**COURSE OBJECTIVES**

1. To Develop Multimedia programming skills using flash.
2. To Create, manipulate, and edit text and graphics to obtain desired graphical outcomes.
3. To Design, edit and manipulate animation using several animation tools and techniques.

**PROGRAM LIST:**

1. Understanding Flash Environment (Stage, Tools, Movie, Timeline)
2. Working with Movie
3. Working with Tools and its Properties
4. Drawing Pictures from Scratch
5. Importing Pictures
6. Animation (Key Frame, Straight Line, User Defined Path)
7. Creating Buttons, Images & Movie Clips (Adding it to Library)
8. Adding Special Effects (Zooming, Rotating, Alpha, Tint, etc)
9. Morphing, Masking
10. Adding Sound and Publishing in the Web



**WEB REFERNECES :**

1. <https://www.scranton.edu/academics/ctle/tutorials/technology/flash.shtml>
2. <http://www.flashkit.com/tutorials/>

**COURSE OUTCOMES**

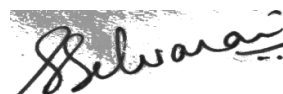
On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES
CO 1	Apply tweens and articulated motions to morph shapes
CO 2	Design, create and edit flash based navigation menus and interactive movies
CO 3	Utilize flash components to create interactivity
CO 4	Demonstrate load, control and remove movie clips and masks in movie content
CO 5	Utilize and understand different sounds and sound formats in flash movies
C06	Publish flash movies in numerous formats and contexts in websites

**COURSE DESIGNER:**

1. Staff Name : Ms. A. Punitha Rosline

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& Name**

**I B.C.A**  
**SEMESTER – II**

*For those who joined in 2019 onwards*

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

**COURSE DESCRIPTION**

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

**COURSE OBJECTIVES**

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

**UNITS**

**UNIT I: INTRODUCTION TO C++**

**(18 HRS)**

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

**UNIT II: FUNCTIONS IN C++**

**(18 HRS)**

Functions in C++: The Main Function – Function Prototyping – Call by Reference – Return by reference Inline function – Default Arguments –

Constant arguments – Recursion – Function Overloading – Friend and Virtual functions – Classes and Objects: Introduction – C Structures Revisited Specifying a class – Defining Member functions – A C++ Program with Class – Making an Outside function Inline – Nesting of member functions – Private member functions – Arrays within a class – Memory allocation for objects – Static data members – Static member functions – Array of Objects – Objects as function Arguments – Friendly functions – Returning Objects

### **UNIT III: CONSTRUCTORS AND DESTRUCTORS**

**(18 HRS)**

Constructors and Destructors: Constructors – Parameterized Constructors – Multiple Constructors in Class – constructors with default arguments – Dynamic initialization of objects – copy constructors – Dynamic Constructors – const Objects – Destructors. Operator overloading and type conversion: Defining operator overloading – overloading unary operators – overloading binary operators – using friend function.

### **UNIT IV: INHERITANCE**

**(18 HRS)**

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

### **UNIT V: FILES**

**(18 HRS)**

Working with Files: Classes for file stream operations – opening and closing files – detecting end – of – file – More about Open (): file modes – file pointers and their manipulations – sequential I/P and O/P operations – updating a file: Random Access – Error handling during file operations.

### **UNIT VI: DYNAMISM**

Command Line Arguments – Dynamic Constructor in C++ – C++Projects – Diamond Problem in Inheritance – Standard Template Library (STL)

**REFERENCE BOOKS:**

1. E Balagurusamy, Object Oriented Programming with C++, VI Edition, Tata McGraw – Hill, 2016
2. Alfred V Aho, John E Hopcroft, Jeffrey D Ullman; Data Structures and Algorithms, Pearson Education, 2013

**WEB REFERNECES :**

1. <https://www.tutorialspoint.com/cplusplus>
2. <https://www.cplusplus.com>
3. <https://www.javapoint.com/cpp-tutorial>

**COURSE OUTCOMES**

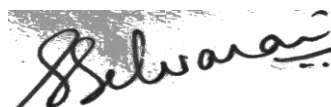
On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES
CO 1	Assess the object – oriented concepts in C++
CO 2	Illustrate the usage of Functions in C++
CO 3	Analyze advanced features of C++ specifically stream I/O and overloading
CO 4	Demonstrate on Inheritance and Virtual Classes
CO 5	Outline the file operations in C++

**COURSE DESIGNER:**

1. Staff Name : Dr. G. Preetha

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Academic Council 28.3.2019

**I B.C.A**  
**SEMESTER – II**

*For those who joined in 2019 onwards*

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

**COURSE DESCRIPTION**

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

**COURSE OBJECTIVES**

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

**PROGRAM LIST:**

1. Write a C++ Program to implement Conditional statements.
2. Write a C++ Program to implement looping statements.
3. Write a C++ Program to implement arrays.
4. Write a C++ Program to implement Classes and objects.
5. Write a C++ Program to implement array of objects.
6. Write a C++ Program to implement constructor and destructor.
7. Write a C++ Program to implement Unary Operator overloading.
8. Write a C++ Program to implement Binary Operator overloading.
9. Write a C++ Program to implement Inheritance.
10. 10. Write a C++ Program using Files

**WEB REFERENCES :**

1. <https://www.tutorialspoint.com/cplusplus>
2. <https://www.cplusplus.com>

**COURSE OUTCOMES**

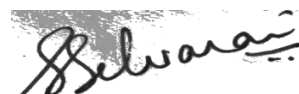
On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES
CO 1	Read, understand and trace the execution of programs written in C++ language
CO 2	Demonstrate class and object functions
CO 3	Assess operator overloading and function overloading to specific problem definition
CO 4	Demonstrate file operations in C++.
CO 5	Write C++ code to demonstrate each concept

**COURSE DESIGNER:**

1. Staff Name : Dr. G. Preetha

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**SEMESTER – II**

*For those who joined in 2019 onwards*

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
USCA	19J2NME	NON MAJOR ELECTIVE – II MULTIMEDIA LAB – FLASH	PRACTICAL	2	2

**COURSE DESCRIPTION**

This course helps to become familiar with the elements and tools in Flash that is used to create interactive animated media such as motion graphics, videos, presentations and websites.

**COURSE OBJECTIVES**

4. To Develop Multimedia programming skills using flash.
5. To Create, manipulate, and edit text and graphics to obtain desired graphical outcomes.
6. To Design, edit and manipulate animation using several animation tools and techniques.

**PROGRAM LIST:**

1. Understanding Flash Environment (Stage, Tools, Movie, Timeline)
2. Working with Movie
3. Working with Tools and its Properties
4. Drawing Pictures from Scratch
5. Importing Pictures
6. Animation (Key Frame, Straight Line, User Defined Path)
7. Creating Buttons, Images & Movie Clips (Adding it to Library)
8. Adding Special Effects (Zooming, Rotating, Alpha, Tint, etc)
9. Morphing, Masking
10. Adding Sound and Publishing in the Web

**WEB REFERENCES :**

1. <https://www.scranton.edu/academics/ctle/tutorials/technology/flash.shtml>
2. <http://www.flashkit.com/tutorials/>

## COURSE OUTCOMES

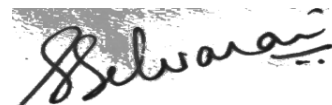
On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES
CO 1	Apply tweens and articulated motions to morph shapes
CO 2	Design, create and edit flash based navigation menus and interactive movies
CO 3	Utilize flash components to create interactivity
CO 4	Demonstrate load, control and remove movie clips and masks in movie content
CO 5	Utilize and understand different sounds and sound formats in flash movies
C06	Publish flash movies in numerous formats and contexts in a

### COURSE DESIGNER:

1. Staff Name : Ms. A. Punitha Rosline

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**II B.C.A**  
**SEMESTER – III**

*For those who joined in 2019 onwards*

<b>PROGRAMME CODE</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CATEGORY</b>	<b>HRS</b>	<b>CREDITS</b>
USCA	19J3CC5	OPERATING SYSTEMS	LECTURE	90	4

**COURSE DESCRIPTION**

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

**COURSE OBJECTIVES**

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

**UNITS**

**UNIT I: PROCESSES**

**(18 HRS)**

Introduction: Definition, Main frame System, Multiprocessor System, Distributed systems – Process: Process concept, Process scheduling.

**UNIT II: CPU SCHEDULING, PROCESS SYNCHRONIZATION**

**(18 HRS)**

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

**UNIT III: DEADLOCK****(18 HRS)**

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

**UNIT IV: MEMORY MANAGEMENT****(18 HRS)**

Background – Swapping, Contiguous Memory Allocations, Paging, Segmentation, Segmentation with paging. Background – demand paging – page replacement algorithms – allocation of frames – thrashing

**UNIT V: FILESYSTEM CONCEPTS****(18 HRS)**

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

**UNIT VI: DYNAMISM**

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

**REFERENCE BOOKS:**

1. Deitel H.M, Operating System, 7th Edition, Pearson Education, 1996
2. Silberschatz Galvin Gagne, Operating System Concept, VI Edition, John Wiley's Sons, 2010.
3. Operating System, Concept & Design, II Edition,2001 TATA McGraw – Hill.
4. Abraham Silberschatz, Peter Baer Galvin, Operating System Concepts, VII Edition ,2014.

**WEB REFERENCES :**

1. <http://Williamstallings.com/os/animations>
2. [https://www.tutorial.com/operating\\_system/](https://www.tutorial.com/operating_system/)

**COURSE OUTCOMES**

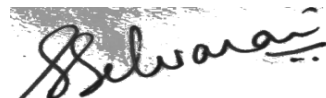
On the successful completion of the course, students will be able to:

<b>NO.</b>	<b>COURSE OUTCOMES</b>
CO 1	Outline the structure of OS, basic architectural components
CO 2	Analyze on the different scheduling algorithms and critical section problems
CO 3	Critique device and resource management techniques by concentrating on deadlocks
CO 4	Identify and know about memory management techniques
CO 5	Interpret the mechanisms adopted for file sharing in distributed Applications

**COURSE DESIGNER:**

1. Staff Name : Ms. A. Punitha Rosline

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

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

**COURSE DESCRIPTION**

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

**COURSE OBJECTIVES**

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

**PROGRAM LIST**

1. Implement Queries using DDL commands
2. Implement Queries using DML commands
3. Implement Queries using SELECT commands
4. Implement Queries using Set operations
5. Implement Queries using Joins.
6. Implement Queries using Grouping Functions.
7. Implement Queries using Sequence.
8. Implement Queries using Views and Indexes
9. Implement Queries using Cursors.
10. Implement Packages and Triggers.

**WEB REFERENCES :**

1. <https://www.tutorialspoint.com/sql/sql-rdbms-concepts.htm>
2. <https://www.tutorialspoint.com/ruby/index.htm>

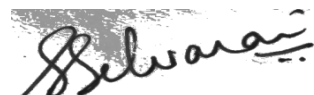
**COURSE OUTCOMES**

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

<b>NO.</b>	<b>COURSE OUTCOMES</b>
CO 1	Critique SQL commands to create tables and indexes
CO 2	Apply DDL and DML commands in real time applications
CO 3	Understand the needs of triggering applications
CO 4	Disseminate knowledge of RDBMS and SQL, both in terms of design and implementation usage
CO 5	Write dynamic queries to demonstrate the concepts of RDBMS

**COURSE DESIGNER:**

1. Staff Name : Ms. S. Selvarani

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

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

**COURSE DESCRIPTION**

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

**COURSE OBJECTIVES**

1. It is the language that managers use to communicate with the terms of accounting.
2. The firm's financial and economic information can be shared to external parties such as shareholders and creditors.
3. It tells how to work with Journals, Ledgers and Cash Flow Statements

**UNITS**

**Unit 1: Principles of Accounting (15 HRS)**

Principles of Accounting –Accounting Concepts & Conventions– Double entry system of book-keeping

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

Journal – Ledger–Subsidiary books – Trial balance

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

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

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

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

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

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

**Text Book:**

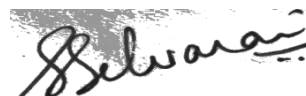
1. Advanced Accountancy, T.S.Reddy&A.Murthy,Margham publications, 1st edition,2007

**Reference Books:**

1. R.L. Gupta and Radhaswamy – Advanced Accountancy – Sulthan Chand and sons – New Delhi – 110002.
2. Jain, S.P.Jain and K.L. Narang – Advanced Accountancy – Kalyani publishers – New Delhi – 110002.
3. Arulanandam and Raman – Advanced Accountancy – “Himalaya Publishing house” – Mumbai –400004.

**COURSE DESIGNER:**

1. Staff Name : Dr. N. Arasammal

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

<b>PROGRAMME CODE</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CATEGORY</b>	<b>HRS / WEEK</b>	<b>CREDITS</b>
USCA	19J3SB1	SKILL BASED – I QUANTITATIVE APTITUDE	LECTURE	2	2

**COURSE DESCRIPTION**

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

**COURSE OBJECTIVES**

1. To judge a candidate's capability in problem solving
2. To analyze and make sense of the data given in various representation
3. To understand statements and making sense of them using logic and establishing theory.
4. To solve critical problems in competitive examinations

**LIST OF PROBLEMS**

1. Problems on Numbers
2. Problems on Ages
3. Time and Work
4. Time and Distance
5. Simple Interest
6. Permutation and Combination
7. Odd Man Out & Series
8. Logical Sequence of words
9. Blood Relations Test
10. Series Completion
11. Mirror Images.



**WEB REFERENCES :**

1. <https://www.javatpoint.com/reasoning>
2. <https://www.toppr.com/guides/quantitative-aptitude/>

**COURSE OUTCOMES**

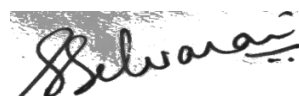
On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES
CO 1	Apply quantitative techniques to solve variety of problems
CO 2	Perform statistical analysis to interpret information
CO 3	Apply the aptitude tricks, shortcuts and formulas
CO 4	Acquire clear understanding on easily solving the reasoning
CO 5	Focuses in clearing the competitive, Campus and entrance online tests

**COURSE DESIGNER:**

1. Staff Name : Ms. S. Selvarani

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

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J4CC7	DATA STRUCTURES AND ALGORITHMS	LECTURE	90	4

**COURSE DESCRIPTION**

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

**COURSE OBJECTIVES**

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

**UNITS**

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

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

**UNIT II: Trees (18 HRS)**

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

**UNIT III: Sets and Sorting Schemes (18 HRS)**

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

**UNIT IV: Directed and Undirected Graphs (18 HRS)**

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

**UNIT V: Algorithm Analysis Techniques (18 HRS)**

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

**UNIT VI: DYNAMISM**

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

**REFERENCE BOOKS:**

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

**WEB REFERENCES :**

1. <https://www.w3schools.in/data-structures-tutorial/intro>
2. <https://www.tutorialride.com/data-structures/data-structures-tutorial.htm>
3. <https://www.geeksforgeeks.org/fundamentals-of-algorithms/>

**COURSE OUTCOMES**

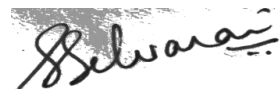
On the successful completion of the course, students will be able to:

<b>NO.</b>	<b>COURSE OUTCOMES</b>
CO 1	Assess the concept of various data structures and the logic behind their workings
CO 2	Compare various ADT
CO 3	Utilize trees and graphs in real time application
CO 4	Compare the various Directed and Undirected Graphs
CO 5	Analyze case studies to implement and comment about performance of algorithms

**COURSE DESIGNER:**

1. Staff Name : Ms. A. Punitha Rosline

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**& Name**

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

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

**COURSE DESCRIPTION**

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

**COURSE OBJECTIVES**

1. 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.
2. Create website for online shopping.
3. Create website for online NewsPaper.
4. Prepare a personal bio – data.
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>

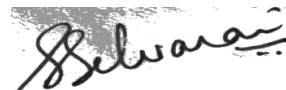
**COURSE OUTCOMES**

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

<b>NO.</b>	<b>COURSE OUTCOMES</b>
CO 1	Select and apply markup languages for processing and presenting information in web pages.
CO 2	Design and implement dynamic websites with good aesthetic sense of designing.
CO 3	Use fundamental skills to maintain web server services required to host a website.
CO 4	Prepare the students to write a well formed DB connection
CO 5	Create Webpages for any application

**COURSE DESIGNER:**

1. Staff Name : Ms. A. Punitha Rosline

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& Name**

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

<b>PROGRAMME CODE</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CATEGORY</b>	<b>HRS</b>	<b>CREDITS</b>
USCA	19J4AC4	DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION	LECTURE	5	5

**COURSE DESCRIPTION**

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

**COURSE OBJECTIVES**

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

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

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

**Unit II: Memory Units and Storage Devices (12 HRS)**

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

**Unit III: Number System and Conversions (12 HRS)**

Number systems – Decimal Systems – Bi-stable Devices – Counting in the Binary Systems – Binary Addition and Subtraction – Binary Multiplication and Division – Converting Decimal Numbers to Binary –Negative numbers –

Use of complements to Represent negative numbers – complements in other number systems – Binary number complements – BCD representation – Octal and hexadecimal number systems.

**Unit IV: Boolean Algebra and Gates (12 HRS)**

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

**Unit V: Logic Design (12 HRS)**

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

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

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

**REFERENCES:**

1. Alexis Leon & Mathews Leon, Introduction to Computers
2. Thomas C.Bartee, Digital Computer Fundamentals, VI Edition, Tata-McGrawHill
3. V.Carl Hamacher & Zvonko Gvranesic Safwat G. Zaky, Computer Organization, III Edition, Prentice Hall
4. M. Morris Mano, Computer System Architecture, III Edition, Prentice-Hall India

**WEB REFERNCES :**

1. <https://www.geeksforgeeks.org/computer-organization-and-architecture-tutorials/>
2. <https://www.geeksforgeeks.org/digital-electronics-logic-design-tutorials/>



**COURSE OUTCOMES**

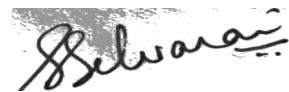
On the successful completion of the course, students will be able to:

<b>NO.</b>	<b>COURSE OUTCOMES</b>
CO 1	Identify the anatomy of computers
CO 2	Compare the various memory units along with the storage devices
CO 3	Demonstrate and perform computer arithmetic operations on integer and real numbers
CO 4	Analyze the performance of Gates
CO 5	Conceptualize the basics of organizational and architectural issues of a digital computer with logics

**COURSE DESIGNER:**

1. Staff Name : Dr. G. Preetha

**Forwarded By**



**HOD'S Signature  
& Name**

**II B.C.A**  
**SEMESTER – IV**

*For those who joined in 2019 onwards*

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

**COURSE DESCRIPTION**

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

**COURSE OBJECTIVES**

1. To use the Ribbon interface and different options the Ribbon offers
2. To understand the formatting features which enhances the overall appearance
3. To create basic charts that helps to help convey the details of analyzed data.
4. To manage spreadsheet data in table format, an excellent feature to administrate large sets of data.

**UNIT I : EXCEL TO EXCELLENCE**

**(6 HRS)**

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

**UNIT II: VISUALIZING DATA USING CHARTS (6 HRS)**

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

**UNIT III : ADVANCED FUNCTIONS (6 HRS)**

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

**UNIT IV : DATA ANALYSIS AND CONSOLIDATION (6 HRS)**

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

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

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

**REFERENCE BOOKS:**

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

**WEB REFERENCES :**

1. <https://spreadsheeto.com/>
2. [https://www.udemy.com/course/excel\\_quickstart/](https://www.udemy.com/course/excel_quickstart/)

**COURSE OUTCOMES**

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

NO.	COURSE OUTCOMES
CO 1	Customize the Ribbons of Spreadsheets
CO 2	Perform statistical analysis using charts
CO 3	Apply the aptitude tricks, shortcuts and formulas
CO 4	Compare all the functions available
CO 5	Focuses on the protection of data in spreadsheets

**COURSE DESIGNER:**

1. Staff Name : Ms. S. Selvarani

**Forwarded By**



**HOD'S Signature  
& Name**

**J5CC11- COMPUTER NETWORKS****HRS/WEEK: 5****CREDITS: 5**

**Objective:** To become an efficient administrator in networking side, the concept of data communication is being introduced.

**UNIT I: INTRODUCTION****[15 HRS]**

Uses of Computer Networks : Business Applications –Home Applications – Mobile Users– Social Issues.

Network Hardware : Local Area Networks – Metropolitan Area Networks – Wide Area Networks –Wireless Networks – Home Networks – Internetworks.

Network Software: Protocol Hierarchies – Connection-oriented and connectionless services –Reference Models: The OSI Reference Model – The TCP/IP Reference Model – A Comparison of the OSI and TCP/IP Reference Model.

**UNIT II: PHYSICAL LAYER****[15 HRS]**

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

**UNIT III: DATA LINK LAYER****[15 HRS]**

The Data link Layer Design Issues : Services provided to the Network Layer – Framing – Error Control – Flow Control.

Error Detection and correction: Error-Correcting Codes – Error-Detecting Codes .

**UNIT IV: NETWORK LAYER****[15 HRS]**

Routing Algorithms: The optimality principle, shortest path routing, Multicast Routing.

Internetworking: Concatenated Virtual Circuits –A Connectionless Internetworking – Tunneling – Fragmentation.

**UNIT V: APPLICATION LAYER, NETWORK SECURITY [15 HRS]**

Domain Name System: The DNS Namespace, Resource Records, Name Servers.

Electronic Mail: Architecture and Services – The User Agent – Message Formats – Message Transfer – Final Delivery.

Web Security: Threats – Secure Naming – SSL-The Secure Socket Layer – Mobile Code Security

**Self Study:** Uses of Computer Networks: Business Applications – Home Applications

**TEXT BOOKS:**

Andrew S Tanenbaum & David J. Wetherall, Computer Networks, V Edition, Pearson, 2015

**REFERENCE BOOKS:**

1. William A Shay, Understanding Data Communications and Networks, III Edition, South- Western Publishing Company, Australia, 2004.
2. William Stallings, Data and Computer Communications, X Edition, Prentice Hall of India Pvt. Ltd., New Delhi, 2014

**III BCA**  
**V SEMESTER**  
**J5CC12- JAVA PROGRAMMING**

**HRS/WEEK:5****CREDITS: 5****Objectives:**

1. To develop OOPS Programming
2. To develop Multithreaded Programs
3. To develop GUI Applications

**UNIT I: OVERVIEW****[15 HRS]**

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

**UNIT II: CONTROL STATEMENTS****[15 HRS]**

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

**UNIT III: EXCEPTION AND STRING HANDLING****[15 HRS]**

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

**UNIT IV: PACKAGE AND INTERFACES****[15 HRS]**

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

**UNIT V: APPLLET CLASS AND EVENT HANDLING****[15 HRS]**

Applet Basics-Applet Architecture-An Applet Skeleton-Simple Applet Display Methods-Requesting Repainting-Using the status window- Two Event  
Academic Council 28.3.2019

Handling Mechanisms-The Delegation Event Model-Event Classes-Sources of Events-Event Listener Interfaces.

**Self Study:** The genesis of Java – Data Types, Variables.

**TEXT BOOKS :**

Herbert Schildt, Java 2 - The Complete Reference, V Edition,2014.

**REFERENCE BOOKS:**

1. Herbert Schildt with Joe 'O' Neil, Java Programmer's Reference, Tata McGraw-Hill, 3<sup>rd</sup> edition,2000.
2. Jamie Jaworski, Java Unleashed, Techmedia, 1999



**III BCA**  
**SEMESTER - V**  
**J5CC13 – LAB V – JAVA PROGRAMMING**

**HRS/WEEK:6**

**CREDITS: 3**

**Objective:** To develop object oriented and GUI programming skills in Java.

1. Write a Java Program to implement arrays
2. Write a Java Program to implement Conditional statements
3. Write a Java Program to implement looping statements
4. Write a Program using constructors.  
(use parameter passing, return value)
5. Write a Program to perform stack operations. (use static)
6. Write a Program using interface
7. Write a Program using packages
8. Write a Program using Applets
9. Write a program to handle exceptions.
10. Write a program to perform multithreading

**III BCA**  
**SEMESTER - V**  
**J5CC14 – LAB VI – DOT NET PROGRAMMING**

**HRS/WEEK:5**

**CREDITS: 3**

**Objective:** To develop web programming skills through the use of Dot Net Frameworks.

**Visual Basic**

1. Sample programs in VB using Control statements.
2. Sample programs in VB using different controls.
3. Sample programs using database.

**VB.NET**

4. Program using Console Application.
5. Program using windows application using different controls.
6. Program using windows application for conditional statements.
7. Program using windows application for Looping statements.

**ASP.NET**

8. Create Simple application using web controls
9. Program working with forms using ASP.NET
10. Creating sample website.

**III BCA**  
**V SEMESTER**  
**MAJOR ELECTIVE - I**  
**J5ME1 – DOT NET PROGRAMMING**

**HRS/WEEK: 5****CREDITS: 4**

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

**UNIT I: INTRODUCTION TO .NET****[15HRS]**

.Net framework overview - Common type system - Common intermediate language - Namespace - Languages in .Net - C# - Encapsulation - Polymorphism - Interfaces -XML - ADO.NET. OurFirst VB.Net Program: The solution explorer window - Class view window -Toolbox - Output Window- Task list Window. DataTypes and Operators: Literals - Variables - Data types - Declaration of Variables - Constants - Statements - Operators - Keywords -Comments - Scope of Variables - Console application in VB.Net.

**UNIT II: CONTROL STATEMENTS****[15HRS]**

If Statement - Looping - Select Case- Go To statement- Intrinsic Control list-form control- Events- label- Textbox- Group box- check box- radio button- Scroll bar- CType- Track bar- Timer- Picture box- Working with mouse input- Link Label- Date time Picker- Month Calendar. Arrays: One dimensional Array- Array Initialization- Redim Statement- Multi dimensional Array- Array of array- List box control- Checked list box control- Combo Box control.

**UNIT III: PROCEDURES & STRUCTURES****[15HRS]**

Subroutine procedures- Functions- Value returned by its function name- the return statement- Calling a function- Call by reference- Functions with arrays- Functions with Param arrays- Function Overloading- Sub Procedure- Structure- Functions inside the Structure- Nested Structures- Message box functions- Input box function.**Creating Menus and using Dialog boxes:**

Menu- MDI form- Context Menu- Rich Text box- Color Dialog control- Font Dialog control.

**UNIT IV: DATA ACCESS WITH ADO.NET****[15 HRS]**

What is database? - What is Relational database- Table Creation- Record insertion- Displaying data- Deleting Data- Modifying Data- Drop Table- Special Features of ADO.NET- Difference between ADO & ADO.NET- Connections- Commands- Data Reader- Data Set- Using Data Grid- Using Data Adapter configuration wizard- XML &ADO.NET- XML document to ADO.NET data- Filtering data using Data View- Complex data binding- Command parameters property- Using stored procedures with a command.

**UNIT V:WEB APPLICATION WITH VB.NET & ASP.NET****[15HRS]**

Our first web application- Server controls- Validation Summary Control- ADO.NET& Data Binding. Advanced Controls and Making Reports in VB.NET: Tab Control- Toolbar Control- Error Provider Control- Tree View Control- Creating a user control in VB.NET- Adding a user control in VB.NET- Making Reports in VB.NET.

**Self-Study:**Creating Menus and using Dialog boxes

**TEXT BOOKS :**

1) VB.NET by P.Radhaganesan, Scitech Publications, Chennai.

Unit I: Chapters 1, 2, 3

Unit II: Chapters 4, 5

Unit III: Chapters 6, 7

Unit IV: Chapter 10

Unit V: Chapter 11, 13

**REFERENCE BOOK:**

1. Visual Basic .Net Programming Black Book by STEVEN HOLZNER, Dreamtech Press
2. Visual Basic 6 from the Ground Up by Gary Cornell, Osborne Mcgraw Hill.
3. Greg Buczek, "ASP .NET Developer's Guide", Tata McGraw – Hill.
4. Programming VB .NET: A Guide for Experienced Programmers Gary Cornell and Jonathan Morrison

**V SEMESTER**  
**MAJOR ELECTIVE - I**  
**J5ME2 – COMPUTER GRAPHICS**

**HRS/WEEK: 5**

**CREDITS: 4**

**Objective:** To know about computer graphics techniques and to implement the technologies in computer world.

**UNIT I: INTRODUCTION**

**[15 HRS]**

**A survey of computer graphics:** Computer-Aided Design - Presentation Graphics – Computer Art – Entertainment – Education and Training – Visualization – Image Processing – Graphical User Interfaces.

**Overview of Graphics Systems:** Video Display Devices – Raster Scan Systems – Random Scan Systems – Input Devices – Hard Copy Devices.

**UNIT II: ALGORITHMS**

**[15 HRS]**

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

**UNIT III: ATTRIBUTES OF OUTPUT PRIMITIVES**

**[15 HRS]**

**Attributes of Output Primitives:** Line Attributes – Curve Attributes – Color and Gray Scale Levels – Area Fill Attributes – Character Attributes – Bundled Attributes – Inquiry Functions – Antialiasing.

**UNIT IV: TWO-DIMENSIONAL GEOMETRIC TRANSFORMATIONS**

**[15 HRS]**

**Two-Dimensional Geometric Transformations:** Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations – Transformations Between Coordinate Systems.

**UNIT V: TWO -DIMENSIONAL VIEWING****[15 HRS]**

**Two -Dimensional Viewing** : The Viewing Pipeline – Viewing Coordinate Reference Frame – Window –to- Viewport Coordinate Transformation – Two-Dimensional Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Polygon Clipping – Curve Clipping – Text Clipping – Exterior Clipping.

**Self Study:** Input Devices – Hard Copy Devices

**TEXT BOOK:**

Computer Graphics, Donald Hearn and M. Pauline Baker, Prentice Hall Of India Pvt. Ltd., New Delhi, Second Edition, 2001.

**REFERENCE BOOKS:**

1. Computer Graphics, Multimedia and Animation – Malay K. Pakhira, Prentice Hall Of India Pvt. Ltd. , New Delhi – 2008.
2. Fundamentals Of Computer Graphics And Multimedia – D. P. Mukherjee, Prentice Hall Of India Pvt. Ltd. , New Delhi – 2010.

**III BCA****V SEMESTER****J5SB3 - SKILL BASED – III – CORELDRAW****HRS/WEEK: 2****CREDITS: 2****Objectives :**

To introduce the concept of essential graphics and visual communication skills.

**UNIT -1: GETTING STARTED WITH COREL DRAW [6 Hrs]**

Introduction to Corel Draw Features of Corel Draw Corel Draw Interface Tool Box -Work Area-Views.

**UNIT -2: DRAWING AND COLORING [6 Hrs]**

Introduction Selecting Objects Creating Basic Shapes Reshaping Objects Organising objects Applying color fills and Outlines.

**UNIT -3: MASTERING WITH TEXT [6 Hrs]**

Introduction Text Tool Artistic and paragraph text Formatting Text Embedding Objects into text Wrapping Text around Object Linking Text to Objects.

**UNIT -4: APPLYING EFFECTS [6 Hrs]**

Introduction Power of Blends Distortion Contour Effects Envelopes Lens effects Transparency Creating Depth Effects

**UNIT -5: WORKING WITH BITMAP COMMANDS [6 Hrs]**

Introduction Working with Bitmaps- Editing Bitmaps Applying effects on Bitmaps.

**TEXT BOOKS :**

CorelDRAW X7 in simple Steps, Kogent Learning Solutions Inc.Published By dreamTech Press.

**REFERENCE BOOK:**

Corel Draw X8 Gary David Bouton,2017

**III BCA****V SEMESTER****J5SB4 - SKILL BASED - IV- PHP****HRS/WEEK: 2****CREDITS: 2****Objective:** To develop web programming skills through the use of PHP.**UNIT I :INTRODUCTION TO PHP****[6 HRS]**

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

**UNIT II: FUNCTIONS****[6 HRS]**

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

**UNIT III: STRINGS****[6 HRS]**

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

**UNIT IV: OBJECTS AND WEB TECHNIQUES****[6 HRS]**

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

**UNIT V: DATABASE CONNECTIVITY****[6 HRS]**

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

**TEXT BOOKS :**

1. Rampus Lerdorf, Kevin Tatore & Peter Macintyre, Programming PHP, II Edition, SPD Pvt. Ltd, 2006

**REFERENCE BOOKS:**

1. Larry Ullman, Learn MySQL the Quick and Easy Way, II Edition, Pearson Education, 2006



**III BCA  
VI SEMESTER  
J6CC15- PYTHON**

**HRS/WEEK: 5****CREDITS: 5****Objectives:**

**To introduce open source programming language and to develop object oriented programs.**

**UNIT 1: INTRODUCTION TO PYTHON [15 HRS]**

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

**UNIT 2: PYTHON PROGRAM FLOW CONTROL [15 HRS]**

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

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

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

**UNIT 4: PYTHON STRING, LIST AND DICTIONARY MANIPULATIONS****15HRS]**

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

**UNIT 5: PYTHON FILE OPERATION****[15 HRS]**

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

**TEXT BOOKS :**

1. Python Programming – Reema Thareja , Oxford University Press , 2017.
2. Think Python – Allen B.Downey ,O'Reilly Publications, 2<sup>nd</sup> Edition.

**REFERENCE BOOK:**

1. Exploring Python – Timothy A.Budd, Tata Mc Graw Hill, 2017

**III BCA**  
**SEMESTER - VI**  
**J6CC16 – LAB VII – PYTHON**

**HRS/WEEK:5**

**CREDITS: 4**

**Objective:** To develop programming skills in Python

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

**III BCA**  
**VI SEMESTER**  
**J6ME3- ARTIFICIAL INTELLIGENCE**

**HRS/WEEK: 5****CREDITS: 4****UNIT I:INTRODUCTION****[15 HRS]**

What is AI? History & Applications, Artificial intelligence as representation & Search, Production system, Basics of problem solving: problem representation paradigms, defining problem as a state space representation, Characteristics.

**UNIT II:SEARCH TECHNIQUES****[15 HRS]**

Uninformed Search techniques, Informed Heuristic Based Search, Generate and test, Hill-climbing, Best-First Search, Problem Reduction, and Constraint Satisfaction.

**UNIT III:KNOWLEDGE REPRESENTATION****[15 HRS]**

Knowledge representation Issues: First order logic, Predicate Logic, Structured Knowledge Representation: Backward Chaining , Backward Chaining , Resolution ,Semantic Nets, Frames, and Scripts, Ontology.

**UNIT-IV:UNCERTAINTY****[15 HRS]**

Handling uncertain knowledge, rational decisions, basics of probability, axioms of probability, Baye's Rule and conditional independence , Bayesian networks , Exact and Approximate inference in Bayesian Networks, Fuzzy Logic .

**UNIT V:LEARNING****[15 HRS]**

What is learning?, Knowledge and learning, Learning in Problem Solving, Learning from example, learning probabilistic models, Formal Learning Theory

**TEXT BOOKS:**

- 1.E.Rich and K. Knight, Artificial Intelligence, Tata McGraw Hill, 2008.
2. Artificial intelligence and soft computing for beginners by Anandita Das Bhattachargee, Shroff Publishers
3. Artificial Intelligence – A Practical Approach : Patterson , Tata McGraw Hill, 3<sup>rd</sup> Edition

**REFERENCE BOOKS:**

Introduction to Artificial Intelligence – Charniak (Pearson Education)

**III BCA**  
**SEMESTER - VI**  
**J6ME4 – DATA MINING**

**HRS/WEEK:5**

**CREDITS: 4**

**OBJECTIVE :** On Successful Completion of this subject the students should have knowledge on Data mining Concepts

**UNIT I: INTRODUCTION**

**[15 HRS]**

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

**UNIT II : DATA MINING TECHNIQUES**

**[15 HRS]**

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

**UNIT III : CLASSIFICATION**

**[15 HRS]**

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

**UNIT IV: CLUSTERING**

**[15 HRS]**

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

**UNIT V: ASSOCIATION RULES**

**[15 HRS]**

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

**Self Study : Application area of Datamining**

**TEXT BOOK** : Margaret H.Dunbam , Data Mining Introductory and Advanced Topics, Pearson Education – 2006 .

**REFERENCE BOOK** : Jiawei Han & Micheline Kamber , Data Mining Concepts & Techniques

**III BCA - VI SEMESTER**  
**MAJOR ELECTIVE - III**  
**J6ME5 – CLOUD COMPUTING**

**HRS/WEEK: 5**

**CREDITS: 4**

**Objective:** To give an introduction to cloud computing and its technologies

**UNIT I: CLOUD MODELS**

**[15 HRS]**

Introduction: Essential, Benefits, Business and IT perspective, Cloud and virtualization, Cloud services requirements, Cloud and Dynamic Infrastructure, Cloud Computing Characteristics, Cloud Adoption.

Cloud Models - Introduction, Cloud Characteristics, cloud Models, Security in a public cloud, Public versus private clouds.

**UNIT II: CLOUD SERVICES**

**[15 HRS]**

Introduction: Cloud as a Service –Gamut of Cloud Solutions, Principal Technologies, Cloud Strategy, Cloud design and implementation using SOA, Conceptual cloud model.

Cloud Solutions – Introduction, Cloud Ecosystem, Cloud Business process Management, Cloud service management, Cloud stack.

**UNIT III: CLOUD SECURITY MANAGEMENT**

**[15 HRS]**

Introduction: Cloud Offerings:–Information Storage, Retrieval, Archive and Protection-Cloud Analytics- Testing Under Cloud –Information Security – Storage Cloud.

Cloud Management-Introduction, Resiliency, Provisioning, Asset Management, Cloud Governance, High Availability and Disaster Recovery.

**UNIT IV: CLOUD VIRTUALIZATION**

**[15 HRS]**

Introduction:Cloud Virtualization Technology-Virtualization Defined, Virtualization Benefits, Server Virtualization, Virtualization for x86 Architecture, Hypervisor Management Software, VIO Server, Virtual Infrastructure Requirements.

Deep Dive: Cloud Virtualization- Introduction, Storage Virtualization, Storage Area Networks, Network-Attached Storage, Cloud server Virtualization.



**UNIT V: BENCHMARK TOOLS****[15 HRS]**

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

**Self study :** Characteristics of cloud computing.

**TEXT BOOKS :**

1. Dr Kumar Saurabh, Cloud Computing Insights into New Era Infrastructure, An Emm International,2014, III Edition

**REFERENCE BOOKS:**

1. John Rhoton, Cloud Computing Explained - Implementation Handbook for Enterprises, Amazon.com
2. David S. Linthicum, Cloud Computing and SOA Convergence in Your Enterprise - A Step-by-Step Guide

**III BCA - VI SEMESTER**  
**MAJOR ELECTIVE - III**  
**J6ME6 – MOBILE COMPUTING**

**HRS/WEEK: 5****CREDITS: 4****Objective:**

On Successful Completion of this subject the students should have knowledge on Mobile Computing Concepts and emerging technologies and applications.

**UNIT I: MOBILE COMPUTING ARCHITECTURE [15 HRS]**

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

**UNIT II: MOBILE COMPUTING THROUGH TELEPHONY [15 HRS]**

Evaluation of telephony – Multiple access procedures – Mobile computing through telephone – IVR Application – Voice XML – TAPI

**EMERGING TECHNOLOGIES:** Blue Tooth – RFID – WiMAX – Mobile IP

**UNIT III: GSM [15 HRS]**

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

**UNIT IV: GPRS [15 HRS]**

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

**UNIT V : MOBILE COMPONENTS AND APPLICATIONS****[15 HRS]**

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

**Self study :** Pros & Cons of Mobile Computing.

**TEXT BOOK:**

1. MOBILE COMPUTING, Asoke K Talukder , Roopa R Yavagal, TMH, II Edition, 2016
2. FUNDAMENTALS OF MOBILE COMPUTING , Prasant Kumar Pattnaik, Rajib Mall, PHI Learning Pvt. Ltd, New Delhi – 2012.(UNIT V).

**III BCA**  
**VI SEMESTER**  
**SKILL BASED - V**  
**J6SB5 – ALICE**

**HRS/WEEK: 2**

**CREDITS: 2**

**Objective:** To develop programming skills and impart animation techniques using Alice.

**UNIT I: EXPLORING THE INTERFACE**

**[6HRS]**

Introduction to Alice - download and install Alice 3.1-A brief tour of the Alice 3 IDE -A brief tour of the Menu Bar- Set Preferences -Touring the Gallery

**UNIT II: SETTING THE SCENE**

**[6HRS]**

Adding an object to a scene- set object properties in the Scene editor- set special effects in a scene-Marking - position and resize an object in the Scene editor- Positioning sub-parts in Scene editor- align objects using a Snap grid- Cut, Copy, and Paste with the Clipboard

**UNIT III: LEARNING TO PROGRAM THROUGH ALICE**

**[6 HRS]**

Sequential & Parallel Execution - Do in order - Do together- Further nesting- Branching & Looping-Conditional execution-Relational Operators- Randomness-Repetition-While loops- Lists.

**UNIT IV: EVENT HANDLING AND METHODS**

**[6 HRS]**

Interactive programming & event handling - Control of flow- Events- Event handing methods.

**UNIT V: 3D AND BILLBOARDS, SOUND**

**[6 HRS]**

Create 3D Text- Billboards- Creating a Sound- Adding a Sound - Posting on YouTube.

**REFERENCE BOOKS :**

1. Wanda Dann, Stephen Cooper, and Randy Pausch; Learning to Program with Alice, Prentice Hall
2. Joel Adams, Alice 3 in Action with Java

**III BCA**  
**VI SEMESTER**  
**J6SB6 – SKILL BASED - VI LINUX**

**HRS/WEEK: 2****CREDITS: 2****Objectives :**

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

**UNIT -1: GETTING STARTED WITH LINUX [6 HRS]**

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

**UNIT -2: BASIC COMMANDS [6 HRS]**

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

**UNIT -3: INTERPROCESS COMMUNICATION [6 HRS]**

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

**UNIT -4: CONDITIONAL STATEMENTS [6 HRS]**

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

**UNIT -5: FILE SYSTEMS [6 HRS]**

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

**TEXT BOOKS :**

Bill Ball, David Pitts, “Red Hat Linux 7 Unleashed”, Techmedia SAMS Publication

**REFERENCE BOOK:**

Red hat Linux & fedora unlashed Authors Bill Ball & Hoyt Dust.

**B.C.A**  
**SEMESTER – VI**

*For those who joined in 2019 onwards*

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19UGVA CJ1	<b>CERTIFICATE COURSE VISUAL BASIC</b>	<b>PRACTICAL</b>	<b>30</b>	-

**CERTIFICATE COURSE - (offered for I UG)**

**Unit I [12 HRS]**

Customizing a Form - Writing Simple Programs - Toolbox - Creating Controls - Name Property - Command Button - Access Keys - Image Controls - Text Boxes - Labels - Message Boxes - Grid - Editing Tools - Variables - Data Types - String - Numbers.

**Unit II [12 HRS]**

Displaying Information - Determinate Loops - Indeterminate Loops - Conditionals - Built-in Functions - Functions and Procedures.

**Unit III [12 HRS]**

Lists - Arrays - Sorting and Searching - Records - Control Arrays - Combo Boxes - Grid Control - Projects with Multiple forms - Do Events and Sub Main - Error Trapping.

**Unit IV [12 HRS]**

VB Objects - Dialog Boxes - Common Controls - Menus - MDI Forms - Testing, Debugging and Optimization - Working with Graphics.

**Unit V [12 HRS]**

Monitoring Mouse activity - File Handling - File System Controls - File System Objects - COM/OLE - automation - DLL Servers - OLE Drag and Drop.



**TEXT BOOK :**

“Teach yourself Visual Basic 6” – Scott warner – Tata McGraw Hill Publications.

**REFERENCE BOOK:**

“ Visual Basic 6 from the Ground Up” – Gary Cornell,Tata McGraw Hill Publications

**II B.C.A**  
**SEMESTER – VI**

*For those who joined in 2019 onwards*

<b>PROGRAMME CODE</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CATEGORY</b>	<b>HRS</b>	<b>CREDITS</b>
<b>USCA</b>	<b>19UGVA J1</b>	<b>CRASH COURSE ANDROID APPLICATION DEVELOPMENT</b>	<b>PRACTICAL</b>	<b>30</b>	-

**CRASH COURSE (offered for II UG)**

**COURSE DESCRIPTION**

This course provides knowledge on mobile applications & the coding aims at developing applications using Android.

**COURSE OBJECTIVE**

- To have an exposure on wireless devices and mobile devices
- To be acquainted with the Mobile Application Development Platform.
- To become skilled on the components needed for Mobile App development

**UNIT I (3 hrs)**

Introduction – Applications - History of wireless communication- Android Introduction – Versions of Android- Application Development - Installation – Creating the first Android Application

**UNIT II (3 hrs)**

Android Programming – Features – Architecture – Android Devices – Login App Creation - Calculator App

**UNIT III (3 hrs)**

Android SDK – Android Development Tools(ADT) – Creating Android Virtual Devices (AVD) - Currency Converter App

**UNIT IV (3 hrs)**

Basic Views – TextView – Button – EditText- CheckBox – ToggleButton - List View App - Date Picker App - Time Picker App

**UNIT V****(3 hrs)**

Activities and Intents –Understanding Activities – Applying Styles and Themes – Hiding the Activity Title Linking Activities Using Intents – Calling Built in Applications - Passing Data - .Built in Application App - SMS App

**TEXT BOOKS:**

1. Mobile communication, Jochen Schiller, Second Edition, Pearson Education.
2. Beginning Android 4 Application Development, Wei- Manglee, Wiley India Pvt. Ltd.,

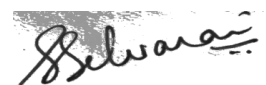
**COURSE OUTCOMES**

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

<b>NO.</b>	<b>COURSE OUTCOMES</b>
CO 1	Work with the Android Development environment
CO 2	Compare and analyze various techniques in mobile environment
CO 3	Demonstrate the architecture of android applications
CO 4	Assess the role of Wireless Networks in shaping the future internet
CO 5	Design and develop apps for mobiles using Android

**COURSE DESIGNER:**

1. Staff Name : Ms. S. Selvarani

**Forwarded By**


**III B.C.A**  
**SEMESTER - VI**

*For those who joined in 2019 onwards*

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

**CRASH COURSE (offered for III UG)**

**COURSE DESCRIPTION**

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

**COURSE OBJECTIVES**

- To identify the multimedia principles and elements for E-Learning
- To Understand the techniques to create customized lessons
- To work on the audio and video editing tools

**UNITS**

**UNIT I: INTRODUCTION TO E-LEARNING (6 HRS)**

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

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

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

**UNIT III: E-CONTENT TOOL (6 HRS)**

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

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

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

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

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

**REFERENCE BOOKS:**

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

**WEB REFERENCES:**

1. E-Learning for Beginners
2. E-Learning Swayam Portal

**COURSE OUTCOMES**

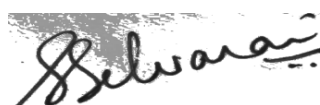
On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES
CO 1	Understand E-Learning with respect to its needs, challenges and benefits
CO 2	Explain the components of Authoring tools and E-learning standards
CO 3	Apply Audio editing techniques for creating podcasts
CO 4	Understand the techniques of creating customized lessons
CO 5	Create videos using online tools

**COURSE DESIGNER:**

1. Staff Name : Ms. S. Selvarani

Forwarded By



**HOD'S Signature  
& Name**

Academic Council 28.3.2019