BHARATHIAR UNIVERSITY: COIMBATORE-641 046

B.Sc. CS/IT/CT/SS/MM/CSA &BCA

(For the students admitted from the academic year **2016-2017** and onwards)

SCHEME OF EXAMINATION - CBCS PATTERN

Part	Study components	Course Title	Ins. Hrs/week	Dur. Hrs.	CIA	Marks	Total Marks	Credit
	Semester I							
I	Language – I		6	3	25	75	100	4
II	English – I		6	3	25	75	100	4
III	Core 1: Computing Fundamentals and C Programming		4	3	25	75	100	4
III	Core 2: Digital Fundamentals and Architecture		4	3	25	75	100	4
III	Core Lab 1: Programming Lab – C		3	3	40	60	100	4
III	Allied 1: &&		5	3	25	75	100	4
IV	Environmental Studies #		2	3	-	50	50	2
	Semester II							
I	Language – II		6	3	25	75	100	4
II	English – II		6	3	25	75	100	4
III	Core 3: C++ Programming		5	3	25	75	100	4
III	Core Lab 2: Programming Lab – C++		4	3	40	60	100	4
III	Core Lab 3: Internet Basics		2	3	20	30	50	2
III	Allied 2: &&		5	3	25	75	100	4
IV	Value Education – Human Rights #		2	3	-	50	50	2
	Semester III							
III	Core 4: Data Structures		6	3	25	75	100	4
III	Core 5: Java Programming		6	3	25	75	100	4
III	Core Lab 4: Programming Lab – Java		5	3	40	60	100	4
III	Allied 3: &&		6	3	25	75	100	4
IV	Skill based Subject 1 - &&		5	3	20	55	75	3
IV	Tamil @/ Advanced Tamil (OR) Non-major elective-1 (Yoga for Human Excellence)# / Women's Rights#		2	3	-	50	50	2
	Semester IV							
III	Core 6: System Software and Operating System		6	3	25	75	100	4
III	Core 7: Linux and Shell Programming		6	3	25	75	100	4
III	Core Lab 5: Linux and Shell Programming Lab		6	3	40	60	100	4
III	Allied 4: &&		6	3	25	75	100	4

IV	Skill based subject 2 (lab) &&	4	3	30	45	75	3
IV	Tamil @/ Advanced Tamil (OR) Non-major elective-II (General Awareness) #	2	3	-	50	50	2
	Semester V						
III	Core 8: RDBMS & Oracle	6	3	25	75	100	4
III	Core 9: Visual Basic	6	3	25	75	100	4
III	Core Lab 6: Programming Lab – VB & Oracle	6	3	40	60	100	4
III	Elective 1 &&	6	3	25	75	100	4
IV	Skill based Subject 3: &&	6	3	20	55	75	3
	Semester VI						
III	Core 10: Graphics & Multimedia	5	3	25	75	100	4
III	Core 11: Project Work Lab %%	5	3	-	200	200	8
III	Core Lab 7: Programming Lab – Graphics & Multimedia	6	3	40	60	100	4
III	Elective II &&	5	3	25	75	100	4
III	Elective III &&	5	3	25	75	100	4
IV	Skill based Subject 4 (lab) &&	4	3	30	45	75	3
V	Extension Activities	-	-	50	-	50	2
	Total					3500	140

@ No University Examinations. Only Continuous Internal Assessment (CIA)

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%% **see Guidelines for Project Work.**

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SCHEME OF EXAMINATION - CBCS PATTERN

Course / Subject	B.Sc. COMPUTER SCIENCE
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Computer Based Optimization Techniques
Allied-4	Business Accounting
Elective- I	E-Learning / Computer Networks / Organizational Behavior
Elective- II	Network Security and Cryptography/ Artificial Intelligence and Expert Systems / Web Technology
Elective- III	Data Mining/ Open source software/Mastering LAN & Trouble Shooting
Skill-1	Software Engineering and Software Project Management
Skill-2 (lab)	Software Project Management- Lab
Skill-3	Software Testing
Skill-4 (lab)	Software Testing Lab

Course / Subject	B.Sc. INFORMATION TECHNOLOGY
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Microprocessor & ALP
Allied-4	Computer Networks

Elective- I	Soft Computing / Animation Techniques / Business Intelligence
Elective- II	Network Security and Administration/ Mobile Computing / Internet Programming
Elective- III	E-Learning / Component Technology / E-Commerce
Skill-1	Introduction to web design & Applications
Skill-2 (lab)	HTML, XML and JavaScript Lab
Skill-3	Dot Net Programming
Skill-4 (lab)	Dot Net Lab

Course / Subject	**B.Sc. COMPUTER TECHNOLOGY**
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Microprocessor & ALP
Allied-4	TCP/IP Protocols
Elective- I	Mobile Computing / Distributed Computing / Digital Image processing
Elective- II	Middleware Technologies / Animation Techniques / Computer Installation & Servicing
Elective- III	Data Mining / Embedded Systems / Computer aided Design and Manufacturing
Skill-1	Data Communication & Networks
Skill-2 (lab)	Network Lab
Skill-3	Network Security & Management
Skill-4 (lab)	Network Security Lab

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Course / Subject	**B.Sc. SOFTWAE SYSTEMS**
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Database Systems
Allied-4	Principles of Programming Languages
Elective- I	E-Commerce / Design and analysis of Algorithms / Web Technology
Elective- II	Computer Networks / Software Quality Assurance / Management Information Systems
Elective- III	Wireless Mobile Communications / Component Technologies / Mastering LAN & Troubleshooting
Skill-1	WAP & XML
Skill-2 (lab)	XML Lab
Skill-3	ASP .NET
Skill-4 (lab)	ASP .NET Lab

Course / Subject	**B.Sc. MULTIMEDIA & WEB TECHNOLOGY**
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Web Services
Allied-4	Digital Image Processing
Elective- I	Web Technology / Software Engineering / CASE Tools Concepts and applications
Elective- II	Flash / Distributed Computing / Multimedia Systems
Elective- III	3DS MAX Animation / Software Project Management / Organizational Behaviour

Skill-1	Introduction to PHP Programming
Skill-2 (lab)	PHP Programming Lab
Skill-3	Animation Techniques
Skill-4 (lab)	Animation Lab - Flash

Course \ Subject	**B.Sc. COMPUTER SCIENCE & APPLICATIONS**
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Management Information Systems
Allied-4	Organizational Behaviour
Elective- I	Client/Server Computing / E-Commerce / Software Engineering
Elective- II	Network Security & Cryptography / Distributed Computing / Computer Networks
Elective- III	Mobile Computing / Web Technology / Software Testing
Skill-1	Internet Programming
Skill-2 (lab)	PHP Programming Lab
Skill-3	Web designing with ASP and ASP .NET
Skill-4 (lab)	ASP Lab

Course \ Subject	**BCA**
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Computer Based Optimization Techniques

Allied-4	Business Accounting
Elective- I	Introduction to Compiler Design / PHP & Scripting Language / Digital Image Processing
Elective- II	Computer Networks / Dot Net programming / Distributed Computing
Elective- III	E-Commerce / Web Services / Software Testing
Skill-1	Web Programming
Skill-2 (lab)	Web Programming Lab
Skill-3	CASE Tools Concepts and Applications
Skill-4 (lab)	CASE Tools Lab

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CBCS PATTERN

CORE SUBJECTS

Course	BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)
Effective from	**2016-2017 and Onwards**
Semester	**I**
Subject	**CORE 1 :** **COMPUTING FUNDAMENTALS AND C PROGRAMMING**

Subject Description: This subject deals with the Computer fundamentals and the concepts of C programming language.

Goal: To learn about the Computer fundamentals and the C programming language concepts.

Objective: On successful completion of this subject the students have the programming ability in C Language.

UNIT I: Fundamentals of Computers : Introduction – History of Computers-Generations of Computers- Classification of Computers-Basic Anatomy of a Computer System-Input Devices-Processor-Output Devices-Memory Management – Types of Software- Overview of Operating System- Programming Languages-Translator Programs-Problem Solving Techniques - Overview of C.

UNIT II: Overview of C - Introduction - Character set - C tokens - keyword & Identifiers - Constants - Variables - Data types - Declaration of variables - Assigning values to variables - Defining Symbolic Constants - Arithmetic, Relational, Logical, Assignment, Conditional, Bitwise, Special, Increment and Decrement operators - Arithmetic Expressions - Evaluation of expression - precedence of arithmetic operators - Type conversion in expression – operator precedence & associativity - Mathematical functions - Reading & Writing a character - Formatted input and output.

UNIT III: Decision Making and Branching: Introduction – if, if….else, nesting of if …else statements- else if ladder – The switch statement, The ?: Operator – The goto Statement.

Decision Making and Looping: Introduction- The while statement- the do statement – the for statement-jumps in loops. Arrays – Character Arrays and Strings

UNIT IV: User-Defined Functions: Introduction – Need and Elements of User-Defined Functions- Definition-Return Values and their types - Function Calls – Declarations – Category of Functions- Nesting of Functions - Recursion – Passing Arrays and Strings to Functions - The Scope, Visibility and Lifetime of Variables- Multi file Programs. Structures and Unions.

UNIT V: Pointers: Introduction-Understanding pointers-Accessing the address of a variable-Declaration and Initialization of pointer Variable – Accessing a variable through its pointer-Chain of pointers- Pointer Expressions – Pointer Increments and Scale factor- Pointers and Arrays- Pointers and Strings – Array of pointers – Pointers as Function Arguments-Functions returning pointers – Pointers to Functions – Pointers and Structures. File Management in C.

TEXT BOOK:

1. E Balagurusamy: Computing Fundamentals & C Programming – Tata McGraw-Hill, Second Reprint 2008.

REFERENCE BOOK:

1. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson, 2002.

2. Henry Mullish & Hubert L.Cooper: The Sprit of C, Jaico, 1996.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**I**
Subject	**CORE 2:** **DIGITAL FUNDAMENTALS AND COMPUTER ARCHITECTURE**

Subject Description: This subject deals with fundamentals of digital computers, Microprocessors and System architecture.

Goal: To learn about Computer Fundamentals and its Architecture.

Objective: On successful completion of this subject the students should have Knowledge on Digital circuits, Microprocessor architecture, and Interfacing of various components.

UNIT I: Number System and Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess3, Gray Code. Arithmetic Circuits: Half adder, Full adder, Parallel binary adder, BCD adder, Half subtractor, Full subtractor, Parallel binary subtractor - Digital Logic: the Basic Gates – NOR, NAND, XOR Gates.

UNIT II: Combinational Logic Circuits: Boolean algebra – Karnaugh map – Canonical form 1 – Construction and properties – Implicants – Don't care combinations - Product of sum, Sum of products, simplifications. Sequential circuits: Flip-Flops: RS, D, JK, and T - Multiplexers – Demultiplexers – Decoder Encoder – shift registers-Counters.

UNIT III: Input – Output Organization: Input – output interface – I/O Bus and Interface – I/O Bus Versus Memory Bus – Isolated Versus Memory – Mapped I/O – Example of I/O Interface. Asynchronous data transfer: Strobe Control and Handshaking – Priority Interrupt: Daisy- Chaining Priority, Parallel Priority Interrupt. Direct Memory Access: DMA Controller, DMA Transfer. Input – Output Processor: CPU-IOP Communication.

UNIT IV: Memory Organization: Memory Hierarchy – Main Memory- Associative memory: Hardware Organization, Match Logic, Read Operation, Write Operation. Cache Memory: Associative, Direct, Set-associative Mapping – Writing into Cache Initialization. Virtual Memory: Address Space and Memory Space, Address Mapping Using Pages, Associative Memory, Page Table, Page Replacement.

UNIT V: CASE STUDY: Pin out diagram, Architecture, Organization and addressing modes of 80286-80386-80486-Introduction to microcontrollers.

TEXT BOOKS:

1. Digital principles and applications, Albert Paul Malvino, Donald P Leach, TMH, 1996.
2. Computer System Architecture -M. Morris Mano , PHI.
3. Microprocessors and its Applications-Ramesh S. Goankar

REFERENCE BOOKS:

1. Digital Electronics Circuits and Systems, V.K. Puri, TMH.
2. Computer Architecture, M. Carter, Schaum's outline series, TMH.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**I**
Subject	**CORE LAB 1: PROGRAMMING LAB – C**

1. Write a C program to find the sum, average, standard deviation for a given set of numbers.

2. Write a C program to generate n prime numbers.

3. Write a C program to generate Fibonacci series.

4. Write a C program to print magic square of order n where n > 3 and n is odd.

5. Write a C program to sort the given set of numbers in ascending order.

6. Write a C program to check whether the given string is a palindrome or not using pointers.

7. Write a C program to count the number of Vowels in the given sentence.

8. Write a C program to find the factorial of a given number using recursive function.

9. Write a C program to print the student's Mark sheet assuming roll no, name, and marks in 5 subjects in a structure. Create an array of structures and print the mark sheet in the university pattern.

10. Write a function using pointers to add two matrices and to return the resultant matrix to the calling function.

11. Write a C program which receives two filenames as arguments and check whether the file contents are same or not. If same delete the second file.

12. Write a program which takes a file as command line argument and copy it to another file. At the end of the second file write the total i)no of chars ii) no. of words and iii) no. of lines.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**II**
Subject	**CORE 3: C++ PROGRAMMING**

Subject Description: This subject deals with Object–oriented programming concepts like Abstraction, Encapsulation, Inheritance and Polymorphism.

Goal: Knowledge on Object–oriented concept and programming with C++.

Objective: To inculcate knowledge on Object-oriented programming concepts using C++.

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

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

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

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

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

TEXT BOOK:

1. Ashok N Kamthane, Object-Oriented Programming with Ansi And Turbo C++, Pearson Education, 2003.

REFERENCE BOOKS:

1. E. Balagurusamy, Object-Oriented Programming with C++, TMH, 1998.
2. Maria Litvin & Gray Litvin, C++ for you, Vikas publication, 2002.
3. John R Hubbard, Programming with C, 2nd Edition, TMH publication, 2002.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**II**
Subject	**CORE LAB 2: PROGRAMMING LAB – C++**

1. Write a C++ Program to create a class to implement the data structure STACK. Write a constructor to initialize the TOP of the STACK. Write a member function PUSH() to insert an element and member function POP() to delete an element check for overflow and underflow conditions..

2. Write a C++ Program to create a class ARITHMETIC which consists of a FLOAT and an INTEGER variable. Write member functions ADD (),SUB(), MUL(), DIV() to perform addition, subtraction, multiplication, division respectively. Write a member function to get and display values.

3. Write a C++ Program to read an integer number and find the sum of all the digits until it reduces to a single digit using constructors, destructors and inline member functions.

4. Write a C++ Program to create a class FLOAT that contains one float data member. Overload all the four Arithmetic operators so that they operate on the object FLOAT.

5. Write a C++ Program to create a class STRING. Write a Member Function to initialize, get and display stings. Overload the operators ++ and == to concatenate two Strings and to compare two strings respectively.

6. Write a C++ Program to create class, which consists of EMPLOYEE Detail like E_Number, E_Name, Department, Basic, Salary, Grade. Write a member function to get and display them. Derive a class PAY from the above class and write a member function to calculate DA, HRA and PF depending on the grade.

7. Write a C++ Program to create a class SHAPE which consists of two VIRTUAL FUNCTIONS Calculate_Area() and Calculate_Perimeter() to calculate area and perimeter of various figures. Derive three classes SQUARE, RECTANGLE, TRIANGE from class Shape and Calculate Area and Perimeter of each class separately and display the result.

8. Write a C++ Program to create two classes each class consists of two private variables, a integer and a float variable. Write member functions to get and display them. Write a FRIEND Function common to both classes, which takes the object of above two classes

as arguments and the integer and float values of both objects separately and display the result.

9. Write a C++ Program using Function Overloading to read two Matrices of different Data Types such as integers and floating point numbers. Find out the sum of the above two matrices separately and display the sum of these arrays individually.

10. Write a C++ Program to check whether the given string is a palindrome or not using Pointers.

11. Write a C++ Program to create a File and to display the contents of that file with line numbers.

12. Write a C++ Program to merge two files into a single file.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**II**
Subject	**CORE LAB 3: PROGRAMMING LAB – INTERNET BASICS**

1. To create an email-id.

2. To compose and send a mail.

3. To forward a mail and to reply for a mail.

4. To send a mail with an attachment.

5. To download the attached document of a mail received.

6. To send a mail to a large number of recipients using cc and bcc options.

7. To search a thing using a search engine.

8. To open and read newspaper sites, TV program schedules using Internet.

9. To verify a university /college details by opening their websites.

10. To upload your resume with any one job portal.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**III**
Subject	**CORE 4: DATA STRUCTURES**

UNIT I Introduction: Introduction of Algorithms, Analysing Algorithms. Arrays: Sparse Matrices - Representation of Arrays. Stacks and Queues. Fundamentals - Evaluation of Expression Infix to Postfix Conversion - Multiple Stacks and Queues

UNIT II Linked List: Singly Linked List - Linked Stacks and Queues - Polynomial Addition - More on Linked Lists - Sparse Matrices - Doubly Linked List and Dynamic - Storage Management - Garbage Collection and Compaction.

UNIT III Trees: Basic Terminology - Binary Trees - Binary Tree Representations - Binary Trees -Traversal - More on Binary Trees - Threaded Binary Trees - Binary Tree Representation of Trees - Counting Binary Trees. Graphs: Terminology and Representations - Traversals, Connected Components and Spanning Trees, Shortest Paths and Transitive Closure

UNIT IV External Sorting: Storage Devices -Sorting with Disks: K-Way Merging - Sorting with Tapes Symbol Tables: Static Tree Tables - Dynamic Tree Tables - Hash Tables: Hashing Functions - Overflow Handling.

UNIT V Internal Sorting: Insertion Sort - Quick Sort - 2 Way Merge Sort - Heap Sort - Shell Sort - Sorting on Several Keys. Files: Files, Queries and Sequential organizations - Index Techniques -File Organizations.

TEXT BOOKS

1. Ellis Horowitz, Sartaj Shani, Data Structures, Galgotia Publication.

2. Ellis Horowitz, Sartaj Shani, Sanguthevar Rajasekaran, Computer Algorithms, Galgotia Publication.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**III**
Subject	**CORE 5: JAVA PROGRAMMING**

Subject Description: This subject deals with Java Programming concepts.

Goal: Enable to create wide range of Applications and Applets using Java.

Objective: To inculcate knowledge on Java Programming concepts.

UNIT I: Fundamentals of Object-Oriented Programming: Object-Oriented Paradigm – Basic Concepts of Object-Oriented Programming – Benefits of Object-Oriented Programming – Application of Object-Oriented Programming. Java Evolution: History – Features – How Java differs from C and C++ – Java and Internet – Java and www –Web Browsers. Overview of Java: simple Java program – Structure – Java Tokens – Statements – Java Virtual Machine.

UNIT II: Constants, Variables, Data Types - Operators and Expressions – Decision Making and Branching: if, if...else, nested if, switch, ? : Operator - Decision Making and Looping: while, do, for – Jumps in Loops - Labeled Loops – Classes, Objects and Methods.

UNIT III: Arrays, Strings and Vectors – Interfaces: Multiple Inheritance – Packages: Putting Classes together – Multithreaded Programming.

UNIT IV: Managing Errors and Exceptions – Applet Programming – Graphics Programming.

UNIT V: Managing Input / Output Files in Java : Concepts of Streams- Stream Classes – Byte Stream classes – Character stream classes – Using streams – I/O Classes – File Class – I/O exceptions – Creation of files – Reading / Writing characters, Byte-Handling Primitive data Types – Random Access Files.

TEXTBOOK:

1. Programming with Java – A Primer - E. Balagurusamy, 3rd Edition, TMH.

REFERENCE BOOKS:

1. The Complete Reference Java 2 - Patrick Naughton & Hebert Schildt, 3rd Edition, TMH

2. Programming with Java – John R. Hubbard, 2nd Edition, TMH.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**III**
Subject	**CORE LAB 4: PROGRAMMING LAB - JAVA**

1. Write a Java Applications to extract a portion of a character string and print the extracted string.

2. Write a Java Program to implement the concept of multiple inheritance using Interfaces.

3. Write a Java Program to create an Exception called payout-of-bounds and throw the exception.

4. Write a Java Program to implement the concept of multithreading with the use of any three multiplication tables and assign three different priorities to them.

5. Write a Java Program to draw several shapes in the created windows.

6. Write a Java Program to create a frame with four text fields name, street, city and pin code with suitable tables. Also add a button called my details. When the button is clicked its corresponding values are to be appeared in the text fields.

7. Write a Java Program to demonstrate the Multiple Selection List-box.

8. Write a Java Program to create a frame with three text fields for name, age and qualification and a text field for multiple line for address

9. Write a Java Program to create Menu Bars and pull down menus.

10. Write a Java Program to create frames which respond to the mouse clicks. For each events with mouse such as mouse up, mouse down, etc., the corresponding message to be displayed.

11. Write a Java Program to draw circle, square, ellipse and rectangle at the mouse click positions.

12. Write a Java Program which open an existing file and append text to that file.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**IV**
Subject	**CORE 6: SYSTEM SOFTWARE AND OPERATING SYSTEMS**

Subject Description: It deals with fundamentals of System Software and Resources of Operating System.

Goal: Knowledge on various System Software and Operating System concepts.

Objective: Enable the student to get sufficient knowledge on various system resources.

(SYSTEM SOFTWARE: Units I & II)

UNIT I: Introduction –System Software and machine architecture. Loader and Linkers: Basic Loader Functions - Machine dependent loader features –Machine independent loader features - Loader design options.

UNIT II: Machine dependent compiler features - Intermediate form of the program - Machine dependent code optimization - Machine independent compiler features - Compiler design options - Division into passes – Interpreters – p-code compilers - Compiler-compilers.

(OPERATING SYSTEMS: UNIT III, IV & V)

UNIT III: What is an Operating System? – Process Concepts: Definition of Process - Process States - Process States Transition – Interrupt Processing – Interrupt Classes - Storage Management: Real Storage: Real Storage Management Strategies – Contiguous versus Non-contiguous storage allocation – Single User Contiguous Storage allocation- Fixed partition multiprogramming – Variable partition multiprogramming.

UNIT IV: Virtual Storage: Virtual Storage Management Strategies – Page Replacement Strategies – Working Sets – Demand Paging – Page Size. Processor Management: Job and Processor Scheduling: Preemptive Vs Non-preemptive scheduling – Priorities – Deadline scheduling.

UNIT V: Device and Information Management Disk Performance Optimization: Operation of moving head disk storage – Need for disk scheduling – Seek Optimization – File and Database Systems: File System – Functions – Organization – Allocating and freeing space – File descriptor – Access control matrix.

TEXT BOOKS:

1. Leland L.Beck, System Software: An Introduction to Systems Programming, Pearson, Third Edition.

2. H.M. Deitel, Operating Systems, 2nd Edition, Perason, 2003.

REFERENCE BOOKS:

1. Achy8ut S. Godbole, Operating Systems, TMH, 2002.

2. John J. Donovan, Systems Programming, TMH, 1991.

3. D.M. Dhamdhere, Systems Programming and Operating Systems, 2nd Revised Edition, TMH.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**IV**
Subject	**CORE 7: LINUX AND SHELL PROGRAMMING**

UNIT I: Introduction to LINUX Operating System: Introduction - The LINUX Operating System.

UNIT II: Managing Files and Directories: Introduction – Directory Commands in LINUX – File Commands in LINUX.

UNIT III: Creating files using the vi editor: Text editors – The vi editor. Managing Documents: Locating files in LINUX – Standard files – Redirection – Filters – Pipes.

UNIT IV: Securing files in LINUX: File access permissions – viewing File access permissions – Changing File access permissions. Automating Tasks using Shell Scripts: Introduction – Variables- Local and Global Shell variables – Command Substitution

UNIT V: Using Conditional Execution in Shell Scripts: Conditional Execution – The case…esac Construct. Managing repetitive tasks using Shell Scripts: Using Iteration in Shell Scripts – The while construct – until construct – for construct – break and continue commands – Simple Programs using Shell Scripts.

TEXT BOOK:

1. Operating System LINUX, NIIT, PHI, 2006, Eastern Economy Edition.

REFERENCE BOOK:

1. Richard Petersen, Linux: The Complete Reference, Sixth Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi, Edition 2008.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**IV**
Subject	**CORE LAB 5: LINUX AND SHELL PROGRAMMING LAB**

1. Write a shell script to stimulate the file commands: rm, cp, cat, mv, cmp, wc, split, diff.

2. Write a shell script to show the following system configuration :

    a. currently logged user and his log name

    b. current shell , home directory , Operating System type , current Path setting , current working directory

    c. show currently logged number of users, show all available shells

    d. show CPU information like processor type , speed

    e. show memory information

3. Write a Shell Script to implement the following: pipes, Redirection and tee commands.

4. Write a shell script for displaying current date, user name, file listing and directories by getting user choice.

5. Write a shell script to implement the filter commands.

6. Write a shell script to remove the files which has file size as zero bytes.

7. Write a shell script to find the sum of the individual digits of a given number.

8. Write a shell script to find the greatest among the given set of numbers using command line arguments.

9. Write a shell script for palindrome checking.

10. Write a shell script to print the multiplication table of the given argument using for loop.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**V**
Subject	**CORE 8: RDBMS AND ORACLE**

Subject Description: This subject deals with RDBMS concepts using Oracle SQL and PL/SQL.

Goal: Knowledge on Oracle Programming techniques.

Objective: To inculcate knowledge on RDBMS concepts and Programming with Oracle.

UNIT I: Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams – De -normalization – Another Example of Normalization.

UNIT II: Oracle9*i*: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus Worksheet - *i*SQL *Plus. Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.

UNIT III: Working with Table: Data Management and Retrieval: DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table – Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations.

UNIT IV: PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQ L in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.

UNIT V: PL/SQL Composite Data Types: Records – Tables – arrays. Named Blocks: Procedures – Functions – Packages –Triggers –Data Dictionary Views.

TEXT BOOK:

1. Database Systems using Oracle, Nilesh Shah, 2ⁿᵈ edition, PHI.

REFERENCE BOOKS:

1. Database Management Systems, Majumdar & Bhattacharya, 2007, TMH.

2. Database Management Systems, Gerald V. Post, 3ʳᵈ edition, TMH.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**V**
Subject	**CORE 9: VISUAL BASIC**

UNIT   I: Getting Started with VB6, Programming Environment, Working with Forms, Developing an application, Variables, Data types and Modules, procedures and control structures, arrays. Working with Controls: Creating and using controls, working with control arrays.

UNIT II: Menus, Mouse events and Dialog boxes: Mouse events, Dialog boxes, MDI and Flexgrid: MDI, Using the Flexgrid control.

UNIT III: ODBC and Data Access Objects: Data Access Options, ODBC, Remote data objects, ActiveX EXE and ActiveX DLL: Introduction, Creating an ActiveX EXE Component, Creating ActiveX DLL Component.

UNIT IV: Object Linking and Embedding: OLE fundamentals, Using OLE Container Control, Using OLE Automation objects, OLE Drag and Drop, File and File System Control: File System Controls, Accessing Files.

UNIT V: Additional controls in VB: sstab control, setting properties at runtime, adding controls to tab, list control, tabstrip control, MSFlexgrid control, Why ADO, Establishing a reference, Crystal and Data reports.

TEXT BOOKS:

1. Visual Basic 6.0 Programming, Content Development Group, TMH, 8th reprint, 2007.
   (Unit I to Unit IV)

2. Programming with Visual Basic 6.0, Mohammed Azam, Vikas Publishing House, Fourth
   Reprint, 2006. **(Unit V)**

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**V**
Subject	**CORE LAB 6: PROGRAMMING LAB – VB and Oracle**

VISUAL BASIC:

1. Write a simple VB program to accept a number as input and convert them into
   a) Binary b) Octal c) Hexadecimal

2. Write a simple VB program to add the items to list box with user input and move the
   selected item to combo box one by one.

3. Write a simple VB program to develop a calculator with basic operation.

4. Design a form using common dialog control to display the font, save and open dialog box
   without using the action control property.

5. Write a VB Program to develop a menu driven program Add a MDI window in the form
   and arrange them in the cascading/horizontal style using menus (Create a menu to add
   form, arrange) (Menu Item 1). Also change the form color using the menu in another
   menu item (Menu Item 2).

6. Develop a simple project for Student Database Management System using VB as front
   end and Oracle as back end.

ORACLE:

1. Create a table for Employee details with Employee Number as primary key and following
   fields: Name, Designation, Gender, Age, Date of Joining and Salary. Insert at least ten
   rows and perform various queries using any one Comparison, Logical, Set, Sorting and
   Grouping operators.

2. Create tables for library management system which demonstrate the use of primary key
   and foreign key. Master table should have the following fields: Accno, Title, Author and
   Rate. Transaction table should have the following fields: User id, Accno, Date of Issue

and Date of Return. Create a Report(Select verb) with fields Accno, Title, Date of Issue for the given Date of Return with column formats.

3. Write a PL/SQL to update the rate field by 20% more than the current rate in inventory table which has the following fields: Prono, ProName and Rate. After updating the table a new field (Alter) called for Number of item and place for values for the new field without using PL/SQL block.

4. Write a PL/SQL to split the student table into two tables based on result (One table for "Pass" and another for "Fail"). Use cursor for handling records of student table. Assume necessary fields and create a student details table.

5. Create a database trigger to implement on master and transaction tables which are based on inventory management system for checking data validity. Assume the necessary fields for both tables.

6. Write a PL/SQL to raise the following Exception in Bank Account Management table when deposit amount is zero.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**VI**
Subject	**CORE 11: GRAPHICS AND MULTIMEDIA**

Subject Description: This subject deals with Graphics Concepts and Multimedia methodologies.

Goal: Mathematical Knowledge on Graphics and Technical background of Multimedia.

Objective: To inculcate knowledge on Graphics & Multimedia concepts.

(GRAPHICS – UNITS I & II)

UNIT I: Output Primitives: Points and Lines – Line-Drawing algorithms – Loading frame Buffer – Line function – Circle-Generating algorithms – Ellipse-generating algorithms. Attributes of Output Primitives: Line Attributes – Curve attributes – Color and Grayscale Levels – Area-fill attributes – Character Attributes.

UNIT II: 2D Geometric Transformations: Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations. 2D Viewing: The Viewing Pipeline –

Viewing Co-ordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation - 2D Viewing Functions – Clipping Operations.

(MULTIMEDIA – UNITS III, IV &V)

UNIT III: Text: Types of Text – Unicode Standard – Font – Insertion of Text – Text compression – File formats. Image: Image Types – Seeing Color – Color Models – Basic Steps for Image Processing – Scanner – Digital Camera – Interface Standards – Specification of Digital Images – CMS – Device Independent Color Models – Image Processing software – File Formats – Image Output on Monitor and Printer.

UNIT IV: Audio: Introduction – Acoustics – Nature of Sound Waves – Fundamental Characteristics of Sound – Microphone – Amplifier – Loudspeaker – Audio Mixer – Digital Audio – Synthesizers – MIDI – Basics of Staff Notation – Sound Card – Audio Transmission – Audio File formats and CODECs – Audio Recording Systems – Audio and Multimedia – Voice Recognition and Response - Audio Processing Software.

UNIT V: Video: Analog Video Camera – Transmission of Video Signals – Video Signal Formats – Television Broadcasting Standards – PC Video – Video File Formats and CODECs – Video Editing – Video Editing Software. Animation: Types of Animation – Computer Assisted Animation – Creating Movement – Principles of Animation – Some Techniques of Animation – Animation on the Web – Special Effects – Rendering Algorithms. Compression: MPEG-1 Audio – MPEG-1 Video - MPEG-2Audio – MPEG-2 Video.

TEXT BOOKS:

1. Computer Graphics, Donald Hearn, M.Pauline Baker, 2nd edition, PHI. *(UNIT-I: 3.1-3.6,4.1-4.5 & UNIT-II: 5.1-5.4,6.1-6.5)*

2. Principles of Multimedia, Ranjan Parekh, 2007, TMH. *(UNIT III: 4.1-4.7,5.1-5.16 UNIT-IV: 7.1-7.3,7.8-7.14,7.18-7.20,7.22,7.24,7.26-28   UNIT-V: 9.5-9.10,9.13,9.15,10.10-10.13)*

REFERENCE BOOKS:

1. Computer Graphics, Amarendra N Sinha, Arun D Udai, TMH.
2. Multimedia: Making it Work, Tay Vaughan, 7th edition, TMH.

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**VI**
Subject	**CORE LAB 7:** **PROGRAMMING LAB – GRAPHICS AND MULTIMEDIA**

Graphics:

1. Write a program to rotate an image.

2. Write a program to drop each word of a sentence one by one from the top.

3. Write a program to drop a line using DDA Algorithm.

4. Write a program to move a car with sound effect.

5. Write a program to bounce a ball an move it with sound effect.

6. Write a program to test whether a given pixel is inside or outside or on a polygon.

Multimedia:

1. Create Sun Flower using Photoshop.

2. Animate Plane flying in the Clouds using Photoshop.

3. Create Plastic Surgery for the Nose using Photoshop.

4. Create See-through text using Photoshop.

5. Create a Web Page using Photoshop.

6. Convert Black and White Photo to Color Photo using Photoshop.

BHARATHIAR UNIVERSITY: COIMBATORE-641 046
B.Sc. CS/IT/CT/SS/MM/CSA &BCA
(For the students admitted from the academic year **2016-2017** and onwards)
CBCS PATTERN

ALLIED SUBJECTS

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**I**
Subject	**Allied 1:** **MATHEMATICAL STRUCTURES FOR COMPUTER SCIENCE**

Subject Description: This subject deals with mathematical concepts like Matrices, Numerical analysis and Statistical methods for computer science and applications.

Goal: To learn about the mathematical structures for computer based applications

Objective: On successful completion of this subject the students should have

- Understood the concepts of mathematics

- Learnt applications of statistical and numerical methods for Computer Science.

UNIT I: Matrices – Introduction – Determination – Inverse of a matrix – Rank of a Matrix – Eigen value Problems

UNIT II: System of Simultaneous Linear algebraic Equation – Gauss elimination, Gauss Jordon, Gauss Seidal methods.

UNIT III: Numerical Differentiations – Newton's forward Difference - Backward Difference – Starling formula Numerical Integration – Trapezoidal Rule & Simpson's rule.

UNIT IV: Measures of central tendency – Mean Median and Mode – Relationship among mean media and mode. Measures of dispersion – Range, quartile deviation and Standard deviation.

UNIT V: Regression and Correlation – Types of relationship – Linear regression – Correlation – Coefficient of correlation – Regression equation of variables.

TEXT BOOKS:

1. Engineering Mathematics, Volume II, Dr M.K. Venkataraman, National Publishing Company, Chennai. (Unit I)

2. Numerical Methods in Science & Engineering, M.K. Venkataraman, National Publishing Company, Chennai, Revised Edition -2005 (Unit II & III)

3. Business Statistics, S.P. Gupta & M.P. Gupta, Sultan Chand and Sons (Unit IV & V)

REFERENCE BOOKS:

1. Numerical Methods, E. Balagurusamy, Tata McGraw Hill.

2. Fundamental of Mathematical Statistics, S. C. Gupta, V. K. Kapoor, Sultan Chand & Sons

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**II**
Subject	**Allied 2: DISCRETE MATHEMATICS**

Subject Description: This subject deals with discrete structures like set theory, mathematical logic, relations, languages, graphs and trees.

Goal: To learn about the discrete structures for computer based applications.

Objective: On successful completion of this subject the students should have: - Understanding the concepts of discrete mathematics - Learning applications of discrete structures in Computer Science.

UNIT I: Set theory-Introduction-Set & its Elements-Set Description-Types of sets-Venn-Euler Diagrams- Set operations & Laws of set theory-Fundamental products-partitions of sets-minsets- Algebra of sets and Duality-Inclusion and Exclusion principle

UNIT II: Mathematical logic – Introduction- prepositional calculus –Basic logical operations- Tautologies-Contradiction-Argument-Method o f proof- Predicate calculus.

UNIT III: Relations – Binary Relations – Set operation on relations-Types of Relations – Partial order relation – Equivalence relation – Composition of relations – Functions – Types of functions – Invertible functions – Composition of functions.

UNIT IV: Languages – Operations on languages – Regular Expressions and regular languages – Grammar – Types of grammars – Finite state machine – Finite – State automata

UNIT V: Graph Theory – Basic terminology – paths, cycle & Connectivity – Sub graphs – Types of graphs – Representation of graphs in computer memory - Trees – Properties of trees – Binary trees – traversing Binary trees – Computer Representation of general trees.

TEXT BOOKS:

1. Discrete Mathematics, J.K. Sharma, 2nd edition, 2005, Macmillan India Ltd. (UNIT I TO V)

REFERENCE BOOKS:

1. Discrete Mathematics Structures with Applications to Computer Science, J. P. Tremblay, R Manohar, McGraw Hill International Edition

2. Discrete Mathematics, M. K. Venkataraman, N.Sridharan, N.Chandarasekaran, National Publishing Company, Chennai

Course	**B.Sc. CS & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**III**
Subject	**Allied 3: COMPUTER BASED OPTIMIZATION TECHNIQUES**

Subject Description: This subject deals various optimization techniques for linear programming, Transportation, Assignment Problems, Game theory, PERT and CPM.

Goal: To learn about the managerial concepts like decision making, optimization, etc.

Objective: On successful completion of this subject the students should have:

- Understanding various mathematical applications in industries.

- Decision making for real time environment.

UNIT I: Linear Programming - Mathematical Model assumption of linear Programming – Graphical method - Principles of Simplex method, Big-M Method, Duality, Dual simplex method.

UNIT II: Transportation and Assignment problem - Integer Programming Branch and Round Techniques - Assignment and Traveling Salesman Problem.

UNIT III: Game Theory - Concept of Pure and Mixed Strategies – Solving 2 x 2 matrix with and without saddle point - n x 2 - 2 x m games. Replacement models - Elementary replacement models - present value - rate of return - depreciation - Individual replacement – Group replacement.

UNIT IV: *(Derivations not included)* Queuing Theory - definition of waiting line model - Queue discipline - traffic intensity - poison arrival – Birth death process - Problem from single server: finite and infinite population model – Problems from multi server: finite and infinite population model.

UNIT V: PERT & CPM - Network representation - backward pass - Forward pass - computation - Pert Network - Probability factor – updating and Crashing.

TEXT BOOK:

1. Operations Research, Manmohan, P.K. Gupta, Kanthiswarup, S. Chand & Sons - 1997.

REFERENCE BOOKS:

1. Operations Research, Hamdy A Taha, Pearson Education, 7th edition, 2002

2. Problems in Operations Research, P.K. Gupta, D.S. Hira, S. Chand Publishers.

Course	**B.Sc. CS & B.C.A (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**IV**
Subject	**Allied 4: BUSINESS ACCOUNTING**

UNIT I: Introduction-Accounting Principles-Branches of accounting-accounting rules-Journalising-Ledger-Subsidiary Book including cash books-Trial Balance.

UNIT II: Preparation of Final Accounts: Trading, Profit and Loss Account and Balance sheet with simple adjustments-Outstanding Expenses and Income, Prepaid Expenses, Pre received Income, Depreciation –Provision for bad debts.

UNIT III: Cost Account-Meaning elements of cost-Preparation of cost sheet with simple adjustments.

UNIT IV: Material cost: Stores Ledger-FIFO-LIFO-weighted average, simple average method. Management Account-Meaning –Objectives- Management account with financial Account.

UNIT V: Budget and Budgetary control-Preparation of various budgets-Flexible Budget-Production Budget-Cash Budget – Sales Budget.

Note: **Distribution of Marks between Problems and Theory shall be 60% and 40%.**

TEXT BOOK:

1. Accounting for Management, N.P.Srinivasan and M.Sakthivel Murugan, S.Chand & Company Ltd., New Delhi.

REFERENCE BOOKS:

1. Double entry book Keeping, T.S Grewal, Sultan Chand & Sons, New Delhi.
2. Management Accounting, Sharma and Gupta, Kalyani Publishers, New Delhi.

Course	**B.Sc. IT / B.Sc. CT (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**III**
Subject	**Allied 3: MICROPROCESSOR AND ALP**

UNIT I: Introduction to microprocessors : Evolution of microprocessors – Single-chip Microcomputer – Embedded Microprocessors – Bit- Slice processors – Microprogramming – RISC and CISC Processors – Scalar and Superscalar Processors – Vector Processors – Array Processors – Symbolic Processors – Digital Signal Processors Intel 8086 – Pin Description of Intel 8086 – Operating modes of 8086 – Register organization of 8086 – BIU and EU – Interrupts – 8086 based computer system – Addressing Modes of 8086

UNIT II: 8086 Instruction Set – Instruction Groups – Addressing Mode Byte – Segment Register Selection – Segment Override – 8086 Instructions Assembly Language Programs for 8086: Largest Number, Smallest Number in a Data Array – Numbers in Ascending and Descending order – Block Move or Relocation – Block Move using REP instruction – Sum of a series – Multibyte Addition

UNIT III: Intel 386 and 486 Microprocessors: Intel 386 and 486 Microprocessor – 486DX Architecture – Register Organization of 486 Microprocessor – Memory Organization – Operating Modes of Intel 486 – Virtual Memory – Memory Managament Unit – Gates – Interrupts and Exceptions – Addressing Modes of 80486 – Pin Configuration

UNIT IV: Input devices – Output devices – Memory and I/O addressing – 8086 Addressing and Address Decoding – Programmable I/O Ports – DMA Data Transfer. Other Microprocessors – PowerPC Microprocessors – Pentium Microprocessors – Pentium Pro microprocessor – Alpha Microprocessor – Cyrix Microprocessor – MIPS Microprocessor – AMD Microprocessor

UNIT V: MOTOROLA 68000, MOTOROLA 68020, MOTOROLA 68030, MOTOROLA 68040 Interfacing of A/D Converter and Applications: Introduction – Interfacing of ADC 0808 or ADC 0809 to Intel 8086 – Bipolar to Unipolar Converter – Sample and Hold Circuit, LF 398 – Microprocessor-based Measurement and Control of Physical Quantities

TEXT BOOK:

1. Badri Ram, Advanced Microprocessors and Interfacing, Tata McGraw-Hill Publishing Company Limited, Fourteenth reprint, 2007

REFERENCE BOOK:

1. A.K. Ray, K.M. Bhurchandi, Advanced Microprocessors and Peripherals, Tata McGraw-Hill Publishing Company Limited, Second Edition, 2007

Course	**B.Sc. CT (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**IV**
Subject	**ALLIED-4: TCP/IP PROTOCOL**

UNIT I: Introduction: Protocols and standards – standards Organizations – internet standards – internet administration -. The OSI model and the TCP/IP protocol suit: the OSI model – layers in the OSI model – TCP/IP protocol suit – addressing – IP versions.

UNIT II: Local area networks – point-to point WANS – SWITCHED WANS – connecting devices – classfull addressing – other issues – subnetting and super netting.

UNIT III: IP addresses – classless addressing: Variable length blocks – subnetting – address allocation. Delivery, forwarding and routing of IP packets: Delivery - forwarding – routing – structure of a router.

UNIT IV: Internet Protocol: Datagram – fragmentation – options – checksum – IP package. User datagram protocol: Process-to-process communication – user datagram – checksum – UDP operation. Transmission control protocol: TCP services – TCP feature – segment – A TCP connection – state transition diagram – TCP timers – TCP package.

UNIT V: Domain name systems: Name space – domain Name space – distribution of name space – DNS in the internet – resolution. Remote Login - TELNET: Concept – network virtual terminal (NVT) – NVT character set – embedding – options – option negotiation – controlling the server – out-of-band signaling – mode of operation – user interface – security issue.

TEXT BOOK:

1. TCP/IP Protocol Suit, Behrouz A. Forouzan Tata McGraw-Hill 3rd Edition.

REFERENCE BOOK:

1. Computer Networks – Protocols, Standards and Interfaces, Uyless Black, PHI, 2nd Edition.

Course	**B.Sc. SS (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**III**
Subject	**ALLIED-3: DATABASE SYSTEMS**

Unit I: Introduction – purpose of database systems – Data Abstraction – Data models – Instances and schemes – Data independence – DDL – DML – Database users – ER model – Entity sets – Keys – ER diagram – relational model – Structure – Relations Algebra – Relational Calculus – Views.

Unit II: SQL – QBE – QUEL – Basic structure – various Operations – Relational database design problems in the relational data base design – Normalization – normalization using functional, Multi value and join dependencies**.**

Unit III: File and system structure – overall system structure – file Organization – data dictionary – Indexing and hashing – basic concept B and B+ tree indices – Static and Dynamic hash functions.

Unit IV: Recovery and atomicity – failures classification and types – Transaction model and Log based recovery, schedules – serial and non-serial types – Serialization of schedules and views – testing for seriability – lock based protocols – time based protocols – validation techniques – multiple Granularity – multiversion schemes – insert and delete Operations.

Unit V: Distributed data bases – structure of distributed databases – Trade offs in Distributing the database – Transparency and autonomy – distributed query processing – recovery in distributed systems – commit protocols – security and integrity violations – authorization and views – security specification – encryption – Statistical databases.

TEXT BOOK:

Henry F.Korth, and Abraham Silberschatz, Sudarshan ―Database system Concepts, McGraw Hill, 4th Edition, 2002.

Course	**B.Sc. SS (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**IV**
Subject	**ALLIED-4: PRINCIPLES OF PROGRAMMING LANGUAGES**

UNIT I: Language Design Issues: History-Role of Programming languages - environments - Impact of machine Architectures - Language Translation Issues: Programming language Syntax- Stages in Translation - formal Translation models - recursive descent Parsing

UNIT II: Modeling Language Properties: Formal Properties of Languages- Language Semantics- Elementary data Types: Properties of Types and Object- Scalar Data Types - Composite Data Types

UNIT III: Encapsulation: Structure data types - Abstract data types - Encapsulation by sub programs Type Definitions Inheritance: - Polymorphisms

UNIT IV: Functional Programming: Programs as Functions- Functional Programming in an Imperative Language - LISP - Functional Programming with static typing - delayed evaluation- Mathematical functional programming- recursive functions and lambda calculus - Logic programming : Logic and Logic Programs - Horn Clauses - Prolog - Problems with logic programming

UNIT V: Formal Semantics: Sample small language - operational Semantics - Denotation Semantics - Axiomatic Semantics - Program correctness - Parallel Programming: Parallel Processing and programming languages - threads - Semaphore - monitors-message passing - parallelism Non Imperative Languages

TEXT BOOKS:

1. Terrence W Pratt, Marvin V Zelkowitz, Programming Languages - Design and Implementation, PHI Publications, 4th edition, 2008

2. Kenneth C. Louden, Programming Languages-Principles and Practices, Cengage Learning Publications, 2nd Edition, 2008

REFERENCE BOOK:

1. Daniel P Friedman, Mitchell Wand, Christopher T Haynes, Essentials of Programming Languages, 2nd Edition, PHI, 2005

Course	**B.Sc. MM & BCA (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**For B.Sc.MM: Allied III (III Semester)** **For BCA : Elective III (V Semester)**
Subject	**WEB SERVICES**

UNIT I: Introduction to Web Services – Industry standards, Technologies and Concepts underlying Web Services – their support to Web Services, Applications that consume Web Services.

UNIT II: XML – its choice for Web Services – Network protocols to backend databases – Technologies – SOAP, WSDL – exchange of information between applications in distributed environment – Locating remote Web Services – its access and usage, UDDI Specification – an introduction.

UNIT III: A brief outline of Web Services – Conversation – static and interactive aspects of system interface and its implementation, Work Flow – Orchestration and refinement, Transactions, Security issues – the Common attacks – security attacks facilitated within Web services Quality of Services – Architecting of systems to meet users requirement with respect to latency, performance, reliability, QOS metrics, Mobile and wireless Services – energy consumption, network bandwidth utilization, Portals and Services Management.

UNIT IV: Building real world Enterprise applications using Web Services – sample source codes to develop Web Services – Steps necessary to build and deploy Web Services and Client applications to meet Customer's requirement – Easier development, Customization, maintenance, Transactional requirements, seamless porting to multiple devices and platforms.

UNIT V: Development of Web Services and applications onto Tomcat application Server and Axis SOAP server (both are freeware) – Web Services Platform as a set of Enabling technologies for XML based distributed Computing.

TEXT BOOKS:

1. Sandeep Chatterjee, James Webber, Developing Enterprise Web Services: An Architects Guide, Prentice Hall, Nov 2003

2. Keith Ballinger, NET Web services: Architecture and Implementation with **.**Net, Pearson Education, First Education Feb 2003.

REFERENCE BOOKS:

1. Ramesh Nagappan, Developing Java Web Services: Architecting and developing secure Web Services Using Java, John Wiley and Sons, 2003.

2. Eric A Marks and Mark J Werrell, Executive Guide to Web Services, John Wiley and Sons, 2003

3. Anne Thomas Manes, Web Services: A Managers Guide, Addison Wesley, 2003.

Course	**B.Sc. MM and BCA (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**For B.Sc. MM : Allied-4 (IV Semester)** **For BCA & CT : Elective-I (V Semester)**
Subject	**DIGITAL IMAGE PROCESSING**

UNIT I: Digital Image Fundamentals Image Transforms- Walsh, Hadamard, Discrete cosine, Hotelling Transforms-Image Formation. File Formats.

UNIT II: Image Enhancement Histogram Modification Techniques-Image Smoothening-Image Sharpening-Image Restoration-Degradation Model-Diagonalization of Circulant and Black circulant matrices-algebraic approach to restoration.

UNIT III: Image Compression and Segmentation Compression Models-Elements of Information Theory-Error free Compression-Inage Segmentation- Detection of Discontinuities-Edge Linking and boundary detection-Thresholding-Regions Oriented Segmentations-Morphology.

UNIT IV: Feature Extraction Image feature descriptions-Interpretations of Line drawings, Image pattern recognition algorithms.

UNIT V: Knowledge Representation and Use Knowledge Representation and Use-Image analysis using Knowledge about scenes-Image Understanding using two dimensional methods.

TEXT BOOK:

1. Gonzalez &Woods, Digital Image Processing, 2nd Edition, Pearson Education, 2002. (Chapters: 1, 2, 3, 4, 5, 8, 9, 10, 11 and 12).

2. Anil Jain, Fundamentals of Digital Image Processing, PHI, 1989. (Chapters: 5, 7, 8 and 11).

REFERENCE BOOKS:

1. Sid Ahmed, Image Processing, McGraw Hill, New York, 1995.

2. Milan Sonka, Vaclav Hlavac and Roger Boyle, Image Processing Analysis and Machine Vision, Second Edition, Thomson Brooks/Cole, 1999.

Course	**B.Sc. SS & B.Sc. CSA (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**B.Sc. CSA: Allied-3 (III Semester)** **B.Sc. SS : Elective-II (VI Semester)**
Subject	**MANAGEMENT INFORMATION SYSTEMS**

UNIT I: Introduction: MIS Concept – MIS Definition – Role of the MIS – Impact of the MIS – MIS and Computer. Role and Importance of Management – Introduction Approaches to Management – Functions of the Manager – Management as a Control System – Process of Management

UNIT II: Organization Structure and Theory – Strategic Management of Business: Basics of Management Information Systems: Decision Making – Information Systems.

UNIT III: System Analysis and Design – Development of MIS – Choice of Information Technology – Applications of Management Information System – Decision Support Systems

UNIT IV: Enterprise Management Systems – Technology of Information Systems – Database Management Systems – Object Oriented Technology (OOT): Conceptual Presentation – Client Server Architecture.

UNIT V: Networks – Business Process Re-Engineering (BPR) – Data Warehouse: Architecture to Implementation – Electronic Business Technology.

TEXT BOOK:

W.S.Jawadekar, Management Information Systems, 2nd Edition, Tata McGraw Hill

REFERENCE BOOK:

Robert Schultheis, Mary Sumner, Management Information System, 4th Edition, TMH

Course	**B.Sc. CSA, B.Sc. CS & B.Sc. MM (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**B.Sc. CSA: Allied-4 (IV Semester)** **B.Sc. CS: Elective –I (V Semester)** **B.Sc. MM : Elective-III (VI Semester)**
Subject	**ORGANIZATIONAL BEHAVIOR**

UNIT I: Introduction to Organizational Behavior –Related Disciplines – Theoretical Framework – Organizational Approaches – Modern Organizational Scenario: Impact of Globalization

UNIT II: Individual Behavior – Perception – Process – Changes - Personality and Attitudes – Job Satisfaction

UNIT III: Motivation: Needs, Content and Process: Motivation: Content Theories -ghh– Process Theories – Contemporary Theories – Motivation Applied – Job Design and Goal setting. Leadership – Background – Process- Styles – Activities – Skills

UNIT IV: Group Dynamics – The nature of Informal Organizations – Formal Groups – Interactive conflict: Interpersonal conflict – Inter-group behavior and conflict – Negotiation Skills: Going beyond conflict management – Traditional Negotiation Approaches - Contemporary negotiation skills.

UNIT V: Communication – Role and background – Interpersonal communication – Informal communication- The Decision Making process – Participative Decision making techniques – Organization design – culture – Organization change and development

TEXT BOOKS:

1. Fred Luthans, Organizational Behavior, 9th Edition, McGraw Hill Irwin, 2002.

2. John W. Newstorm and Keith Davis, Organizational Behavior, 10th Edition.

Course	**B.Sc. CS/IT/SS/CSA/BCA (Regular)**
Effective from	**2016-2017 and Onwards**
Semester	**B.Sc. IT: Allied-4 (IV Semester)** **B.Sc. CS/SS/CSA/BCA : Elective**
Subject	**COMPUTER NETWORKS**

Subject Description: This subject deals different Network concepts like Layers, Wireless Concepts, Transmission and Security.

Goal: Knowledge on Computer Networks and technologies like broadband and Bluetooth.

Objective: To inculcate knowledge on Networking concepts and technologies like wireless, broadband and Bluetooth.

UNIT I: Network Hardware: LAN – WAN – MAN – Wireless – Home Networks. Network Software: Protocol Hierarchies – Design Issues for the Layers – Connection-oriented and connectionless services – Service Primitives – The Relationship of services to Protocols. Reference Models: OSI Reference Model – TCP/IP reference Model – Comparison of OSI and TCP/IP -Critique of OSI and protocols – Critique of the TCP/IP Reference model.

UNIT II: PHYSICAL LAYER - Guided Transmission Media: Magnetic Media – Twisted Pair – Coaxial Cable – Fiber Optics. Wireless Transmission: Electromagnetic Spectrum – Radio Transmission – Microwave Transmission – Infrared and Millimeter Waves – Light Waves. Communication Satellites: Geostationary, Medium-Earth Orbit, Low Earth-orbit Satellites – Satellites versus Fiber.

UNIT III: DATA-LINK LAYER: Error Detection and correction – Elementary Data-link Protocols – Sliding Window Protocols. MEDIUM-ACCESS CONTROL SUB LAYER: Multiple Access Protocols – Ethernet – Wireless LANs - Broadband Wireless – Bluetooth.

UNIT IV: NETWORK LAYER: Routing algorithms – Congestion Control Algorithms. TRANSPORT LAYER: Elements of Transport Protocols – Internet Transport Protocols: TCP.

UNIT V: APPLICATION LAYER: DNS – E-mail. NETWORK SECURITY: Cryptography – Symmetric Key Algorithms – Public Key Algorithms – Digital Signatures.

TEXT BOOK:

1. Computer Networks, Andrew S. Tanenbaum, 4th edition, PHI. *(UNIT-I:1.2-1.4 UNIT-II:2.2-2.4 UNIT-III:4.2-4.6 UNIT-IV:5.2,5.3,6.2,6.5 UNIT-V:7.1,7.2,8.1-8.4)*

REFERENCE BOOKS:

1. Data Communication and Networks, Achyut Godbole, 2007, TMH.
2. Computer Networks: Protocols, Standards, and Interfaces, Uyless Black, 2nd ed, PHI

BHARATHIAR UNIVERSITY: COIMBATORE-641 046

B.Sc. CS/IT/CT/SS/MM/CSA &BCA

(For the students admitted from the academic year **2016-2017** and onwards)

CBCS PATTERN

ELECTIVE SUBJECTS

ELECTIVE: E-LEARNING

UNIT I: E-Learning Evolution - Advantages and Disadvantages of E-Learning - Instructional design Models for E-Learning - Applying User-Centered Design to E-Learning - E-Learning tools – What is an E-Learning tool?

UNITII: Flash: Geometric shape tools – Drawing tools - Creating Precise Lines with the Pen Tool - Fill and stroke controls - Selection Tools - Designing and Aligning Elements.

UNIT III: Creating Animation and Effects: Animation strategies – TimeLine Animation – Applying Layer Types - Character animation Techniques.

UNIT IV: Sound: Import and Export formats – Importing sound to flash – Adding sound to timeline – Synchronizing audio to animations - Stopping sounds. Video: Integrating and Importing Video.

UNIT V: Adobe Premiere: Starting Movie Projects: Starting New Projects - Reviewing and Changing Project Settings - Saving a Project. Adding Special Effects to Your Movies: Surveying Effects - Introducing the Effect Controls Window - Using Keyframes - Removing Effects - Working with Effect Presets.

TEXT BOOKS

1. E-Learning Concepts and Techniques, Pamela Berman, Institute for Interactive Technologies, Bloomsburg University of Pennsylvania, USA (e-book), 2006.
2. MacroMedia Flash 8 Bible, Robert ReinHardt and Snow Dowd. 2006, 1st Edition, Wiley India (P) Ltd, New Delhi.
3. Adobe Premiere Elements for Dummies, Keith Underdahl, Wiley Publishing Inc.

REFERENCES

1. Flash 8, Dinesh Maidasani, 2006, Firewall Media Publications, New Delhi.

2. MultiMedia Literacy, Fred T.Hofstetter, 2001, Tata McGraw Hill, New Delhi.

3. Multimedia Making it Work, Tay Vaughan. 2008. 7th Edition, Tata McGraw Hill, New Delhi.

ELECTIVE : NETWORK SECURITY & CRYPTOGRAPHY

Subject Description: deals with principles of encryption algorithms, and conventional and public key cryptography.

Goal: enable to know the levels of network security and security tools.

Objective: to impart knowledge regarding cryptography and network security.

UNIT I: Service mechanism and attacks – The OSI security architecture – A model for network security – symmetric Cipher model – Substitution techniques – transposition techniques – simplified des – block chipper principles – the strength of des – block chipper design principles and modes of operation.

UNIT II: Triple des-blow fish – RCS Advanced Symmetric Block Ciphers –RC4 stream Cipher confidentially using symmetric encryption – introduction to number theory – public – key cryptography and RSA.

UNIT III: Key management – Diffle Hellman key exchange – message authentication and hash function – hash algorithm – digital signature and authentication protocols – digital signature standard.

UNIT IV: Authentication application – pretty good privacy – S/MIME – ip security – web security considerations –secure socket layer transport layer security –secure electronic transaction.

UNIT V: Intruders –intrusion detection – password management –viruses and related threats – virus countermeasures – fire wall design principles – trusted systems

TEXT BOOK:

1. William Stallings, Cryptography and Network Security Principles and Practices, Fourth edition, PHI Education Asia

REFERENCE BOOKS:

1. Atul Kahate, Cryptography and Network Security, 2nd Edition, TMH.
2. Behrouz A.Forouzan, Cryptography and Network Security, TMH.

ELECTIVE : ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS

Subject Description: This subject deals with various AI Concepts and Methodologies.

Goal: To Acquire Knowledge on various AI Techniques and Expert Systems.

Objective: To have enriched knowledge regarding heuristic search, Knowledge representation and Expert systems

UNIT I: Introduction: AI Problems – AI techniques – Criteria for success. Problems, Problem Spaces, Search: State space search – Production Systems – Problem Characteristics – Issues in design of Search.

UNIT II: Heuristic Search techniques: Generate and Test – Hill Climbing – Best-Fist, Problem Reduction, Constraint Satisfaction, Means-end analysis.

UNIT III: Knowledge representation issues: Representations and mappings – Approaches to Knowledge representations – Issues in Knowledge representations – Frame Problem.

UNIT IV: Using Predicate Logic: Representing simple facts in logic – Representing Instance and Isa relationships – Computable functions and predicates – Resolution – Natural deduction.

UNIT V: Representing knowledge using rules: Procedural Vs Declarative knowledge – Logic programming – Forward Vs Backward reasoning – Matching – Control knowledge Brief explanation of Expert Systems-Definition- Characteristics-architecture- Knowledge Engineering- Expert System Life Cycle-Knowledge Acquisition Strategies- Expert System Tools.

TEXT BOOK:

1. Artificial Intelligence, Elaine Rich and Kelvin Knight, TMH, 2nd Edn, 1991.(chapters 1-6).

REFERENCE BOOKS:

1. Artificial Intelligence A Modern Approach, Stuart Russell & Peter Norvig, 2nd Edition Perason.
2. Artificial Intelligence, George F Luger, 4th Edition, Pearson, 2002.
3. Foundations of Artificial Intelligent and Expert Systems, V S Janaki Raman, K Sarukesi, P Gopalakrishnan, MacMillan India limited.

ELECTIVE: WEB TECHNOLOGY

Subject Description: This subject deals TCP/IP, FTP, WWW and Web technologies like ASP, JVM, DCOM, XML and WAP.

Goal: Knowledge on various Web technologies.

Objective: To inculcate knowledge web technological concepts and functioning internet.

UNIT I: TCP/IP: TCP/IP Basics – Why IP address – Logical Address - TCP/IP Example- The concept of IP address – Basics of TCP – Features of TCP – Relationship between TCP and IP – Ports and Sockets – Active Open and Passive Open - TCP Connections – What makes TCP reliable? – TCP Packet format - Persistent TCP connections – UDP – Differences between TCP and UDP.

UNIT II: DNS – E-mail – FTP – TFTP – History of WWW – Basics of WWW and Browsing - Local information on the internet – HTML – Web Browser Architecture – Web Pages and Multimedia – Remote Login (TELNET).

UNIT III: Introduction to Web Technology: Web pages – Tiers – Concept of a Tier – Comparison of Microsoft and Java Technologies – Web Pages – Static Web Pages – Plug-ins – Frames – Forms. Dynamic Web Pages: Need – Magic of Dynamic Web Pages – Overview of Dynamic Web Page Technologies – Overview of DHTML – Common Gateway Interface – ASP – ASP Technology – ASP Example – Modern Trends in ASP – Java and JVM – Java Servlets – Java Server Pages.

UNIT IV: Active Web Pages: Active Web Pages in better solution – Java Applets – Why are Active Web Pages Powerful? – Lifecycle of Java Applets – ActiveX Controls – Java Beans. Middleware and Component-Based E-Commerce Architectures: CORBA – Java Remote Method Invocation – DCOM. EDI: Overview – Origins of EDI – Understanding of EDI – Data Exchange Standards – EDI Architecture – Significance of EDI – Financial EDI – EDI and internet.

UNIT V: XML: SGML – Basics of XML – XML Parsers – Need for a standard. WAP: Limitations of Mobile devices – Emergence of WAP – WAP Architecture – WAP Stack – Concerns about WAP and its future – Alternatives to WAP.

TEXT BOOKS:

1. Web Technologies: TCP/IP to Internet Applications Architectures – Achyut S Godbole & Atul Kahate, 2007, TMH. *(UNIT-I: 3.1-3.5,4.1-4.12 UNIT-II: 5.1-5.4,6.1-6.7 UNIT III:8.1-8.1,9.1-9.13 UNIT IV: 10.1-10.7,15.1-15.3,16.1-16.8 UNIT-V: 17.1-17.4,18.1-18.6)*

REFERENCE BOOKS:

1. Internet and Web Technologies, Rajkamal, TMH.
2. TCP/IP Protocol Suite, Behrouz A. Forouzan, 3rd edition, TMH.

ELECTIVE : DATA MINING

Subject Description: This Subject deals with the Data Mining

Goal: To learn about Data Mining

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

UNIT I: 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 – a Statistical Perspective on data mining – Similarity Measures – Decision Trees – Neural Networks – Genetic Algorithms.

UNIT III: Classification: Introduction – Statistical – Based Algorithms – Distance Based Algorithms – Decision Tree – Based Algorithms – Neural Network Based Algorithms – Rule Based Algorithms – Combining Techniques.

UNIT IV: Clustering: Introduction – Similarity and Distance Measures – Outliers – Hierarchical Algorithms. Partitional Algorithms.

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

TEXT BOOK:

1. Margaret H.Dunbam, Data Mining Introductory and Advanced Topics, Pearson Education – 2003.

REFERENCE BOOK:

1. Jiawei Han & Micheline Kamber, Data Mining Concepts & Techniques, 2001 Academic Press.

ELECTIVE : OPEN SOURCE SOFTWARE

UNIT I: Introduction to open sources – Need of open sources – advantages of open sources – application of open sources. Open source operating systems: LINUX: Introduction – general overview –Kernel mode and user mode –process – advanced concepts –scheduling – personalities – cloning – signals – development with Linux.

UNIT II: MySQL: Introduction – setting up account – starting, terminating and writing your own SQL programs-record selection Technology – working with strings – Date and Time – sorting Query results – generating summary –working with meta data –using sequences – MySQL and Web.

UNIT III: PHP: Introduction –programming in web environment –variables- constants – data types –operators – statements – functions – arrays – OOP – string manipulations and regular expression – file handling and data storage – PHP and SQL database – PHP and

LDAP – PHP connectivity – sending and receiving E-mails – debugging and error handling – security –templates.

UNIT IV: Syntax and style – python objects – numbers – sequences – strings – lists and tuples – dictionaries – conditional loops –files – input and output – errors and exceptions – functions – modules – classes and OOP – execution environment.

UNIT V: Pert backgrounder – pert overview – pearl parsing rules – variables and data – statements and control structures – subroutines -, packages and modules – working with files – data manipulation.

TEXT BOOKS:

1. The Linux Kernel Book, Remy Card, Eric and Frank Mevel, Wiley Publications 2003.
2. MySQL Bible, Steve Suchring, John Wiley 2002.

REFERENCE BOOKS:

1. Programming PHP, Rasmus Lerdorf and Levin Tatroe, O'Reilly, 2002
2. Core Python Programming, Wesley J. Chun, Prentice Hall, 2001
3. Perl: The Complete Reference, 2nd Edn, Martin C. Brown, TMH , 2009
4. MySQL: The Complete Reference, 2nd Edn, Vikram Vaswani, TMH, 2009
5. PHP: The Complete Reference, 2nd Edn, Steve Holzner, TMH 2009.

ELECTIVE : MASTERING LAN AND TROUBLESHOOTING

Subject Description This Course presents the details of Local Area Networks.

Goals To enable the students to learn about the internal organization of a PC

Objective On successful completion of the course the students should have understood types of faults and how to solve the problems

UNIT I: PC- Hardware overview Introduction to computer organization-Memory-PC family-PC hardware-interconnections between Boxes-Inside the boxes:-motherboard, daughter boards, floppy disk drive, HDD, speaker, mode switch, front panel indicators & Control-mother board logic-memory space-I/O port address-wait state-interrupts -I/O data transfer-DMA channels-POST sequence.

UNIT II: PERIPHERAL DEVICES Floppy drive controller-Overview-Disk format-FDC system interface-FDD interface Hard Disk controller-overview-Disk Drives and interface-controller post description Hard disk card-Hard disk format. **Display Adapter**:-CRT display-CRT controller principle -CRT controller 6845 **Printer controller**:-Centronics interface-programming sequence -Hardware overview-printer-sub assemblers.

UNIT III: MOTHERBOARD CIRCUITS Mother board functions-functional units and inter communications:-Reset logic -CPU nucleus logic-DMA logic-Wait state logic-NM logic-speaker logic-keyboard interface-SMPS.

UNIT IV: INSTALLATION AND MAINTENANCE Introduction-pre installation planning -installation practice-routine checks-special configuration memory up gradation - HD up gradation - DOS command(Internal and external).Preventive maintenance-system usage.

UNIT V: TROUBLESHOOTING Computer faults-nature of faults -types of faults -diagnostic programs and tools-fault elimination-systematic trouble shooting procedure mother board problem-serial port problems-FDC, HDC, display problems- display adapter-printer problem -monitor problems, HDC,FDC problems.

REFERENCE BOOKS:

1. B.Govindarajulu, "IBM PC and Clones", Tata McGraw Hill Co.1995.
2. Robert C Brenner, "IBM PC Troubleshooting and Repair Guide", BPB publications.
3. Winn & Rosch, "Hardware Bible", TechMedia.
4. Ray Duncan, "DOS Programming".
5. Zacker, Upgrading & Troubleshooting Networks – The Complete Reference, Tata McGraw Hill edition.
6. Meyers, Introduction to PC Hardware and Troubleshooting, Tata McGraw Hill edition.

ELECTIVE : SOFT COMPUTING

UNIT I: Fundamentals of Neural Networks: Basic Concepts of Neural Networks, Human Brain, Model of an Artificial Neuron, Neural Network Architectures, Characteristics of Neural Networks, Learning Methods, Taxonomy of Neural Network Architectures, History of

Neural Network Research, Early Neural Network Architectures, Some Application Domains. Back Propagation Networks: Architecture of a Back Propagation Network, Back Propagation Learning, Illustration, Applications.

UNIT II: Associative Memory: Autocorrelators, Heterocorrelators, Exponential BAM, Associative Memory for Real-Coded Pattern Pairs, Applications, Recent Trends. Adaptive Resonance Theory: Introduction, ART1, ART2, Applications, Sensitives of Ordering of Data.

UNIT III: Fuzzy Set Theory: Fuzzy Versus Crisp, Crisp Sets, Fuzzy Sets, Crisp Relations, Fuzzy Relations. Fuzzy Systems: Crisp Logic, Predicate Logic, Fuzzy Logic, Fuzzy Rule Based Systems, Defuzzification Methods, Applications.

UNIT IV: Fundamentals of Genetic Algorithms: Genetic Algorithms: History, Basic Concepts, Creation of Offsprings, Working Principle, Encoding, Fitness Function, Reproduction. Genetic Modeling: Inheritance Operators, Cross Over, Inversion, And Deletion, Mutation Operator, Bit-Wise Operators, Bit-Wise Operators used in GA, Generational Cycle, Convergence of Genetic Algorithms.

UNIT V: Integration of Neural Networks, Fuzzy Logic and Genetic Algorithms: Hybrid Systems, Neural Networks, Fuzzy Logic, and Genetic Algorithms Hybrids, Preview of Hybrid Systems.

TEXT BOOK:
1. S.Rajasekaran, G.A. Vijayalakshmi Pai, Neural Networks, Fuzzy Logic, and Genetic Algorithms, PHI Learning, 2010.

REFERENCE BOOKS:
1. Klir.G, Yuan B.B. Fuzzy Sets and Fuzzy Logic, Prentice Hall of India, 1997.
2. Laurance Fausett, Fundamentals of Neural Networks, Prentice Hall, 1992.
3. Gen, M. and R. Cheng, Genetic Algorithm and Engineering Design, John Wiley, 1997.

ELECTIVE – ANIMATION TECHNIQUES

UNIT I: What is meant by Animation – Why we need Animation – History of Animation – Uses of Animation – Types of Animation – Principles of Animation – Some Techniques of Animation – Animation on the WEB – 3D Animation – Special Effects - Creating Animation.

UNIT II: Creating Animation in Flash**:** Introduction to Flash Animation – Introduction to Flash – Working with the Timeline and Frame-based Animation - Working with the Timeline and Tween-based Animation – Understanding Layers - Actionscript.

UNIT III: 3D Animation & its Concepts – Types of 3D Animation – Skeleton & Kinetic 3D Animation – Texturing & Lighting of 3D Animation – 3D Camera Tracking – Applications & Software of 3D Animation.

UNIT IV: Motion Caption – Formats – Methods – Usages – Expression – Motion Capture Software's – Script Animation Usage – Different Language of Script Animation Among the Software.

UNIT V: Concept Development –Story Developing –Audio & Video – Color Model – Device Independent Color Model – Gamma and Gamma Correction - Production Budgets - 3D Animated Movies.

TEXT BOOKS:

1. Principles of Multimedia, Ranjan Parekh, 2007, TMH. (Unit I, Unit V)
2. Multimedia Technologies, Ashok Banerji, Ananda Mohan Ghosh, McGraw Hill Publication. (Unit II: Chapter 10)
3. Text for Unit III, IV & V is appended.

ELECTIVE : BUSINESS INTELLIGENCE

UNIT I: Introduction to business intelligence and business decisions – Data warehouses and its role in Business Intelligence – Creating a corporate data warehouse – Data Warehousing architecture – OLAP vs. OLTP - ETL process – Tools for Data Warehousing – Data Mining – KDD Process

UNIT II: Applications of Data Mining in Business – Data Mining Techniques for CRM – Text Mining in BI - Web Mining – Mining e-commerce data – Enterprise Information Management - Executive Information Systems

UNIT III: Business Intelligence – Function, Process, Services & Tools - Application in different domains – Operational BI - Customizing BI – Managing BI projects vs. Traditional IS projects – Managing BI projects – Best Practices in BI Strategy

UNIT IV: Knowledge Management – Definition – Data Vs. Information Vs. Knowledge – The ten key principle of KM – Knowledge Management Architecture – Knowledge Management Vs. Knowledge Processing – KM approaches – KM Tools – KM Infrastructure – KM models - KM Strategies

UNIT V: Web Analytics and Business Intelligence – eCRM - Case Study: Web Trends – Boeing – EverBank – China Eastern

TEXT BOOKS:

1. Business Intelligence in the Digital Economy - Opportunities, Limitations and Risks, M.Raisinghani, Idea Group Publications, 2004.
2. Introduction to Data Mining and its Applications, Sumathy, Sivanandam, Springer Verlag, 2006
3. Knowledge Management and Business Innovation, Yogesh Malhotra, Idea Group, 2001

ELECTIVE : NETWORK SECURITY & ADMINISTRATION

UNIT I: Attacks on computers and computer security : Introduction –Need for security – Security approaches -principles of security –Types of attacks. **Cryptography** : Concepts and techniques - - introduction – plain text and cipher text –substitution techniques - transposition techniques – encryption and decryption – symmetric and asymmetric key cryptography – steganograpgy – key range and key size – possible types of attacks

UNIT II: Symmetric Key Algorithms and AES : Introduction - Algorithm Types and modes – An overview of symmetric key cryptography – Data encryption Standard (DES) – International Data Encryption Algorithm (IDEA) – RC4 – RC5 – Blowfish – Advanced Encryption Standard (AES) . **Asymmetric Key Algorithms**: Digital Signature and RSA :

Introduction – brief history of Asymmetric Key cryptography – An Overview of Asymmetric Cryptography - The RSA algorithm – Symmetric and asymmetric cryptography together – digital signatures – Knapsack algorithm – Some other algorithms.

UNIT III: Digital certificate and Public Key Infrastructure (PKI): Introduction – digital certificates – private key management- the PKIX model – Public key cryptography standards – XML, PKI and Security – Creating digital certificates using JAVA. **Internet Security Protocols :** Introduction – basic concepts – Secure Socket Layer – (SSL) – Transport Layer Security(TLS) – Secure Hyper Text Transfer Protocol (SHTTP) – Time Stamping Protocol (TSP) – Secure Electronic Transaction (SET) – SSL Versus SET – 3-D secure Protocol – Electronic Money - - Email security – Wireless Application Protocol (WIP) Security - Security in GSM –Security in 3G.

UNIT IV: User Authentication and Kerberos: Introduction – Authentication basics - Passwords – Authentication Tokens – Certificate based Authentication – biometric authentication – kerberos – Key distribution centre – Security handshake Pitfalls – Single sign on (SSO) Approaches. **Cryptography in JAVA, .NET, and Operating System**: Introduction – Cryptographic Solution using JAVA – Cryptographic Solutions using Microsoft .NET Framework – Cryptographic Toolkits – Security and Operating Systems – Database Security.

UNIT V: Network Security Firewalls and Virtual Private Networks (VPN) : Introduction – Brief introduction to TCP/IP – Fire walls – IP security – Virtual Private networks (VPN) – Intrusion. **Case Studies on Cryptography and Security** : Introduction – Cryptographic Solutions a Case Study – SSO – Secure inter branch payment Transactions – DOS Attacks – IP Spoofing Attacks – Cross Site Scripting Vulnerability (CSSV) – Contract signing – secret Splitting - virtual elections – secure multiparty calculations – creating a VPN – Cookies and Privacy.

TEXT BOOK:

1. Atul Kahate, Cryptograpy and Network Security, Second Edition, Tata McGraw-Hill Publishing, 2003

ELECTIVE: MOBILE COMPUTING

UNIT I: Introduction: Mobility of Bits and Bytes –Wireless The Beginning – Mobile Computing – Dialogue Control – Networks – Middleware and Gateways – Application and services- Developing Mobile computer Applications – security in mobile computing – Standards _ Why is it necessary – Standard bodies. MOBILE COMPUTTING ARCHITECTURE: 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: Evaluation of telephony – Multiple access procedures – Mobile computing through telephone – IVR Application – Voice XML – TAPI

UNIT III: EMERGING TECHNOLOGIES: Blue Tooth – RFID – WiMAX – Mobile IP – IPv6 – Java Card. GSM : Global System for mobile communications – 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 – 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: CDMA and 3G: Spread spectrum technology – Is 95 – CDMA vs GSM – Wireless Data – Third generation networks – Applications on 3G WIRELESS LAN: Wireless LAN advantages – IEEE 802.11 standards – Architecture – Mobile in Wireless LAN – Deploying wireless LAN – Mobile adhoc networks and sensor networks – Wireless LAN Security – WiFi vs 3G

TEXT BOOK:

1. MOBILE COMPUTING, Asoke K Talukder , Roopa R Yavagal, TMH, 2005

ELECTIVE : COMPONENT TECHNOLOGY

Subject Description: This course presents the middle ware technologies that are available and explaining how this can be used for real time applications.

Goals: To enable the students to learn the basic functions and concepts of COM, DCOM and CORBA.

Objectives: On successful completion of the course the students should have Understood the facilities available in component technology Learnt how this can be used for real time application.

UNIT I: Information system - Analyzing the Scenario challenges - CORBA overview - Concepts - Overview of CORBA IDL - IDL Tutorial Conversion of 00 design to IDL - IDL Guidelines - Overview of CORBA and Standard Object model - Architecture - Clients & Object Implementation interface and implementation.

UNIT II: Language mapping - Portability and inter operability - OLE integration - CCRBA services - Information Management Services - Task Management- System Management - Infrastructure of Services.

UNIT III: Facilities and domains - horizontal - Vertical facilities - Leveraging the OMG Process - Relationship with other technologies.

UNIT IV: The CORBA migration process - software Architecture - Applications Design using software Architecture

UNIT V: Migration case studies - Problem and Objective standard based Profile - Project context - Business objects and Process - Interface migration.

REFERENCE BOOK:

1. Inside CORBA — Distributed Object Standards and Applications Thomas J. owtray, William A. Roh. Addison Wesley 1999.

ELECTIVE : DISTRIBUTED COMPUTING

Subject Description This Course presents the distributed computing techniques emphasizing the client server model

Goals To enable the students to learn the concepts of distributed computing

Objectives On successful completion of the course the students should have understood the trends and principles of distributed computing

UNIT I: Distributed Systems: Fully Distributed Processing systems – Networks and interconnection structures – designing a distributed processing g system.

UNIT II: Distributed systems: Pros and Cons of distributed processing – Distributed databases – the challenges of distributed data – loading, factors – managing the distributed resources division of responsibilities.

UNIT III: Design considerations: Communication Line loading – line loading calculations- partitioning and allocation - data flow systems – dimensional analysis- network database design considerations- ration analysis- database decision trees- synchronization of network databases

UNIT IV: Client server network model: Concept – file server – printer server and e-mail server

UNIT V: Distributed databases: An overview, distributed databases- principles of distributed databases – levels of transparency- distributed database design- the R* project techniques problem of heterogeneous distributed databases

REFERENCE BOOKS:

1. John A. Sharp, An introduction to distributed and parallel processing, *Blackwell Scientific Publication(Unit I & III)*

2. Uyless D. Black, Data communication and distributed networks‖(unit II)

3. Joel M.Crichllow , Introduction to distributed & parallel computing (Unit IV)

4. Stefans Ceri, Ginseppe Pelagatti , Distributed database Principles and systems, McGraw Hill

ELECTIVE : MIDDLEWARE TECHNOLOGIES

UNIT I: Client-Server architecture: 2-tier model – 3-tier model – n-tier model – J2EE architecture – DOTNET architecture – MVC architecture

UNIT II: Presentation services: Servlets – JSP – Interaction services: RMI – CORBA – XML – JAXP - JMS – Data Management services: JDBC

UNIT III: Component model: EJB: Session Beans: Stateless and Stateful – Entity Beans – CMP and BMP - Message Driven Beans

UNIT IV: ASP.NET : Introduction – architecture – ASP.NET Runtime – Internet Information Services – Visual Web Developer Web Server – ASP.NET Parser – Assembly – Page class. Web Server Controls – HTML Controls – AdRotator and Calendar controls – Validation Controls – Security Management.

UNIT V: ASP.NET and ADO.NET: System.Data.SqlClient and Xml namespaces – Provider objects and Consumer objects – Disconnected data access – GridView FormView. Web Services: Provider – WSDL – UDDI – SOAP – HTTP – Developing simple web services – Connecting a Web Service to a data source – Developing ASP.NET Clients for Web Services.

TEXT BOOKS:
1. Justin Couch and Daniel H Steinberg, "J2EE bible", Willey India Pvt. Ltd, New Delhi, 2002.
2. Paul Tremblett, "Instant Enterprise Java Beans", TMH Publishing company, New Delhi, 2001

ELECTIVE: COMPUTER INSTALLATION AND SERVICING

UNIT I: PC SYSTEM Personal Computer System - Functional Blocks - System Unit - Display Unit - Keyboard. INSIDE PC Motherboard - BIOS - CMOS-RAM - Motherboard

types – Processors – Chipsets – USB. ON-BOARD MEMORY PC's Memory Organization - Memory packaging - I/O Ports - USB Port.

UNIT II: Floppy Disk Drive and Controller - Hard Disk Drive and Controller, MMX – Multimedia Extensions.

UNIT III: Input Devices - Monitors and Display Adapters.

UNIT IV: Output Devices DOT Matrix Printer - Printer Controller - Laser Printer - Inkjet Printer. Computer Installation Power supply - PC Installation.

UNIT V: Troubleshooting and servicing POST, Trouble shooting the mother board - Trouble shooting the Keyboard - Trouble shooting the disk devices - Trouble shooting the printer. Maintenance Diagnostic Software's - Data Security. Computers and Communication Networking – Modem - Internet.

TEXT BOOK:

1. Computer Installation and Servicing, 2nd Edition, D.Balasubramaniam, Tata McGraw-Hill, 2005.

ELECTIVE: COMPUTER AIDED DESIGN AND MANUFACTURING

UNIT I: Introduction: CAD/ CAM Defined – The Product Cycle and CAD/CAM – Automation and CAD/CAM – Organization. **Fundamentals of CAD:** Introduction – The Design Process – The Application of Computers for Design – Creating the Manufacturing Data Base – Benefits of Computer-Aided Design.

UNIT II: Hardware in Computer-Aided Design: Introduction - The Design Workstation - The Graphics terminal - Operator input Devices- Plotters and Other Output Devices - The Central Processing Unit - Secondary Storage. **Conventional Numerical Control:** Introduction – Basic Components of an NC System – The NC Procedure – NC Coordinate System – NC Motion Control Systems – Applications of Numerical Control – Economics of Numerical Control.

UNIT III: Robot Technology: Introduction – Robot Physical Configurations – Basic Robot Motions – Other Technical Features – Programming the Robot – Robot Programming Languages – End Effectors – Work Cell Control and Interlocks – Robotic Sensors. **Robot Applications:** General Considerations in Robot Applications – Material Transfer – Machine Loading - Welding - Spray Coating - Processing Operations - Assembly - Inspection.

UNIT IV: Group Technology: Introduction – Part Families – Part Classification and Coding **-** Three Parts Classification and Coding Systems – Group Technology Machine Cells – Benefits of group Technology. **Computer-Aided Process Planning:** The Planning Function – Retrieval-Type Process Planning Systems – Generative Process Planning Systems – Benefits of CAPP – Machinability Data Systems – Computer-Generated Time Standards.

UNIT V: Production Planning and Control: Introduction – Traditional Production Planning and Control – Problems with Traditional Production Planning and Control – Computer-Integrated Production Management System – Cost Planning and Control. **Inventory Management and MRP:** Introduction – Inventory Management – Material Requirements Planning – Basic MRP Concepts – Inputs to MRP – How MRP works – MRP Output Reports – Benefit Of MRP – MRP II:Manufacturing Resource Planning.

TEXT BOOK:

1. CAD/CAM Computer-Aided Design and Manufacturing, Mikell P.Groover and Emory.W.Zimmers, Jr., Pearson, 2003.

ELECTIVE : E-COMMERCE

Subject Description: This Subject deals with the E-Commerce

Goal: To learn about E-Commerce

Objective: On successful completion of this subject the students should have thorough understanding of: E-Commerce , E-Market , EDI , Business Strategies etc.

UNIT I: Introduction to E-Commerce: The Scope of E-Commerce – Definition-E-Commerce & the Trade Cycle – Electronic Market – Electronic Data Interchange – The Internet Commerce – The E-Commerce in Perspective. Business Strategy: The Value Chain – Supply Chains – Porter's Value Chain Model – The Inter Organizational Value Chain.

UNIT II: The Introduction to Business Strategy – Strategic Implications of IT – Technology – Business Environment – Business Capability – Existing Business Strategy – Strategy Formulation & Implementation Planning – e-Commerce Implementation -Commerce Evaluation. The Inter Organizational Transactions – The Credit Transaction Trade Cycle. A Variety of Transactions – Pens & Things.

UNIT III: E-Markets: Markets – E-Markets-Usage of E-Markets-Advantages & Disadvantages of E-Markets. EDI: Introduction – Definition - Benefits of EDI – EDI Standards – EDI Communication EDI Implementation – EDI Agreement – EDI Security.

UNIT IV: The Internet : The Internet – The Development of the Internet – TCP/IP – Internet Components – Uses of the Internet – A Page on the Web: HTML Basics – Introduction to HTML – Further HTML – Client Side Scripting – Server Side Scripting – HTML Editors & Editing – The Elements of E-Commerce : Elements – e-Visibility – The e-Shop – On line Payments - Delivering the Goods – Internet e-Commerce Security .

UNIT V: E-Business: Introduction - The Internet Bookshops – Grocery Supplies - Software Supplies and Support – Electronic Newspapers – The Internet Banking - The Virtual Auctions – Online Share Dealing – Gambling on the Net – e-Diversity.

TEXT BOOK:
1. David Whiteley, E-Commerce – Strategy, Technology & Applications, Tata McGraw-Hill.

ELECTIVE - DESIGN & ANALYSIS OF ALGORITHM

UNIT I: Algorithms – Conventions – writing structured programs – Analyzing algorithms – Sorting: Heap sort – Binary Search- Finding the maximum and minimum – merge sort – quick sort – Selection sort.

UNIT II: GREEDY METHOD: The general method – optional storage on tapes – Knap sack problems – Job sequencing with deadlines – optional merge patterns – minimum spanning trees – single source shortest paths.

UNIT III: DYNAMIC PROGRAMMING: The general method – Multistage graphs – All pairs shortest paths – optional binary search trees – 0/1 Knapsack – Reliability design the traveling salesman problem- game theory.

UNIT IV: BACKTRACKING: The general method – The 8 queens problem – sum of subsets – graph coloring – Hamiltonian cycles – knapsack problem.

 UNIT V: BRANCH & BOUND: The general method – 0/1 knapsack problem – Traveling salesperson – Efficiency considerations.

TEXT BOOK:

1. Fundamentals of Computer Algorithms – Ellis Horowitz and Sartaj Sahni, Galgotia Publications (Chapters 1 to 5,6.4,7 & 8)

ELECTIVE : SOFTWARE QUALITY ASSURANCE

Subject Description: This Course presents the essentials of Software Qulaity, Plan for SQA, Standards, Tools for SQA.

Goals: To enable the students to learn the Concepts and Principles of SQA.

Objectives: On successful completion of the course the students should have understood the principles of SQA and must be able to judge the quality of softwares.

UNIT I: Introduction to software quality – Software modeling – Scope of the software quality program – Establishing quality goals – Purpose, quality of goals – SQA planning software – Productivity and documentation.

UNIT II: Software quality assurance plan – Purpose and Scope, Software quality assurance management - Organization – Quality tasks – Responsibilities – Documentation.

UNIT III: Standards, Practices, Conventions and Metrics, Reviews and Audits – Management, Technical review – Software inspection process – Walk through process – Audit process – Test processes – ISO, CMM compatibility – Problem reporting and corrective action.

UNIT IV: Tools, Techniques and methodologies, Code control, Media control, Supplier control, Records collection, Maintenance and retention, Training and risk management.

UNIT V: ISO 9000 model, CMM model, Comparisons, ISO 9000 weaknesses, cmm weaknesses, SPICE – Software process improvement and capability determination.

REFERENCE BOOKS:

1. Mordechai Ben, Meachem and Garry S. Marliss, Software Quality – Producing Practical, Consistent Software, International Thompson Computer Press, 1997

2. Watt. S. Humphrey, Managing Software Process, Addison Wesley, 1998.

3. Philip.B.Crosby, Quality is Free: The Art of Making Quality Certain, Mass Market, 1992.

ELECTIVE : WIRELESS MOBILE COMMUNICATIONS

Subject Description:- This Course presents the Wireless Mobile Communications.

Goals: To enable the students to learn the fundamentals of Wireless Transmission.

Objective: On successful completion of the course the students should have:

- Understood the wireless communication principles, wireless networking and wireless standards.

UNIT I: Introduction to Wireless Communication Systems: Evolution of Mobile Radio Communication - Applications - Comparison of common wireless Communication Systems - Trends in Cellular Radio and Personal Communications - Modern wireless Communication Systems.

UNIT II: Wireless Transmission: Frequencies for Radio transmission- Signals- Antennas - Signal Propagation – Multiplexing- Modulation- Spread Spectrum – **Medium access control**: Specialized MAC – SDMA- FDMA- TDMA - CDMA - FHMA - Radio Packet. **Tele Communication Systems** : GSM - DECT - TETRA – UTMS-PACS - Personal Handy Phone System (PHS) - Pacific Digital Cellular (PDC) and IMT 2000.

UNIT III: The **Cellular Concept** - System Design fundamentals : Introduction - Frequency Reuse - Channel Assignment Strategies - Interference and System capacity - Trunking and Grade of Service - Improving coverage & Capacity in Cellular Systems.

UNIT IV: Wireless Networking: Introduction to wireless Networks - Differences between wireless and fixed telephone Networks - Development of Wireless Networks - Traffic Routing in Wireless Networks - Wireless Networks - Wireless Data Services –CCS- ISDN - Signaling system No: 7(SS7)- PCS / PCNs-_ Protocols for Network Access - Network Databases.

UNIT V: Wireless Systems and Standards: AMPS and ETACS - CDMA Digital Cellular standard (15 – 95) -Reverse CDMA channel - Scripting languages for Wireless Communication - An overview - components.

REFERENCE BOOKS:

1. Odore W.Rapport, Wireless Communications - Principals and Practice , Second Edition , 2002, Pearson Education.
2. Jochen Schillr, Mobile Communication, Addison Wesley, 2000.
3. Stallings, Wireless Communications & Networks, Pearson Education.
4. Garg, Wireless Network Evolution : 2G to 3G, Pearson Education.
5. Richharia, Mobile Satellite Communications : Principles and Trends, Pearson Education
6. Dornan, The Essential Guide to Wireless Communications Applications, Pearson Education

ELECTIVE : SOFTWARE ENGINEERING

Subject Description: This subject deals with Software Engineering concepts like Analysis, Design, Implementation, Testing and Maintenance.

Goal: Knowledge on how to do a software project with in-depth analysis.

Objective: To inculcate knowledge on Software engineering concepts in turn gives a roadmap to design a new software project.

UNIT I: Introduction to Software Engineering: Definitions – Size Factors – Quality and Productivity Factors. **Planning a Software Project:** Planning the Development Process – Planning an Organizational Structure.

UNIT II: Software Cost Estimation: Software cost Factors – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Estimation Costs.

UNIT III: Software Requirements Definition: The Software Requirements specification – Formal Specification Techniques. **Software Design:** Fundamental Design Concepts – Modules and Modularization Criteria.

UNIT IV: Design Notations – Design Techniques. **Implementation Issues**: Structured Coding Techniques – Coding Style – Standards and Guidelines – Documentation Guidelines.

UNIT V: Verification and Validation Techniques: Quality Assurance – Walkthroughs and Inspections – Unit Testing and Debugging – System Testing. **Software Maintenance:** Enhancing Maintainability during Development – Managerial Aspects of Software Maintenance – Configuration Management.

TEXT BOOK:

1. Software Engineering Concepts, Richard Fairley, 1997, TMH. *(UNIT-I: 1.1-1.3, 2.3-2.4 UNIT-II: 3.1-3.4 UNIT III: 4.1-4.2, 5.1-5.2 UNIT-IV: 5.3-5.4, 6.1-6.4 UNIT-V: 8.1-8.2, 8.5-8.6, 9.1-9.3)*

REFERENCE BOOKS:

1. Software Engineering for Internet Applications, Eve Anderson, Philip Greenspun, Andrew Grumet, 2006, PHI.
2. Software Engineering Project Management **–** 2nd Edition**,** Wiley India.
3. Software Quality Engineering, Jeff Tian, Student Edition, 2006, Wiley India.

ELECTIVE : FLASH

UNIT I: An Introduction to Flash – What's New in Flash MX 2004 – Simple Drawing Techniques –Adding Some Easy Animation – Learning about the Tools.

UNIT II: Using the TimeLine – Controlling Drawn Objects – Creating Symbols – Using the Library – Importing & Optimizing Graphics.

UNIT III: Adding & Optimizing Sounds – Importing & Using Video – Understanding Tweens - Adding Interactions.

UNIT IV: Using Masking Techniques – Guiding Animations – Optimizing Your Movies – Creating Flash Movies - Creating Flash Movies for the Pocket PC .

UNIT V: An Action Script Primer – Applying Action Script – Intermediate Action Script Examples.

TEXT BOOK:

1. Brian Underdahl, The Complete Reference – Macromedia Flash Mx2004, 2nd edition – TMH.

REFERENCE BOOK:

1. Flash MX 2004, Thyagharajan Anbumani, TMH.

ELECTIVE : 3DS MAX ANIMATION

UNIT I: Introducing Animations – Types of Animations – Animation Methods – Storyboarding - Introducing 3Ds Max – Interface Basics – Animation Tools & Controls – Creating a Simple Animation – Modifiers in Animations – Applying Modifiers to Animations – Controllers in Animations – Applying Controllers Using the Motions Panel – Applying Controllers Using the Track View Dialog Box.

UNIT II: Animating using Constraints – Constraints in Animations – Applying Constraints to Animations – Introducing a Hierarchy – Animating Hierarchies – Particle Systems – Basics of Particle System – Creating Particle Systems in 3Ds Max – Types of Particle Systems in 3Ds Max – Creating Basic Particle Systems – Creating Advanced Particle Systems.

UNIT III: Space Warps and Gizmos – Space Warps – Types of Space Warps in 3Ds Max – Applying Space Warps – Creating a Dynamic Simulation in 3Ds Max – Gizmos – Creating

Gizmos – Animating with Lights – Lights in 3Ds Max –Adjusting Light Parameters – Additional Light Controllers – Animating Lights – Applying Lights to Create Animation.

UNIT IV: Animating with Cameras – Types of Cameras – Camera View Port – Camera Parameters – Cameras in Animations – Animating with the Target and Free Cameras – Camera Matching.

UNIT V: Rendering Animations – Rendering – Rendering Methods – Render Scene Dialog Box – Rendering Tools – Rendering an Animation – Previewing Animations – Using the RAM Player – Adding Effects to Animations – Environments Effects – Rendering Effects – Video Post.

TEXT BOOK:

1. 3D Animation: An Overview, Prentice Hall India.

REFERENCE BOOKS:

1. George Avgerakis, Digital Animation Bible, TMH, 2005.
2. Barrett Fox, 3D S Max 6 Animation, TMH, 2005.

ELECTIVE: SOFTWRE PROJECT MANAGEMENT

Subject Description: This subject deals with various Techniques for Software Project Management.

Goal: Enables to have sound knowledge on Software Project Management.

Objective: To inculcate knowledge on how to manage a Software Project.

UNIT I: Introduction to Software Project management: Introduction – Why is Software project management is important? – What is a project? – Software project versus other types of project – Contract Management and technical project management – Activities covered by software project management – plans, methods, methodologies – some ways of categorizing software projects. Stepwise: an overview of project planning. Programme Management and Project Evaluation: Programme Management – Managing the Allocation of resources within programmes – strategic programme management – creating a programme – aids to programme management – Benefits Management – Evaluation of Individual projects –

technical assessment – cost-benefit analysis - cash flow forecasting – cost-benefit evaluation techniques – risk evaluation.

UNIT II: Software Effort Estimation: Where are estimation done? – Problem with over and under-estimates – basis for software estimating – software effort estimation techniques – expert judgment – estimating by analogy. Activity Planning: The objectives – When to plan? – Project schedules – project and activities – sequencing and scheduling activities – Network Planning models – formulating a network model – adding time dimension – forward pass – backward pass. Risk Management: Risk – Categories – Dealing with risk – Risk identification, assessment, planning and management – Evaluating risk to schedule.

UNIT III: Resource Allocation: Introduction - Nature of resources – identifying the resource requirements – scheduling resources – creating critical path – counting the cost – being specific – publishing the resource schedule – cost schedules – scheduling the sequence. Monitoring and Control: Creating framework – collecting the data – visualizing progress – cost monitoring – earned value analysis – prioritizing monitoring – getting the project back to target – change control.

UNIT IV: Managing Contracts: ISO 12207 approach – supply process – types of contract – stages in contract placement, management – acceptance. Managing People and Organizing Terms: understanding behavior – organizational behavior – selecting the right person for the job – instruction in the best methods – Motivation – Working in groups – becoming a team – decision making – Leadership – organizational structures – dispersed and virtual teams - influence of culture – stress – health and safety.

UNIT V: Software Quality: The place of software quality in project planning – importance of software quality – defining software quality – ISO 9126 - practical software quality measures – product vs process quality management – external standards – techniques to help enhance software quality- quality plans. Small Projects: Introduction – Some problems with student projects – content of a project plan – conclusion.

TEXT BOOK:
1. Software Project Management, Bob Hughes & Mike Cotterell, 4ᵗʰ Ed, PHI.

ELECTIVE: CLIENT/SERVER COMPUTING

Subject Description: This subject deals with concepts of Client / Server computing. Also it deals with various components of Client / Server Applications.

Goal: Knowledge on Client / Server Concepts and various components of client / server Applications.

Objective: To inculcate knowledge on Client / Server concepts.

UNIT I: Client / Server Computing – Advantages of Client / Server Computing – Technology Revolution – Connectivity – Ways to improve Performance – How to reduce network Traffic.

UNIT II: Components of Client / Server Applications – The Client: Role of a Client – Client Services – Request for Service. Components of Client / Server Applications – The Server: The Role of a Server – Server Functionality in Detail – The Network Operating System – What are the Available Platforms – The Server Operating system.

UNIT III: Components of Client / Server Applications – Connectivity: Open System Interconnect – Communications Interface Technology – Inter-process communication – WAN Technologies.

UNIT IV: Components of Client / Server Applications – Software. Components of Client / Server Applications – Hardware.

UNIT V: Components of Client / Server applications – Service and Support: System Administration. The Future of Client / Server Computing: Enabling Technologies – Transformational Systems.

TEXT BOOKS:

1. Client /Server Computing, Patrick Smith, Steve Guenferich, 2nd edition, PHI. *(Chapters 1-8 & 10)*

REFERENCE BOOKS:

1. Robert Orfali, Dan Harkey, Jeri Edwards: The Essential Client/Server Survival Guide, 2nd edition, Galgotia Publications.

2. Dewire and Dawana Travis, Client/ Server Computing, TMH.

ELECTIVE: INTRODUCTION TO COMPILER DESIGN

UNIT I: Introduction to Compliers: Compliers and Translator – Need of Translator – The structure of a Complier – Lexical analysis – Syntax analysis – Intermediate code generation – optimization – code generation – Complier – writing tools. Finite automata and lexical Analysis: The role of the lexical analysis – A simple approach to the design of lexical analyzers- Regular expressions to finite automata – Minimizing the number of states of a DFA.

UNIT II: The Syntactic specification of programming languages: context free grammars – derivations and parse trees – capabilities of context free grammars. Basic parsing techniques: Parsers – shift – reduce parsing – operator – precedence parsing – top down parsing – predictive parsers.

UNIT III: Syntax – directed translation: syntax – directed translation schemes – implementation of syntax – directed translators – intermediate code – postfix notation – parse trees and syntax trees – 3 address code – quadruples and triples – translation of assignment statements – Boolean expressions – statements that alter the flow of control. Symbol tables: the contents of a symbol table – data structures for symbol table – representing scope information.

UNIT IV: Run time storage administration: Implementation of a simple stack allocation scheme – implementation of block-structured languages – storage allocation in block structured languages. Error deduction and recovery: errors – lexical phase errors – syntactic phase errors – semantic errors.

UNIT V: Introduction of code optimization: The principle sources of optimization – loop optimization – the DAG representation of basic blocks – value numbers and algebraic laws – Global data flow analysis. Code generation: Object programs – problems in code generation – a machine model – a simple code generator – register allocation and assignment – code generation from DAG's – peepholes optimization.

TEXT BOOK:

1. Principles of Complier Design, Alfred V.Aho, Jeffrey D.Ullman, Narosa Publishing House.

ELLECTIVE - PHP & SCRIPTING LANGUAGES

UNIT I: VB Script and Java Script: Language structure - control structure - Procedures and functions - Error handling.

UNIT II: VB Script: Input & Output - Data Validation -Integration with Forms – Activex Control & Scripting

UNIT III: Java Script: Form Validation – SSI and Cookies – Frames and Windows – MIME Types - Plugins

UNIT IV PHP: Server side scripting Language: Basic syntax - Types - Variables - Constants - Expressions - Operators - Control Structures

UNIT V: PHP: Functions - Classes and Objects - HTML forms - HTTP authentication with PHP - Cookies - Handling file uploads - Using remote files - Connection handling - Database Connections.

TEXT BOOKS:

1. Christopher J.Goddard, Mark White, Mastering VB Script, Galgotia Publications, New Delhi.
2. Lee Purcell, Mary Jane Mara, The ABCs of Javascript,
3. Steven Holzner, PHP: The Complete Reference

ELECTIVE – MULTIMEDIA SYSTEMS

UNIT I: Introduction – Branch Overlapping Aspects of Multimedia Content – Global Structure – Multimedia Literature . Multimedia – Media and Data Streams – Medium.

UNIT II: Sound/Audio: Basic Sound Concepts – Music –Speech , Images and Graphics : Basic Concepts – Computer Image Processing – Video and Animation : Basic Concepts – Television – Computer Based Animation .

UNIT III: Data Compression: Storage Space – Coding Requirements – JPEG – MPEG – DVI , Optical Storage Media , Computer Technology – Multimedia Operating System.

UNIT IV: Networking System: Layers, Protocols and Services, Networks, Metropolitan Area Networks, WAN, Multimedia Communication System

UNIT V: User Interfaces, Synchronization, Abstraction for Programming: Abstraction Levels – Libraries – System Software – Toolkit – Higher Programming Languages. Multimedia Application: Introduction – Media Population – Media Compos ion – Media Communication – Trends.

TEXT BOOK:

1. Ralf Steinmetz & Klara Nahrstedt, Multimedia Computing, Communication & Applications ― Pearson Education.

ELECTIVE – EMBEDDED SYSTEMS

UNIT I: Introduction to Embedded System: An Embedded System – Processor in the System – Other Hardware units – Software embedded into a system – Exemplary embedded system – Embedded system on chip and in VLSI circuit. Processor and Memory organization: Structural units in a processor – Processor selection – Memory devices – Memory selection - Allocation of memory – DMA – Interfacing processor, memories and I/O devices

UNIT II: Devices and buses for device networks: I/O devices – Timer and counting devices – Serial communication – Host system. Device drivers and Interrupts servicing mechanism: Device drivers – Parallel port device drivers – Serial port device drivers – Device drivers for IPTD – Interrupt servicing mechanism – Context and the periods for context-switching, dead-line and interrupt latency

UNIT III: Programming concepts and embedded programming in C and C++: Software programming in ALP and C – C program elements – Header and source files and processor directives – Macros and functions – Data types – Data structures – Modifiers – Statements – Loops and pointers – Queues – Stacks – Lists and ordered lists – Embedded programming in

C++ - Java – C program compiler and cross compiler – Source code for engineering tools for embedded C / C++ - Optimization of memory needs

UNIT IV: Program modeling concepts in single and multi processor systems: Modeling process for software analysis before software implementation – Programming models for event controlled or response time constrained real time programs – Modeling of multiprocessor systems. Software engineering practices: Software algorithm complexity – Software development process life cycle and its models – Software analysis – Software design – Implementation – Testing, Validation and debugging – Software maintenance

UNIT V: Inter-process communication and synchronization of processes, tasks and threads: Multiple processor – Problem of sharing data by multiple tasks and routines – Inter process communication. Real time operating systems: Operating system services – I/O subsystem – Network operating systems – Real time and embedded operating systems – Interrupt routine in RTOS environment – RTOS task scheduling – Performance metric in scheduling

TEXT BOOK:

1. Raj Kamal, ― Embedded Systems – Architecture, Programming and Design, TMH, 2007

ELECTIVE / SKILL : BCA&CSA / CS : SOFTWARE TESTING

Subject Description: This subject deals software testing concepts like unit-wise testing, integration testing and acceptance testing.

Goal: Knowledge on software testing and how to test the software at various levels.

Objective: To inculcate knowledge on Software testing concepts.

UNIT I: Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. White-Box Testing: Static Testing – Structural Testing –Challenges in White-Box Testing.

UNIT II: Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? – When to do Black-Box Testing? – How to do Black-Box Testing? – Challenges in White Box

Testing - Integration Testing: Integration Testing as Type of Testing – Integration Testing as a Phase f Testing – Scenario Testing – Defect Bash.

UNIT III: System and Acceptance Testing: system Testing Overview – Why System testing is done? – Functional versus Non-functional Testing - Functional testing - Non-functional Testing – Acceptance Testing – Summary of Testing Phases.

UNIT IV: Performance Testing: Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing – Process for Performance Testing – Challenges. Regression Testing: What is Regression Testing? – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.

UNIT V: Test Planning, Management, Execution and Reporting: Test Planning – Test Management – Test Process – Test Reporting –Best Practices. Test Metrics and Measurements: Project Metrics – Progress Metrics – Productivity Metrics – Release Metrics.

TEXT BOOK:

1. Software Testing Principles and Practices, Srinivasan Desikan & Gopalswamy Ramesh, 2006, Pearson Education. *(UNIT-I: 2.1-2.5, 3.1-3.4 UNIT-II: 4.1-4.4, 5.1-5.5 UNIT III: 6 .1-6.7 (UNIT IV: 7.1-7.6, 8.1-8.5 UNIT-V: 15.1-15.6, 17.4-17.7)*

REFERENCE BOOKS*:*

1. Effective Methods of Software Testing, William E. Perry, 3rd ed, Wiley India.
2. Software Testing, Renu Rajani, Pradeep Oak, 2007, TMH.

ELECTIVE / SKILL : BCA / IT : DOT NET PROGRAMMING

UNIT I: Introduction to .Net: .NET framework- difference between VB6 and VB .Net- Object-Oriented programming and VB .Net-Data types-Variables-Operators-Arrays-Conditional logic.

UNIT II: Procedures- Dialog boxes- File IO and System objects- Error handling- Namespaces-Classes and Objects- Multithreading-Message Queue- Programming MSMQ.

UNIT III: VB .Net IDE-Compiling and Debugging-Customizing- Data access: ADO.Net- Visual studio .Net and ADO .Net. Windows Forms: Controls-Specific controls- Irregular forms.

UNIT IV: Vb .Net and web: Introduction to ASP .Net page framework- HTML server controls- Web controls- Validation controls- Events-CSS- State management- Tracing- Security.

UNIT V: Web Services: Introduction- Infrastructure- SOAP-Building web services- Deploying and publishing web services- Finding and consuming web services

TEXT BOOK:

1. Bill Evjen, Jason Beres, et.al, Visual Basic .Net programming, Wiley Dreamtech India (p) Ltd. ISBN 81-265-0254-1. (Chapters: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 25, 26, 27, 29, 31, 32, 33, 34, 35, 36, 38, 39, 40, 42, 43, 44, 45, 46, 47, 48, 49, 50).

REFERENCE BOOKS:

1. Fergal Grimes, Microsoft .NET for programmers, Shroff Publishers & Distributors (P) Ltd. ISBN 81-7366-540-0.
2. Thuan Thai & Hoang Q.Lam, .NET Framework Essentials, Shroff Publishers & Distributors (P) Ltd. ISBN 81-7366-654-7

ELECTIVE / SKILL – MM / BCA: CASE TOOLS CONCEPTS AND APPLICATIONS

UNIT I: Data Modeling: Business Growth-Organizational Model-Case Study of student MIS-What is the purpose of such Models-Understanding the business-Types of models-model development approach-the case for structural development-advantages of using a case tool. System analysis and design-what is DFD-General Rules for Drawing DFD-Difference

Between Logical data flow diagram and Physical data flow diagram-Software verses Information Engineering-How case tools store information.

UNIT II: Approach used to solve the problem statement: How to deal with a problem statement-Data flow diagram for Payroll System-Presentation Diagram for Payroll System-sehematics of the model-Forms-Screens-Menu Screens-Data entry Screens-Report Output Format-Utilities. Installation of Ubridge and Synthesis: How to use the tools in Ubridge Synthesis for case-Installation of Ubridge Synthesis-Computer Aided Software Engineering-Getting Ubridge to work-Setup-Assign-Housekeep-The Ubridge page.

UNIT III: Introduction to Ubridge: Introduction - Main flow of the system prototyping your Report-Introducing the Novice Model of the Operation. Introducing Synthesis - Synthesis basic – Synthesis - Menu Drawing the screen-Requirement Definition-Diagram-Data Dictionary-Document-Synthesis Main Administration - Synthesis reference - importing and exporting screen.

UNIT IV: Diagram definition tool: Introduction-Starting DDT-Drawing your own Icon - Defining the connection rules-Rebuilding your icon. Object oriented methodologies: Rambaugh et.al.'s object modeling techniques-The Booch methodology –The Jacobson et.al. Methodologies-Pattern-Frame works-The Unified Approach.

UNIT V: Introduction to UML-UML Diagram-Class Diagram-Use Case Diagram-Interaction Diagram-Sequence Diagram-Collaboration Diagram-State Chart Diagram-Activity Diagram-Component Diagram-Deployment Diagram.

TEXT BOOKS:

1. Case Tools Concepts and Applications, Ivan N Bayross, BPB Publications
2. Object Oriented System Development using the Unified Modeling Language, McGraw Hill International edition.

REFERENCE BOOK:

1. Software Engineering: A Practitioner's Approach, Roger S Pressman, McGraw Hill International Edition.

ELECTIVE / SKILL :   IT / CSA : INTERNET PROGRAMMING

UNIT I: Basics of Internet communication - Hardware elements associated with internet - Internet Services - Internet Protocols - TCP/IP, UDP, HTTP - other Protocols - Telnet - Gopher - Mail and its types - FTP - Remote access and Transaction - Web Indexes - Search Engines.

UNIT II: Introduction to HTML - Tags and Documents - Link documents using Anchor Tags - Images and Pictures - Tables -HTML Forms - Frames - Framesets.

UNIT III: Introduction to Scripting - Java Script - Data types - Operators - Variables - Conditional Statements - Functions -Objects - Document object - Image Object - Event Handling -Introduction to VBScript and Perl Script.

UNIT IV: Introduction to XML - Well formed XML - CSS - XSL - Valid XML - DTD - XSD -Introduction to DOM and SAX.

UNIT V: Introduction to Dynamic web applications -Active Server Page Basics - ASP Object Model -Collections - Introduction to PHP.

TEXT BOOKS:
1. Deitel & Deitel, Internet and WWW How to Pprogram, Prentice Hall 2000.
2. David Hunter et al., Beginning XML, Wrox Publications 2000.

REFERENCE BOOKS:
1. Daniel C.Lynch, Marehall T. Rose. Internet Systems Handbook , Addison Wesley 1993.
   Thomas Penny, How to do Everything with HTML.

BHARATHIAR UNIVERSITY: COIMBATORE-641 046
B.Sc. CS/IT/CT/SS/MM/CSA &BCA
(For the students admitted from the academic year **2016-2017** and onwards)

CBCS PATTERN

SKILL BASED SUBJECTS

Skill-1 CS: SOFTWARE ENGINEERING & SOFTWARE PROJECT MANAGEMENT

UNIT I: Software Engineering: A Layered Technology – Software Process – Software Process Models – The Prototyping. Requirement Engineering– Software prototyping - Elements of analysis model – Data modeling – Functional modeling and information flow.

UNIT II: Software design and Software engineering – The Design process – Design principles – Design concepts – Effective modular design –Software Architecture.

UNIT III: Software testing fundamentals – Test Case Design - White box testing – Basis path testing – Control structure testing – Black box testing. Unit testing – Validation testing – System testing.

UNIT IV: Software Configuration Management: Definitions and terminology – processes and activities. Software Quality assurance: Definitions – Quality control and Quality assurance – Organization of Structures. Risk Management: Risk Identification – quantification - Monitoring - Mitigation. Software requirements gathering: Steps to be followed – Outputs and Quality Records - Skill sets required – Challenges.

UNIT V: Estimation: What is Estimation? – When and Why? – Three phases of Estimation – Estimation methodology – Formal models of Size Estimation. Design and Development phases: Reusability - Technology choices – Standards – Portability -User interface issues – Testability - The Effect of Internet on Project Management.

TEXT BOOKS:
1. Roger S. Pressman: Software Engineering, Tata McGraw Hill, V Edition.

2. Gopalaswamy Ramesh, Managing Global Software Projects, Tata McGraw Hill, New Delhi, 2002.

REFERENCE BOOKS:

1. Watts S Humphrey: A Discipline for Software Engineering, Pearson Education, 2001.
2. Bob Hughes and Mike Cotterell, Software Project Management, 2nd Edition, Tata McGraw Hill, 2002.

SKILL 2 - CS: SPM LAB

1. Preparation of Project Management Plan.
2. Using any of the CASE tools, Practice requirement analysis and specification for different firms.
3. Case study of cost estimation models.
4. Practice object oriented design principles for implementation.
5. Practice function oriented design.
6. Practice creating software documentation for the Analysis phase of software development life cycle for a real time application.
7. Practice creating software documentation for the Development phase of software development life cycle for a real time application.
8. Practice creating software documentation for the Implementation phase of software development life cycle for a real time application.
9. Practice creating software documentation for the Testing phase of software development life cycle for a real time application.
10. Simulate a tool for path testing principles.
11. Simulate a tool for testing based on control structures.
12. Simulate a tool that reflects black box testing concepts

SKILL- 4 – CS : SOFTWARE TESTING LAB

Write at least 10 TEST CASES for the following programs. Test cases can be for Input data, Conditional expressions, control transfer, output, etc. Run-Test-Debug- until all the test cases are in success status. Marks distribution as follows:

1. List of Test Descriptions (at least 10) for the Program. (20%)

2. Test Cases (40%)

3. Program with all test case results success (30%)

4. Record (10%)

TEST CASE EXAMPLE:

Test -Id	Test Description	Test Steps	Expected Output	Actual Output	Status
TC-01	Acceptance of 10 digit input data	Input 10 Digit Number	Accepting 10 digit number	Accepted 10 digit number	Success
TC-02	Non- acceptance of character data	Input a character data X	Character X should not be accepted	Accepting Character data	Failure

Modify PIC X(10) into PIC 9(10) and then run program for Test-id TC-02 again.

| TC-02 | Non- acceptance of character data | Input a character data X | Character X should not be accepted | Character data not accepted | Success |
| TC-03 | Digit sum of 10 digit is in single digit | Output data | Single digit sum | Single digit Sum | Success |

1. Test the COBOL program: Finding the sum of individual digits of a 10-digit number until a single digit is produced.

2. Test the COBOL Program: Accept the inputs student name, marks in five subjects and declare the result as PASS if the student gets minimum 40 in each subject; otherwise declare the result as FAIL.

3. Test the COBOL program: Accept the date in DMMMYY format and display the result in the format 10th June 2016.

4. Test the C program: Sort and store the elements of two arrays of integers into the third list.

5. Test the C program: Experiment the operations of a stack using array implementation.

6. Test the C program: Menu-driven option for queue operations like add, remove and display.

7. Test the C++ program: Palindrome string checking program (using pointers)

SKILL 1: BSc. IT : INTRODUCTION TO WEB DESIGN AND APPLICATIONS

UNIT I: Fundamentals of Electronic Mail: Introduction - Email :Advantages and Disadvantages - Userids, Passwords and Email addresses - Message Components - Message Composition - Mailer Features - E mail Inner Workings - Email Management - MIME Types.

Browsing and Publishing: Introduction – Browser bare bones – Coast – to – Coast surfing – Hyber Text Markup Languages – Web page installation – Web page set up – HTML formatting and hyper link creation

UNIT II: The internet: Introduction – internet defined – internet history – the way the internet works – internet congestion – Internet culture – Business culture and the internet – collaborative computing and the internet . **World Wide Web**: introduction the web defined – web browser details – web writing styles – web presentation outline, design, and management – registering web pages

UNIT III: Searching the world wide web: introduction – directories , search engines and metasearch engines – search fundamentals – search strategies – how does a search engine works. **Telnet and FTP**: introduction – telnet and remote login – File transfer – Computer Viruses

UNIT IV: Basic HTML: introduction – semantic versus syntactic – based style types – headers and footers – lists – tables – debugging. **Advanced HTML:** introduction – frames – html forms – CGI scripts – dynamic documents – html tools – next generation html – cascading style sheets

UNIT V: News groups, Mailing Lists, Chat rooms and MUDs: introduction – news groups and mailing lists history – mailing list fundamentals – newsgroups and mailing lists availability – chat-rooms – MUDs. **Electronic Publishing:** introduction – electronic publishing advantages and disadvantages – copy right issues – project Gutenberg and on-line books – electronic journals , magazines and news papers – miscellaneous publishing issues.

TEXT BOOK:
1. Raymond Greenlaw, Ellen Hepp, Fundamentals of the INTERNET and the World Wide Web, Second Edition , Tata McGraw Hill, 2005

SKILL-2- BSc IT : HTML, XML, JAVASCRIPT – LAB

Students are required to write code snippets, which covers the following objectives

1. Design Simple Web Pages using standard HTML tags like, HEAD, TITLE, BODY

2. Design HTML web pages, which make use of INPUT, META, SCRIPT, FORM, APPLET, BGSOUND, MAP

3. Working with various attributes of standard HTML elements

4. Using JavaScript's Window and document objects and their properties and various methods like alert(), eval(), Parselnt () etc. methods to give the dynamic functionality to HTML web pages

5. Writing JavaScript snippet which makes use of JavaScript's in-bulit as well as user defined objects like navigator, Date Array, Event, Number etc.

6. Write code which does the form validation in various INPUT elements like TextFiled, Text Area, Password, Selection list etc.

7. Writing XML web Documents which make use of XML Declaration, Element Declaration, Attribute Declaration

8. Usage of Internal DTD, External DTD, Entity Declaration.

SKILL 4 : BSC IT : DOT NET LAB 1

1. Create a VB .Net program to add a string to Combo box with value of Textbox when user clicks button control.

2. Create a VB .Net program to display hierarchical representations of items with tree view control using Runtime coding.

3. Create a VB .Net program to handle user defined Exceptions.

4. Create a VB .Net program for Employee details to read and display the data using constructors and member functions.

5. Create an application in VB .Net to demonstrate the following events:

    i.   Click

    ii.   Mouse Down

    iii. Key Down

    iv.   Form Load

6. Create an application in VB .Net for File Menu with Menu items New, Open, Save, Print and Exit & Edit Menu with Menu items Cut, Copy, Paste, Find and Undo.

7. Create an application in VB .Net for student information database and perform the following operations:

    i.   Addition

    ii.   Deletion

  iii. Updation

8. Design a website using web form to show the current date and time when a user clicks the button.

SKILL-1 – BSc CT : DATA COMMUNICATION AND NETWORKS

UNIT I: Introduction to communications and Networking : Introduction – Fundamental concepts - Data communications – Protocols- standards - Standards organizations - Signal propagations- Analog and Digital signals- Bandwidth of a signal and a medium - Fourier analysis and the concept of bandwidth of a signal - The data transmission rate and the bandwidth. **Information encoding:** Introduction – Representing different symbols- Minimizing errors- Multimedia – Multimedia and Data compression.

UNIT II: Analog and digital transmission methods: Introduction - Analog signal, Analog transmission - Digital signal, Digital transmission - Digital signal , Analog transmission - Baud rate and bits per second - Analog signal, Digital (Storage and) transmission - Nyquist Theorem. **Modes of data transmission and Multiplexing:** Introduction – Parallel and Serial communication - Asynchronous, Synchronous and Isochronous communication - Simplex, Half-duplex and Full-duplex communication – Multiplexing - Types of Multiplexing - FDM versus TDM. **Transmission Errors: Detection and correction :** Introduction – Error classification – Types of Errors – Error detection.

UNIT III: Transmission media: Introduction - Guided media - Un Guided media - Shannon capacity. **Network topologies, switching and routing algorithms:** Introduction - Mesh topology - Star topology - Tree topology - Ring topology - Bus topology - Hybrid topology - Switching basics- Circuit switching – Packet switching - Message switching - Router and Routing – Factors affecting routing algorithms - Routing algorithm -Approaches to routing.

UNIT IV: Networking protocols and OSI model: Introduction – Protocols in computer communications - The OSI model - OSI layer functions. **Integrated services digital networking (ISDN):** Introduction – Background of ISDN - ISDN architecture – ISDN interfaces - Functional grouping – Reference points - ISDN protocol architecture - Broadband ISDN (B-ISDN). of ATM – Packet size – Virtual circuits in ATM – ATM cells – Switching – ATM layers – Miscellaneous Topics.

Text book:

1. Data Communications and Networks, Achyut. S. Godbole, Tata McGraw-Hill Publishing Company, 2007.

SKILL-2 BSc CT : NETWORK LAB

1. Write a program to Detect Errors using Vertical Redundancy Check (VRC).

2. Write a program to Detect Errors using Longitudinal Redundancy Check (LRC).

3. Write a program to Detect Errors using Cyclic Redundancy Check (CRC).

4. Write a Socket program to implement Asynchronous Communication.

5. Write a Socket program to implement Isochronous Communication.

6. Write a program to implement Stop & Wait Protocol.

7. Write a program to implement Sliding Window Protocol.

8. Write a program to implement the Shortest Path Routing using Dijkstra algorithm.

9. Write a Socket Program to Perform file transfer from Server to the Client.

10. Write a Program to implement Remote Procedure call under Client / Server Environment

SKILL- 3 - BSc CT: NETWORK SECURITY AND MANAGEMENT

UNIT I Introduction: Why Network Security is needed – Management principles – Security principles - Network management - Security attacks – Qualities of a Good Network. **Organizational Policy and Security:** Security policies, Standards and Guidelines – Information Policy – Security Policy - Physical Security – Social Engineering – Security Procedures – Building a Security Plan. **Security Infrastructure:** Infrastructure Components – Goals of Security Infrastructure – Design Guidelines – Security Models.

UNIT II Cryptography: Terminology and background – Data Encryption Methods – Cryptographic Algorithms- Secret Key Cryptography - Public key cryptography – Message Digest – Security Mechanisms – Speech Cryptography. **Hardware and Software Security:** Hardware security – Smart Card – Biometrics – Virtual Private Networks (VPNs) - Trusted Operating Systems – Pretty Good Privacy (PGP) – Security Protocols. **Database Security:** Introduction to Database – Characteristics of a Database Approach – Database Security Issues - Database Security – Vendor-Specific Security – Data Warehouse Control and Security.

UNIT III Intrusion Detection Systems: What is not ad IDS – Infrastructure of IDS – Classification of Intrusion Detection Systems – Host-Based IDS – Network-Based IDS - Anomaly Vs Signature Detection – Manage an IDS – Intrusion Detection Tools – IDS Products and Vendors. **Network Security:** Fundamental Concepts – Identification and Authentication – Access Control – A Model for Network Security – Malicious Software – Firewalls.

UNIT IV Network Management: Goal of Network Management – Network Management Standards – Network Management Model – Infrastructure for Network Management - Simple Network Management Protocol (SNMP). **Security Management:** Security Plan - Security Analysis - Change Management - Disaster Recovery - Systems Security Management - Protecting Storage Media- Protection of System Documentation -Exchanges of Information and Software – Security Requirements of Systems.

UNIT V Electronic Mail Policy: Electronic Mail – What are the E-mail threats that organization's face - Why do you need an E-mail Policy - How do you create an E-mail Policy - Publishing the E-mail Policy - University E-mail Policy. **Security of Internet Banking Systems:** Introduction Banking System – Security Problem – Methodology for Security Problem – Schematic flow of Internet Banking – A layered approach to security.

Text Book:

1. Network Security and Management, Brijendra Singh, PHI 2007.

SKILL-4 - BSc CT: NETWORK SECURITY LAB

1. Write a program to encrypt the data using the encryption methods:

    i.   Substitution Ciphers
    ii. Transposition Ciphers

2. Write a program to implement DES algorithm.

3. Write a program to implement the Public Key Cryptography using Diffie -Hellman Algorithm.

4. Write a program to implement the Public Key Cryptography using RSA algorithm.

5. Write a program to secure the Database using User Authentication Security.

6. Write a server security program for Dynamic Page Generation.

SKILL 1 BSC SS :WAP AND XML

UNIT I: The Rise of Mobile Data: Market Convergence Enabling Convergence – Key Services for the Mobile Internet. Overview of the Wireless Application Protocol: The Origins of WAP – Overview of the WAP Architecture – Components of the WAP Standard – Network Infrastructure Services Supporting WAP Clients – WAP Architecture Design Principles – Relationship to Other Standards.

UNIT II: The Wireless Markup Language: Overview – The WML Document Model – WML Authoring – URLs Identify Content – Markup Basics – WML – Basics – Basic Content – Events, Tashs and Bindings.

UNIT III: Variables – Other Content you can Include – Controls – Miscellaneous Markup – Sending Information – Application Security – Other Data: The Meta Element – Document Type Declarations – Errors and Browser Limitations – Content Generation – WML Version Negotiation.

UNIT IV: User Interface Design: Making Wireless Applications, Easy to Use: Web Site Design: Computer Terminals Vs Mobile Terminals – Designing a Usable WAP Site – Structured Usability Methods – User Interface Design Guidelines – Design Guidelines for Selected WML Elements.

UNIT V: Wireless Telephony Applications: Overview of the WTA Architecture – WTA Client Framework – WTA Server & Security – Design Considerations – Application Creation Toolbox – Future WTA Enhancements. The Mobile Internet Future: Better Content, Easier Access – Beyond Browsing – Beyond Cellular – Mobile Data Unleashed.

Text Book:

1. Sandeep Singhal, Thomas Bridgman, Lalitha Suryanarayana, Daniel Mauney, Jari Alvinen, David Bevis, Jim Chan, Stefan Hild, ―The Wireless Application Protocol, Pearson Education, 2003.

SKILL 2 BSc SS :XML LAB

1. Create a demo for XSLT.

2. Create a menu in XML.

3. Write an XML document to display your bio-data

4. Display XML information in Tree structure format.

5. Write a XML program to navigate the records in the file.

6. Write a program to save data to an XML file.

7. Write a program to show the function of CDATA.

8. Write a XML program to maintain the student database.

9. Write a program to generate XML file from the Database.

10. Write a XML program to implement the Internal DTD and External DTD.

11. Write a program to load a text file into a div element with XML HTTP.

12. List data from an XML file with XML HTTP.

SKILL 3 : BSc SS - ASP.NET

UNIT I: Getting Setup - what is ASP.NET- Setting up for ASP.NET- The development environment – ASP & ASP.NET. An overview – ASP.NET Programming Languages. Programming Basics: Basics of Programming - Program Flow – Effective Coding Techniques –Designing Applications.

UNIT II: How Dynamic Website Applications work- Processing ASP.NET with Visual basic. NET:VB.NET Programming Language Structures –Built in ASP.NET objects & Interactivity- The response object –The ASP Server object.

UNIT III: Web forms & ASP.NET: Web forms- ASP.NET Configuration, Scope and State: ASP.NET and configuration- ASP.NET and state –The application object –ASP sessions – The session object.

UNIT IV: ASP.NET objects and components: The Scripting Object Model- Active Server Components and Controls –More Active Server Components.

UNIT V: Web services & ASP. NET –WSDL & SOAP- Web services Background – ASP.NET &SQL server- using SQL server –using databases in ASP.NET applications- ActiveX data objects- the ADO.NET objective model –coding structured query language.

TEXT BOOKS:

1. Dave Mercer, —ASP. NET A Beginner's Guide, Tata McGraw –Hill Pub. Company Ltd, 2002

2. Matt J. Couch, —ASP. NET and VB. NET Web programming —, Pearson Education, 2002.

3. Kirk Allen Evans, Ashwin Kamanna, Joel Mueller, —XML and ASP.NET, Pearson Education, 2002.

SKILL 4 : BSc SS :ASP.NET LAB

1. Write a program to display the following feedback form. The different options for the list box must be ASP-XML, DotNET, JavaPro and Unix,C,C++. When the Submit Form button is clicked after entering the data, a message as seen in the last line of the above figure must be displayed.

2. Write a program to display three images in a line. When any one of the images is clicked, it must be displayed below. On clicking the displayed image it must be cleared. The screen must look as in the figures given below:

3. Write a simple ASP.NET program to display the following Web Controls:
   - A button with text —click me. The button control must be in the center of the form.
   - A label with a text hello
   - A checkbox.

   The form name must be Web Control

4. Write a program to display ―Welcome To Radiant‖ in the form when the ―click‖ button is clicked. The form title must be ASP.NET.

5. Write a program that displays a button in green color and it should change into yellow when the mouse moves over it.

6. Write a program containing the following controls: • A ListBox • A Button • An Image • A Label The listbox is used to list items available in a store. When the user clicks on an item in the listbox, its image is displayed in the image control. When the user clicks the button, the cost of the selected item is displayed in the control.

7. Write a JavaScript program to display a calendar with the following specifications:

   - The width of the border is 10 units
   - The border is set to inset style
   - The cellpadding is set to 1
   - The cellspacing is set to 4
   - The height of the calendar is 300px
   - The width of the calendar is 500px
   - The Days are displayed as ―Sun, ―Mon etc.
   - The first day of the week is Saturday
   - The days are displayed in brown color
   - The names of the next and previous months are displayed as full months
   - The next and previous months are displayed in white color
   - The days of other months are displayed in gray color
   - The SelectionMode is set to DayWeekMonth
   - The background color of the selected day(s) is lightblue
   - The background color of the selector tab is lightgreen and its text is in black
   - The current day is set to blue color and its text is made bold
   - The background color of the title is green, its text is white and it is made bold

8. Write a JavaScript code that displays two advertisements alternately. When the user clicks on one of the advertisements, he/she is redirected to ―www.amazon.com‖, and the other advertisement redirects the user to ―www.fabmart.com. The weightage of the amazon advertisement is 50 and that of the other one is 40. The advertisement should be centered horizontally and should cover 60% of the width of the screen. Its height should be 80 units. The width of the border should be 5 units.

9. Write a program to get a user input such as the boiling point of water and test it to the appropriate value using CompareValidator.

10. Write a program that uses a textbox for a user input name and validate it for RequiredField Validation.

11. Write a program that gets user input such as the user name, mode of payment, appropriate credit card. After the user enters the appropriate values the Validation button validates the values entered.

12. Create a Form that receives the user name, address, date, nationality, country preferred for working and skill sets from the user and stores the user name in the client using cookies. The country preferred data should appear in a dropdownlist whereas, others should be entered in a text box. Validate all the controls. The Form is named ―formexp.aspx. The date should appear between ―1/1/1990 and 1/1/2012.

SKILL 1 : MM : INTRODUCTION TO PHP PROGRAMMING

UNIT I: Introducing PHP – Basic development Concepts – Creating first PHP Scripts – Using Variable and Operators – Storing Data in variable – Understanding Data types – Setting and Checking variables Data types – Using Constants – Manipulating Variables with Operators.

UNIT II: Controlling Program Flow: Writing Simple Conditional Statements - Writing More Complex Conditional Statements – Repeating Action with Loops – Working with String and Numeric Functions.

UNIT III: Working with Arrays: Storing Data in Arrays – Processing Arrays with Loops and Iterations – Using Arrays with Forms - Working with Array Functions – Working with Dates and Times.

UNIT IV: Using Functions and Classes: Creating User-Defined Functions - Creating Classes – Using Advanced OOP Concepts. Working with Files and Directories: Reading Files-Writing Files-Processing Directories.

UNIT V: Working with Database and SQL : Introducing Database and SQL- Using MySQL-Adding and modifying Data-Handling Errors – Using SQLite Extension and PDO Extension. Introduction XML—Simple XML and DOM Extension.

TEXT BOOK:

1. PHP A Beginner's Guide, Vikram Vaswani, Tata McGraw-Hill

REFERENCE BOOKS:

1. The PHP Complete Reference – Steven Holzner, Tata McGraw Hill Edition.

2. Spring into PHP5 – Steven Holzer, Tata McGraw Hill Edition

SKILL 2 : MM : PHP PROGRAMMING LAB

1. Develop a PHP program using controls and functions

2. Develop a PHP program and check message passing mechanism between pages.

3. Develop a PHP program using String function and Arrays.

4. Develop a PHP program to display student information using MYSQL table.

5. Develop a PHP program to design a college application form using MYSQL table.

6. Develop a PHP program using parsing functions (use Tokenizing)

7. Develop a PHP program and check Regular Expression, HTML functions, Hashing functions.

8. Develop a PHP program and check File System functions, Network functions, Date and time functions.

9. Develop a PHP program using session

10. Develop a PHP program using cookie and session

SKILL 3 – BSC MM : ANIMATION TECHNIQUES

Subject Description : This Subject deals with the Animation Techniques.

Goal : To learn about Animation.

Objective: On Successful Completion of this subject the students should have understood:

2D & 3D Animation, Script Animation, Motion Caption, Audio & Video Formats, etc.

UNIT I: What is meant by Animation – Why we need Animation – Types of Animation 2D & 3D – Theory of 2D Animation – Theory of 3D Animation – Difference between Graphics & Animation – Application of 2D & 3D Animation – History of Animation – Software's.

UNIT II: Traditional 2D Animation Concept – Types of 2D Animation – Techniques of 2D Animation – Color – Text – Formation – Size – Script Animation – Time Line Effects –

Application of 2D Animation – Characterization 2D – Principle of 2D Animation – Concept Development.

UNIT III: 3D Animation & its Concepts – Types of 3D Animation – Cycle & Non-Cycle Animation – Theory of Character 3D Animation – 3D Transition Animation – Skeleton & Kinetic 3D Animation – Texturing & Lighting of 3D Animation – 3D Camera Tracking – Applications & Software of 3D Animation.

UNIT IV: Motion Caption – Formats – Methods – Usages – Motion Capture Software – Merge with Software – Expression – Formats – Methods – Usages – Expression Capture Softwares – Script Animation Usage – Different Language of Script Animation Among the Software.

UNIT V: Concept Development – Scripting – Story Developing – Output Formats – Audio Formats & Video Formats – Colors – Color Cycle – Color Formats – 3D Production Budjets – 3D Animated Movies – Fields in 3D Animation.

TEXT BOOK:

1. Joestadaro, Donkim, Maya 6.0 Bible.
2. Kelly Ldot Murtock, 3DS Max Bible.

REFERENCE BOOK:

1. Tom Meade, Shinsaku Arima, Maya 8.0:The Complete Reference, Tata McGraw Hill.

SKILL– 4 : BSc MM : ANIMATION LAB - FLASH

1. Create Shapes and Drawings in Flash.

2. Change a Shape to Another Shape. (Shape Animation)

3. Create a Man to walk with the help of Key Frame Animation.

4. Draw a Bird with Flash tools and make it fly with key Frame Animation.

5. Change the Colors of an object with the help of Animation.

6. Animate a Ball with the help of Guide line Animation.(Path Animation)

7. Create a Shining Stores with the help of Movie Clip.

8. Create Buttons & Link with other Frames.

9. Create an Album with the help of Buttons.

10. Create a 3D Rotation of a Box with the Help of Shape Animation.

11. Create Morphing between two images in Flash.

12. Create a Simple game with the help of Action Script.

REFERENCE BOOKS:

1. Flash 8 in Simple Steps – Shalini Guptha & Adity Gupta, 2007, Dreamtech.

2. Flash 8 – Ethan Waterall & Norbert Herber, Dreamtech.

SKILL 2 – BSC CSA: PHP PROGRAMMING LAB

1. Develop a PHP program using controls and functions

2.Develop a PHP program and check message passing mechanism between pages.

3.Develop a PHP program using String function and Arrays.

4. Develop a PHP program to display student information using MYSQL table.

5. Develop a PHP program to design a college application form using MYSQL table.

6. Develop a PHP program using parsing functions (use Tokenizing)

7. Develop a PHP program and check Regular Expression, HTML functions, Hashing functions.

8. Develop a PHP program and check File System functions, Network functions, Date and time functions.

9. Develop a PHP program using session

10. Develop a PHP program using cookie and session

SKILL 3 BSC CSA : WEB DESIGNING WITH ASP & ASP. NET

UNIT I: Introduction to web design : what is web design – the web design process – frames – LINKING : text – buttons – icons & graphics – search & designing – text : fonts –text layout – colors – images and backgrounds – cookies

UNIT II: Introduction to ASP VB Script –active server objects : applications ,server, session, response, request - active server components : server side components.

UNIT III: Introduction to ASP.Net: what is ASP.Net – setting up for ASP.Net – Programming basics :basics of programming –program flow – effective coding techniques –

processing ASP.Net applications. Web founds and ASP.Net – ASP.Net and state – scope – ASP.Net objects and components.

UNIT IV: Web services and ASP.Net –ASP.Net and SQL server –using SQL server –using database in ASP.Net applications – ActiveX data objects –ADO.Net object model.

UNIT V: Introduction to ADO- working with ADO connection object, command object and record set objects – over view of ADO and ADO.Net – ADO.Net providers , process – editing data with ADO.Net – ADO and SQL server.

TEXT BOOKS:

1. The Complete reference WEB design by Thomos A Powel TMH Publications 2000 Edn.

2. Using Active server pages by Scot Johnson PHI Spl Edn.

3. ASP.Net a beginners guide by Dave Merces TMH 2002 Edn.

4. ADO & ADO.Net programming by Mike Yenderloy BPB publications 2002 Edn.

SKILL 4 : BSc CSA : ASP LAB

1. Design a personal web page using ASP.

2. Design a data entry form in ASP.

3. Write a Program in ASP to get data using a form, validate the data and returns the same data for correction if any using the same form.

4. Write a program in ASP to display the Session properties.

5. Write a program in ASP that makes use of Ad Rotator component.

6. Write a program in ASP that makes use of Browser Capabilities component.

7. Write a program in ASP that makes use of Content Rotator component.

8. Write a program in ASP that makes use of page counter component.

9. Write a program in ASP to get the data of students using forms and stores them in database.

10. Write a program in ASP to perform record navigation using a form.

SKILL – 1 : BCA - WEB PROGRAMMING

Unit I: Introduction to Internet – World Wide Web – Browsers: Introduction – Popular Web Browsers – know your browsers – Electronic Mail : Introduction – E-mail networks and servers – E-mail protocols – Structure of an E-mail.

Unit II: HTML : Introduction – Getting started – Creating and saving an HTML document – Document Layout of HTML Page – HTML elements – Some other formatting Styles – Hypertext Links.

Unit III: HTML (contd) : URLs – Images – HTML tables – Forms – Special Characters – Metatages. **Interactivity Tools and Multimedia** : Introduction – DHTML – Scripting Languages – Java – ASP.

Unit IV: XML :XML basics – Introduction – need for XML – Advantages – Working with an XML Document – Structure of an XML Document – DTD- XML Schema.

Unit V: XML (contd) : Working with XML Schema - Declaring Attributes – XML namespaces – Reusing Schema Components – Grouping elements and attributes. XML Style sheets : Introduction – CSS – eXtensible Style Sheet language – Formatting Data based on controls – Displaying data in a Tabular Format.

Text Books:

1. Internet and Web Design, ITL Education, Macmillan India Ltd.
2. HTML and XML an Introduction, NIIT, Prentice Hall of India Pvt. Ltd

REFERENCE BOOK:

1. World Wide Web Design with HTML, C. Xavier, 2007, TMH.

SKILL – 2 : BCA - WEB PROGRAMMING LAB

1. Develop a HTML document which displays you name as *<h1>* heading and displays any four of your friends. Each of your friend's names must appear as hot text. When you click your friend's name, it must open another HTML document, which tells about your friend.
2. Write names of several countries in a paragraph and store it as an HTML document, *world.html*. Each country name must be a hot text. When you click India (for example), it must open *india.html* and it should provide a brief introduction about India.
3. Design a HTML document describing you. Assign a suitable background design and background color and a text color.

4. Develop a HTML document to print the following: *Who can use the solar heaters? Anybody with a regular hot water demand.* *In houses for domestic purposes (cooking, bathing and washing).* *For engineering / chemical industries, dairies and textile/leather process plants, to –preheat boiler feed water.* *For hostels, hospitals, guest houses and industrial canteens.* *For food-processing plants and for process applications.*

5. Write a HTML document to print the following: *The family has the following facilities: 1. Own House* *Living area 2400 square feet* *Separate bungalow* *Car shed 2. Car* *Maruti Esteem* *Registration Number TN 38 A 9650* *1996 Model 3. Farm*

   35 acres Coconut Groves *10 acres Mango Groves*

6. Write a HTML document to print your class Time Table.

7. Develop a Complete Web Page using Frames and Framesets which gives the Information about a Hospital using HTML.

8. Write a HTML document to print your Bio-Data in the following format: **NAME Religion Community** *Street Town District State* **Address** *PIN Code Office* **Phone** *Residence Mobile* **Educational Qualification** *Degree University/Institute Month& year Grade / Mark*

9. Develop complete set of web pages to describe you skills in various areas using HTML.

10. Develop a web site to publish your family and the details of each member using HTML.

11. Develop a HTML document to display a Registration Form for an inter-collegiate function.

12. Develop a HTML document to design Alumni Registration form of your college.

SKILL 4 : BCA - CASE TOOLS LAB

1. To design an ATM transfer system using UML diagram and to generate VB code.

2. To design a student mark analysis using UML diagram and to generate VB code.

3. To design a platform assignment system using UML diagram and to generate VB code.

4. To design a railway reservation system using UML diagram and to generate VB code.

5. To design an expert system for medicine field using UML diagram and to generate VB code.

6. To design a stock maintenance system using UML diagram and to generate VB code.

7. To design a quizzing system using UML diagram and to generate VB code.

8. To design a remote computer monitoring system using UML diagram and to generate VB code.

9. To design an online ticket reservation system using UML diagram and to generate VB code.

10. To design an E-mail client server system using UML diagram and to generate VB code.

BHARATHIAR UNIVERSITY: COIMBATORE-641 046

B.Sc. CS/IT/CT/SS/MM/CSA &BCA
(For the students admitted from the academic year **2016-2017** and onwards)

CBCS PATTERN

GUIDELINES FOR PROJECT WORK

- The aim of the project work is to acquire practical knowledge on the implementation of the programming concepts studied.

- Each student should carry out individually one project work and it may be a work using the software packages that they have learned or the implementation of concepts from the papers studied or implementation of any innovative idea focusing on application oriented concepts.

- The project work should be compulsorily done in the college only under the supervision of the department staff concerned.

Viva Voce

- Viva-Voce will be conducted at the end of the year by both Internal (Respective Guides) and External Examiners, after duly verifying the **Annexure Report** available in the College, for a total of 200 marks at the last day of the practical session.

- Out of 200 marks, 160 marks for project report and 40 marks for Viva Voce.

PROJECT WORK
TITLE OF THE DISSERTATION

Bonafide Work Done by

STUDENT NAME

REG. NO.

Dissertation submitted in partial fulfillment of the requirements

for the award of <Name of the Degree>

of Bharathiar University, Coimbatore-46**.**

College emblem

GUIDE   HOD

Submitted for the Viva-Voce Examination held on _____

Internal Examiner   External Examiner

MONTH – YEAR

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    2.1 EXISTING SYSTEM

2.1.1 DRAWBACKS

2.2 PROPOSED SYSTEM

2.2.1 FEATURES

3. SYSTEM DESIGN AND DEVELOPMENT

3.1 FILE DESIGN

3.2 INPUT DESIGN

3.3 OUTPUT DESIGN

3.4 DATABASE DESIGN

3.5 SYSTEM DEVELOPMENT

3.5.1 DESCRIPTION OF MODULES

(Detailed explanation about the project work)

4. TESTING AND IMPLEMENTATION

5. CONCLUSION

BIBLIOGRAPHY

APPENDICES

A. DATA FLOW DIAGRAM

B. TABLE STRUCTURE

C. SAMPLE CODING

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