FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with "A" Grade by NAAC (3ʳᵈ Cycle)

74ᵗʰ 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 : BCA

PROGRAMME CODE : USCA

ACADEMIC YEAR : 2020 - 2021

DEPARTMENT OF BCA

SYLLABUS 2020-2021

SEM	SUB.CODE	SUBJECT TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT Mks
I		ENGLISH	5	3	40	60	100
		LANGUAGE	5	3	40	60	100
		VALUE EDUCATION	1	1	40	60	100
	19J1CC1	PROGRAMMING IN C	6	4	40	60	100
	19J1ACG1	DISCRETE MATHEMATICS	5	5	40	60	100
	19J1CC2	LAB IN C	6	3	40	60	100
	19J1NME1	NON MAJOR ELECTIVE – I MULTIMEDIA LAB – FLASH	2	2	40	60	100
		TOTAL	30	21			
II		ENGLISH	5	3	40	60	100
		LANGUAGE	5	3	40	60	100
		VALUE EDUCATION	1	1	40	60	100
	19J2CC3	OBJECT ORIENTED PROGRAMMING IN C++	6	4	40	60	100
	19J2ACG2	OPERATIONS RESEARCH	5	5	40	60	100
	19J2CC4	LAB IN C++	6	3	40	60	100
	19J2NME2	NON MAJOR ELECTIVE – II MULTIMEDIA LAB – FLASH	2	2	40	60	100
		TOTAL	30	21			

FATIMA COLLEGE (AUTONOMOUS)
MARY LAND, MADURAI – 625018, TAMIL NADU, INDIA
(College with Potential for Excellence, Re-accredited with Grade 'A' by NAAC)

DEPARTMENT OF BCA

SEM	SUB.CODE	SUBJECT TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT Mks
III		ENGLISH	5	3	40	60	100
		LANGUAGE	5	3	40	60	100
		VALUE EDUCATION	1	1	40	60	100
	19J3CC5	OPERATING SYSTEMS	6	4	40	60	100
	19J3CC6	LAB IN RELATIONAL DATABASE MANAGEMENT SYSTEMS	5	5	40	60	100
	19AC3ACJ3	PRINCIPLES OF FINANCIAL ACCOUNTING AND ACCOUNTING PACKAGE	6	3	40	60	100
	19J3SB1	SKILL BASED – I QUANTITATIVE APTITUDE	2	2	40	60	100
		TOTAL	**30**	**21**			
IV		ENGLISH	5	3	40	60	100
		LANGUAGE	5	3	40	60	100
		VALUE EDUCATION	1	1	40	60	100
	19J4CC7	DATA STRUCTURES AND ALGORITHMS	6	4	40	60	100
	19J4CC8	LAB IN WEB PROGRAMMING	5	5	40	60	100
	19J4AC4	DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION	6	3	40	60	100
	19J4SB2	SKILL BASED – II DATA ANALYSIS USING SPREADSHEETS	2	2	40	60	100
		TOTAL	**30**	**21**			

SEM	SUB. CODE	SUBJECT TITLE	HRS	CREDIT	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**
		TOTAL	**30**	**27**						**700**
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	2	2				50	**50**	**100**

	ANIMATION TECHNIQUE – I – ALICE						
J6SB6	SKILL BASED – VI LINUX	2	2		50	**50**	100
J6CC17	PROJECT	5	4		40	**60**	100
	TOTAL	**30**	**27**				**700**
	NSS/JUNIOR JAYCEE – PART V		**1**				
	GRAND TOTAL		**140**				**1400**

I B.C.A

SEMESTER – I

For those who joined in 2019 onwards

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

COURSE DESCRIPTION

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

COURSE OBJECTIVES

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

UNITS

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

Evolution of Computers – Generation of Computers – Classification of Computers – Characteristics of Computers – Advantages of Computers – Block Diagram of Digital Computer – Introduction to C – Simple C Programs – Character Set – Identifiers & Keywords – Data Types – Constant – Variables

and Arrays – Declarations – Expressions – Statements – Symbolic Constants – Operators and Functions – Data Input and Output.

UNIT II: CONTROL STATEMENTS AND ARRAYS   (18HRS)

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

UNIT III: FUNCTIONS AND POINTERS   (18HRS)

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

UNIT IV: STRUCTURES AND UNIONS   (18HRS)

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

UNIT V: DATA FILES   (18HRS)

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

UNIT –VI DYNAMISM (Evaluation Pattern – CIA only)

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

REFERENCES:

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

WEB REFERNCES :

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

I B.C.A

SEMESTER – I

For those who joined in 2019 onwards

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

COURSE DESCRIPTION

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

COURSE OBJECTIVES

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

PROGRAM LIST:

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

WEB REFERENCES :

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

I B.C.A - SEMESTER – I

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
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/

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

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. Write a C++ Program using Files

WEB REFERENCES :

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

I B.C.A - SEMESTER – I

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
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/

II B.C.A - SEMESTER – III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
USCA	19J3CC5	OPERATING SYSTEMS	LECTURE	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.   Silberscahatz Galvin Gagne, Operating System Concept, VI Edition, John Wiley's Sons, 2010.

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

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

WEB REFERENCES :

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

II B.C.A

SEMESTER – III

For those who joined in 2019 onwards

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

COURSE DESCRIPTION

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

COURSE OBJECTIVES

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

PROGRAM LIST

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

WEB REFERENCES :

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

II B.C.A - SEMESTER – III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
USCA	19J3SB1	SKILL BASED – I 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/

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

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/

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 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

II B.C.A - SEMESTER – IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS	CREDITS
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

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– Winchesters Disks – MO Drives –

Input devices – Output devices.

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

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

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

Unit IV: Boolean Algebra and Gates   (12 HRS)

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

Unit V: Logic Design   (12 HRS)

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

UNIT –VI DYNAMISM (Evaluation Pattern – CIA only)

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

REFERENCES:

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

WEB REFERNCES :

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

II B.C.A - SEMESTER – IV

For those who joined in 2019 onwards

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

COURSE DESCRIPTION

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

COURSE OBJECTIVES

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

UNIT I : EXCEL TO EXCELLENCE   (6 HRS)

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

UNIT II: VISUALIZING DATA USING CHARTS   (6 HRS)

Enhancing a Chart With Titles & Tables – Drawing Tools – Adding Chart Elements – Formatting Charts – Chart Options – Chart Data Selection – Editing and Moving Data – Creating Charts – Changing Chart Types – Chart

Layout – Data tables – Pivot tables – Using Bar and Line Chart together – Using Secondary Axis in Graphs – Sharing Charts to Word, Powerpoint dynamically

UNIT III : ADVANCED FUNCTIONS   (6 HRS)

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

UNIT IV : DATA ANALYSIS AND CONSOLIDATION   (6 HRS)

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

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

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

REFERENCE BOOKS:

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

WEB REFERENCES :

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

III B.C.A - SEMESTER – V
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 B.C.A - SEMESTER – V
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: APPLET CLASS AND EVENT HANDLING   [15 HRS]

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

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, 3rd edition,2000.
2. Jamie Jaworski, Java Unleashed, Techmedia, 1999

III B.C.A - 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.(parameter passing, return value)
5. Write a Program to perform stack operations. (use static)
6. Write a Program using Interfaces
7. Write a Program using Packages
8. Write a Program using Applets
9. Write a program to handle Exceptions.
10.   Write a program to perform multithreading

III B.C.A - 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. Programs working with forms using ASP.NET with Databases
10.   Creating websites with Databases

III B.C.A - SEMESTER – V

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. Our first 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

III B.C.A - SEMESTER – V

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 B.C.A - SEMESTER – V

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 - Organizing 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 B.C.A - SEMESTER – V

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

UNIT IV : OBJECTS AND WEB TECHNIQUES   [6 HRS]

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

UNIT V : DATABASE CONNECTIVITY – MYSQL   [6 HRS]

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

TEXT BOOKS :

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

REFERENCE BOOKS:

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

III B.C.A - SEMESTER – V
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, 2nd Edition.

REFERENCE BOOK:

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

III B.C.A - 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 B.C.A - SEMESTER – V

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: AI 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**]

Handing 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, 3rd Edition

REFERENCE BOOKS:

1. Introduction to Artificial Intelligence – Charniak (Pearson Education)

III B.C.A - 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 COMPUTTING ARCHITECTURE   [15 HRS]

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

UNIT II: MOBILE COMPUTING THROUGH TELEPHONY   [15 HRS]

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

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

UNIT III: GSM   [15 HRS]

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

UNIT IV: GPRS   [15 HRS]

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

UNIT V : MOBILE COMPONENTS AND APPLICATIONS   [15 HRS]

Mobile Device Operating Systems – Special Constrains & Requirements – Commercial Mobile Operating Systems – Software Development Kit: iOS, Android, BlackBerry, Windows Phone – M-Commerce – 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 <mark>Sound</mark>- Adding a Sound - Posting on YouTube - <mark>Video</mark>.

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

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: <mark>FILE SYSTEMS</mark>   [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	CERTIFICATE COURSE VISUAL BASIC	PRACTICAL	30	-

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.
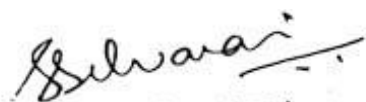
Unit V [12 HRS]

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

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