

GOVERNMENT COLLEGE FOR WOMEN  
(AUTONOMOUS),  
KUMBAKONAM

**Department of Computer Science**

**B.Sc COMPUTER SCIENCE UG-SYLLABUS**

(2017 Onwards)



2017-2018

GOVERNMENT COLLEGE FOR WOMEN (AUTONOMOUS), KUMBAKONAM

B.Sc., Computer Science - Course Structure under CBCS

(For the candidates to be admitted from the year June 2017- 2018 onwards)

**SEMESTER= I**

Part	Course Type	Course Code	Title of the Course	Hrs/Week	Credits	Exam Hrs	Marks		
							CI A	ES E	Total
I	LC	17GT1	Tamil	6	3	3	25	75	100
II	ELC	17GE1	English	6	3	3	25	75	100
III	CC-I	17CSC101	Programming in C	6	4	3	25	75	100
III	CC-II	17CSC102P1	Practical - I- Programming in C Lab	4	3	3	40	60	100
III	AC-I	171AM1:CS	Numerical Methods	5	3	3	25	75	100
III	AC-I	172AM2:CS	Operations Research	3	-	3	-	-	-
				<b>30</b>	<b>16</b>				<b>500</b>

**SEMESTER= II**

Part	Course Type	Course Code	Title of the Course	Hrs/Week	Credits	Exam Hrs	Marks		
							CI A	ES E	Total
I	LC	17GT2	Tamil	6	3	3	25	75	100
II	ELC	17GE2	English	6	3	3	25	75	100
III	CC-III	17CSC203	Object Oriented Programming with C++	5	4	3	25	75	100
III	CC-IV	17CSC204P2	Practical II - Programming in C++ Lab	3	3	3	40	60	100
III	AC-II	172AM2:CS	Operations Research	2	3	3	25	75	100
III	AC-III	172AM3:CS	Probability & Statistics	4	4	3	25	75	100
		18UVE	Value education – yoga	2	2	3	25	75	100
IV	AEC	UGCES	Environmental Studies	2	2	3	25	75	100
				<b>30</b>	<b>24</b>				<b>600</b>

**SEMESTER- III**

Part	Course Type	Course Code	Title of the Course	Hrs/Week	Credits	Exam Hrs	Marks		
							CI A	ES E	Total
I	LC	17GT3	Tamil	6	3	3	25	75	100
II	ELC	17GE3	English	6	3	3	25	75	100
III	CC-V	17CSC305	Fundamentals of Data Structures and Algorithms	6	5	3	25	75	100
III	CC-VI	17CSC306P3	Practical III – Data Structures using C++ lab	3	3	3	40	60	100
III	AC-IV	183AAPH1	Applied Physics-I	5	4	3	25	75	100
III	AC-V	184AAPH2P	Practical –Applied Physics –II (Carry Over)	2	-	-	-	-	-

IV	NMEC	17CS3NMEC1	Fundamentals of Photoshop	2	2	3	25	75	100
			TOTAL	<b>30</b>	<b>20</b>				<b>600</b>

**SEMESTER= IV**

Part	Course Type	Course Code	Title of the Course	Hrs/Week	Credits	Exam Hrs	Marks		
							CI A	ES E	Total
I	LC	17GT4	Tamil	6	3	3	25	75	100
II	ELC	17GE4	English	6	3	3	25	75	100
III	CC-VII	17CSC407	Programming in JAVA.	4	4	3	25	75	100
III	CC-VIII	17CSC408P4	Practical IV – Programming in Java Lab	3	3	3	40	60	100
III	AC-V	184AAPH2P	Applied Physics-II Lab	3	3	3	-	-	100
III	AC-VI	183AAPH3	Applied Physics –III	4	3	3	25	75	100
IV	NMEC	17CS4NMEC2	Internet Programming.	2	2	3	25	75	100
IV	SBEC-I	18EL4NMEC2	Inter Personal Skills.	2	2	3	25	75	100
			<b>Total</b>	<b>30</b>	<b>23</b>				<b>800</b>

**SEMESTER= V**

Part	Course Type	Course Code	Title of the Course	Hrs/Week	Credits	Exam Hrs	Marks		
							CI A	ES E	Total
III	CC-IX	17CSC509	Operating Systems	6	6	3	25	75	100
III	CC-X	17CSC510	Computer Architecture & Fundamentals of Microprocessor	5	5	3	25	75	100
III	CC- XI	17CSC511	Data and Computer Communications	5	5	3	25	75	100
III	CC-XII	17CSC512P5	Practical V – Microprocessor and Animation lab	5	4	3	40	60	100
III	EC I	17CS5EC3:1	Computer Graphics	5	5	3	25	75	100
		17CS5EC3:2	Multimedia Systems						
		17CS5EC3:3	Digital Image Processing						
IV	SBEC-II	SBEC-2	Office Management	2	2	3	25	75	100
IV	SBEC-III	SBHC	Hardware Concepts	2	2	3	25	75	100
			<b>Total</b>	<b>30</b>	<b>29</b>				<b>700</b>

**SEMESTER= VI**

Part	Course Type	Course Code	Title of the Course	Hrs/Week	Credits	Exam Hrs	Marks		
							CI A	ES E	Total
III	CC-XIII	17CSC613	Data Base System Concepts	5	5	3	25	75	100
III	CC-XIV	17CSC614P6	Practical VI – RDBMS Lab	6	5	3	25	75	100
III	CC-XV	17CSC615P7	Practical VII - Programming in PHP Lab	6	5	3	40	60	100
III	EC- II	17CS6EC4:1	PHP Scripting Language	5	5	3	25	75	100
		17CS6EC4:2	Software Testing						
		17CS6EC4:3	E - Commerce						
III	EC- III	17CS6EC5:1	Software Engineering	5	4	3	25	75	100
		17CS6EC5:2	System Analysis and Design						
		17CS6EC5:3	Software Project Management						
III	EC	NMET	Emerging Technology for Workplace	2	2	3			100
IV			Extension activities	-	1	3	-	-	-
IV		GS	Gender studies	1	1	3	25	75	100
			<b>Total</b>	<b>30</b>	<b>28</b>				<b>700</b>

Total number of Papers = 40  
 Total number of Hours = 180

Extension Activities = 1  
 Marks = 4000Credit

# I Semester - Core Paper – I

## Programming in C

### Objective :

To obtain knowledge about the structure of the programming language C and to develop the program writing and logical thinking skill.

### **UNIT I**

Overview of C - History of C - Importance of C - Sample Programs - Basic Structure of C Programs - Programming Style - Executing a 'C' Program Constants, Variables, and Data Types Introduction - Character Set - C Tokens - Keywords and Identifiers – Constants – Variable - Data Types - Declaration of Variables - Declaration of Storage Class - Assigning Values to Variable - Defining Symbolic Constants - Declaring a Variable as Constant - Declaring a Variable as Volatile - Overflow and Underflow of Data Operators and Expressions : Introduction - Arithmetic Operators - Relational Operators - Logical Operators - Assignment Operators - Increment and Decrement Operators - Conditional Operators - Bitwise Operators - Special Operators - Arithmetic Expressions- Evaluation of Expressions - Precedence of Arithmetic Operators - Type Conversions in Expressions - Operator Precedence and Associativity - Mathematical Function.

### **UNIT II**

Managing Input and Output Operation - Introduction - Reading a Character - Writing a Character - Formatted Input - Formatted Output - Decision making and Branching - Introduction Decision Making with IF Statement - Simple IF Statement - The IF....ELSE Statement - Nesting of IF.....ELSE Statement - The 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 - Concise Test Expressions.

### **UNIT III**

Arrays – Introduction - One-dimensional Arrays - Declaration of One-dimensional Arrays Initializing of One - dimensional Arrays - Two - dimensional Arrays - Initializing Two - dimensional Arrays - Multi-dimensional Arrays - Dynamic Arrays - More about Arrays - Character Arrays and Strings - Introduction - Declaring and Initializing String Variables- Reading String from Terminal- Writing Strings to Screen - Arithmetic Operation on Characters - Putting Strings Together - Comparison of Two Strings - String-handling Function - Table of Strings - Other Features of Strings.

### **UNIT IV**

User-defined Functions- Introduction - Need for User-defined Function- A multi-function Program- Element of User-defined Function - Definition of Functions - Return Values and their Types - Function Calls - Function Declaration - Category of Functions - No Arguments and no Return Values - Arguments but no Return Values - Argument with Return Values- No Arguments but Returns a Value - Function that Return Multiple Values - Nesting of Function - Recursion - Passing Arrays to Functions - Passing Strings to Functions - The Scope, Visibility and Lifetime of Variables - Multi file Programs - Structures and Unions - Introduction - Defining a Structure - Declaring Structure Variables - Accessing Structure Members Copying and Comparing Structure Variables - Operations on Individual Members Arrays of Structures - Arrays within Structures - Structures within Structures - Structures and Function – Unions - Size of Structures - Bit Fields.

### **UNIT V**

Pointers- Introduction- Understanding Pointers- Accessing the Address of a Variable Chain of Pointer - Pointer Expressions- Pointer Increment and Scale Factor- Pointer and Arrays Pointers and Character String- Array of Pointers- Pointers as Function Arguments - Functions Returning Pointer- Pointers to Function- Pointer and Structures- Troubles with Pointer. **File Management in C** - Introduction- Defining and Opening a File- Closing a File - Input / Output Operations on File- Error Handling During I/O Operations- Random Access to Files Command Line Arguments.

**Text Book :** “ Programming in C ” – E. Balagurusamy - 4<sup>th</sup> edition - Tata McGraw – Hill Publishing company.

**Reference Book :** “ Programming with C ” – schaum series - 2<sup>nd</sup> Edition - Byron S.Gottfried.

## **I Semester - Core Paper II – Practical I**

### **PROGRAMMING IN C LAB**

1. Simple Interest
2. Reverse a given five digit number.
3. Income Tax calculation using nested IF.
4. Prime number checking.
5. Sum of digits of a given number.
6. Printing Pascal Triangle.
7. Solution of a Quadratic Equation (all cases).
8. Sum of Series (Sine, Cosine, e (Pow) x).
9. Palindrome checking.
10. Ascending and descending order of numbers using Arrays(Use it to find Largest and Smallest Numbers)
11. Sorting of names in Alphabetical order.
12. Matrix Operations(Addition, Subtraction, Multiplication – use Functions)
13. Finding factorial, generating Fibonacci Numbers using recursive function.
14. String manipulations without using string functions (String length, String Comparison, String Copy, Palindrome checking, Counting words and lines in strings – use function pointers).
15. Calculate no.of positive , no.of negative and zero number in an array.
16. Swap two values using function pointers.
17. Number sorting using pointers.
18. Printing maximum marks in each subject along with the name of the student by using structure.
19. Pay bill calculation using file.
20. Counting no.of words, lines and characters using files.
21. Adding given numbers using command line arguments.
22. Graphics programs (Fill style, Olympic logo,Doordarshan )

## II Semester - Core Paper- III

### OBJECT ORIENTED PROGRAMMING WITH C++

#### **Objective :**

To gain the basic knowledge of object oriented programming concepts and to understand the detail idea of C++ streams, templates and error handling concepts of C++ programming.

#### **UNIT I**

Object oriented programming: Software Evolution – OOP Paradigm – concepts, Benefits, Object Oriented Languages and Applications.

#### **UNIT II**

Introduction to basic concepts of C++ Languages – Tokens, keywords, Identifiers, Data Types, Variables, Manipulators – Expression and Control Structures – Functions: main function – function prototyping – Call by Reference – Function Overloading – Friend and Inline functions.

#### **UNIT III**

Classes and Objects – Constructors and Destructors – Operator Overloading – Type Conversions.

#### **UNIT IV**

Inheritance – single Inheritance – Multiple Inheritance – Hierarchical, Hybrid Inheritance – Polymorphism – Pointers – Virtual Functions – Console I/O operations.

#### **UNIT V**

Files – Classes for file stream operations – Opening, Closing and Processing files – End of file Detection – File pointers – Updating a file – Error Handling during file operations – Command line Arguments – Templates – Exception Handling.

#### **Text Book :**

“OBJECT ORIENTED PROGRAMMING WITH C++” – E. BALAGURUSAMY TATA McGraw Hill Publishing Ltd, New Delhi, 1995.

#### **Reference Books :**

1. "OBJECT ORIENTED PROGRAMMING WITH C++" – Robert Lafore. Galgotia, 1994.
2. "C++, The Complete Reference" – Herbert Schildt, 3<sup>rd</sup> Edition, Tata McGraw Hill Publishing Ltd, 1999.
3. "Let us C++" – Yeswant Kanetkar, BPB Publication, 1999.
4. Programming with C++ - John R. Hubbard – Schaum's Outline Series, 1996.

**PROGRAMMING IN C++ LAB**

1. Election Candidate problem.
2. Function overloading and default value to a parameter.
3. Write a C++ program using a class to represent a bank Account with data members – name of depositor, account number, type of account, balance and member functions – deposit amount, withdraw amount, show name and balance. Check the program with your own data.
4. Consider a shopping list of items for which orders are placed with a dealer. The list should include code number and price the item. Operations such as adding an item to the list, deleting an item from the list and printing the total value of the order are to be provided. Write a program to implement the above using a class with arrays as data members.
5. Create a ‘time’ class with integer data members hours, minutes, and seconds. Develop two constructors, one should initialize the data to zero and the other should initialize to fixed values. A member function should display it in hh:mm:ss format.
6. Design an abstract base class ‘Shapes’ and derive three classes “Rectangle”, “Circle”, and “Triangle”. Develop Polymorphic Functions “Circumference” and “Computer Area”, to calculate the circumference and area of these objects and display is. Develop a main program to create each of these objects and apply these polymorphic functions.
7. Develop a program using operator overloading
  - a) To add two complex numbers.
  - b) To find the difference between any given time and the system time.
  - c) To multiply two matrices.
8. Class inheritance for a publishing company.
9. Simulation of a calculator using function overloading.
10. Income Tax calculation using virtual function.
11. Write a program which reads a text from a file and the display the following information  
Number of Lines  
Number of Words  
Number of Characters  
Strings should be left justified and numbers should be right justified in a suitable field width.
12. Write a C++ programs to illustrate the use of the following  
Default argument  
Reference Variable  
Copy Constructor  
Develop a “Employee” class having the data members Empno, Ename, Basic pay, Dept and Grade. Calculate the DA, HRA, LIC AND PF (Assume your own data and Percentage). Using these calculate Gross pay and Net Pay.



### III Semester - Core Paper -V

## FUNDAMENTALS OF DATA STRUCTURES & ALGORITHMS

### Objective :

To give a fundamental knowledge on data structures and exposure to development of algorithms related to data structures.

### **UNIT I**

Arrays and sequential Representations – Ordered Lists – Stacks and Queues – Evaluation of Expressions – Multiple Stacks and queues – singly Linked Lists – Linked Stacks and Queues – Polynomial Addition – Doubly Linked Lists and Dynamic Storage Management – Strings – a case study.

### **UNIT II**

Trees – Binary tree representations – Tree Traversal – Threaded binary trees – Binary tree representation of trees – Set representations – Decision trees .

### **UNIT III**

Graphs and Representations – Traversal, Connected Components and spanning trees – Shortest paths and transitive Closure .

### **UNIT IV**

Algorithms – conventions – Writing Structured Program – Analyzing algorithms – Sorting – Heap sort – Binary search – Finding the maximum and minimum – Merge sort – Quick sort – Selection sort.

### **UNIT V**

Greedy Method: The general method – Optimal storage on tapes – knapsack problem – Job sequencing with deadlines – Optimal merge patterns – Minimum spanning trees – single source shortest paths.

### **Text Books :**

1. Fundamentals of data structure – Ellis Horowitz and Sartaj Sahini Chapters 2,3,4,5,6.1 to 6.3 (Excluding 2.3,3.2,4.5,4.6,5.8.3,5.9,4.7,4.10,4.12,6.4,6.5).
2. Fundamental of Computer Algorithms – Elliz Horowitz and sartaj sahini Galgotia Publications.

### **Reference Books :**

1. Data Structures – LIPSCHUTA, Tata McGraw Hill, Schaum's Outline Series.
2. Introduction to Design & Analysis of Algorithms – Goodman(S.E), Hedetniemi (S.T).

### **III Semester – Core Paper VI-Practical III**

#### **DATA STRUCTURES USING C++ LAB**

1. Write a program to merge two arrays into single array.
2. Write a program to implement stack using array.
3. Write a program to implement queue using array.
4. Write a program to implement postfix evaluation.
5. Write a program to insert and delete an element in a linked list
6. Write a program to implement polynomial addition using linked list.
7. Write a program to implement double linked list.
8. Write a program to implement binary tree
9. Write a program to implement breadth first search.
10. Write a program implement depth first search.
11. Write a program to find an element using Sequential search.
12. Write a program to find an element using Binary search.
13. Write a program to implement quick sort.
14. Write a program to implement selection sort.
15. Write a program to implement insertion sort.

## **IV Semester – Core Paper- VII**

### **PROGRAMMING IN JAVA**

#### **Objective :**

To give basic knowledge of Object Oriented Programming paradigm and to impart the programming skills in JAVA.

**UNIT I :** Java Evolution: Java History – Java Features – How Java Differs from c and c++ - Java and Internet – Java and World Wide Web – Web Browsers – Hardware and Software Requirements – Java Support Systems – Java Environment - Overview of Java Language: Introduction – Simple Java Program – More of Java – An Application with Two Classes – Java Program Structure – Java Tokens – Java Statements – Implementing a java program – Java virtual machine – Command line arguments – Programming Style – Constants, Variables and Data types: Introduction – Constants – Variables – Data Types – Declaration of Variables – Giving values to variables – Scope of variables – Symbolic Constants – Type casting – Getting values of Variables – Standard default values.

**UNIT II :** Operators and Expressions: – Arithmetic operators – Relational Operators – Logical Operators – Assignment Operators – Increment and decrement operators – Conditional operators – Bitwise Operators – Special operators – Arithmetic Expressions – Evaluation of Expressions – Precedence of Arithmetic Operators – Type conversion in Expressions- Operator Precedence and Associativity – Mathematical Functions – Decision making and branching - Decision making and Looping.

**UNIT III :** Classes, Objects and Methods: Defining a class – Fields Declaration – Methods Declaration – Creating Objects – Accessing Class Members – Constructors – Methods Overloading – Static members – Nesting of methods – Inheritance: Extending a class – Overloading Methods – Final Variables and methods – Final Classes – Finalizer Methods – Abstract methods and classes – Methods with Varargs – Visibility Control- Arrays, Strings and Vectors: Introduction – One Dimensional Arrays – Creating an Array – Two – dimensional Arrays – Strings – Vectors – Wrapper Classes – Enumerated Types – Annotations – Interfaces: Multiple Inheritance – Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface variables.

**UNIT IV :** Packages - Java API Packages – Using System Packages – Naming Conventions – Creating Packages – Accessing A package – Using a Package – Adding a class to a package – Hiding classes - Static Import – Multithreaded Programming : Creating Threads – Extending the Thread class – Stopping and Blocking a Thread – Life cycle of a Thread – Using Thread Methods – Thread Exceptions – Thread Priority – Synchronization – Implementing the “Runnable” Interface – Managing Errors and Exceptions: Types of Errors – Exceptions – Syntax of Exception Handling Code – Multiple Catch statements – Using Finally Statement – Throwing Our Own Exceptions – Using Exceptions for Debugging.

**UNIT V :** Applet Programming : How applets differ from Applications – Preparing to write applets – Building applet code – Applet life cycle – Creating an Executable applet – designing a web Page – Applet Tag – Adding Applet to HTML File – Running the applet – More about Applet Tag – Passing parameters to applets – Aligning the display – More about HTML tags - Displaying Numerical values – Getting input from the user – Graphics Programming: The Graphics Class – Lines and Rectangles – Circles and Ellipses – Drawing Arcs – Drawing Polygons – Line Graphs – Using Control loops in applets – Drawing bar charts. Managing Input/Output Files in Java: Concept of Streams – Stream classes - Byte Stream Classes – Character stream classes – using streams – other useful I/O classes – Using the file Class – Input / Output Exceptions – Creation of Files – Reading/Writing characters – Reading/Writing Bytes – Handling primitive data types – Concatenating and Buffering files – Random access files – Interactive input and output – other stream classes.

#### **Text Book :**

“Programming with Java” – E.Balagurusamy, Tata McGraw Hill Publishing Company Ltd, Third Edition.

#### **Reference Book :**

Java 2 Complete Reference”, Herbert Schildt,Tata Mc Graw HILL, 4<sup>th</sup> edition.

## **Semester IV - Core Paper VIII - Practical - IV**

### **PROGRAMMING IN JAVA LAB**

1. Simple programs using For, While, Ternary and Switch
2. String handling using String and String Buffer.
3. Inheritance
4. Polymorphism
5. Interfaces and packages
6. Text files (Copy, Display, counting characters, words and lines)
7. Data Files (Creating, Processing)
8. Vector manipulation
9. Simple Programs Applet and AWT
10. Exercises using Predefined and User Defined Exception
11. Graphics Programs for drawing Lines, Rectangle, Oval, String using Applet.

## **V Semester – Core Paper - IX**

### **OPERATING SYSTEMS**

#### **Objective :**

To have a basic knowledge of processes, Scheduling concepts, Memory Management, Device Management and Information Management.

#### **UNIT I**

Evolution of Operating Systems – Types of Operating system – Different views of OS – Design and Implementation of Operating Systems – I/O programming concepts – Interrupt structure & processing.

#### **UNIT II**

Memory Management: Single contiguous Allocation – Partitioned Allocation – Relocatable Partitioned Allocation – Paged and Demand paged Memory management – Segmented Memory Management – Segmented and Demand paged memory management – Swapping and overlay techniques.

#### **UNIT III**

Processor Management: Job scheduling – process scheduling – functions and policies – Evaluation of Round Robin Multiprogramming performance – Process Synchronization – Race condition – synchronization mechanism – deadly embrace prevention and detect and recover methods.

#### **UNIT IV**

Device Management: Techniques for Device management – Device characteristics – I/O Traffic controller, I/O scheduler, I/O device handlers – Virtual devices – Spooling.

#### **UNIT V**

File Management: Simple File System – General model of a File system, Physical and Logical File systems.

Case studies: DOS, UNIX/LINUX Operating systems.

#### **Text Book:**

1. “Operating Systems” – E. Madnick and John J. Donavan, Tata McGraw Hill Book Company Ltd.,

#### **Reference Book:**

1. “Operating Systems (concepts and design) Milan Milenkovic – McGraw Hill International Edition.

## V Semester – Core Paper - X

### COMPUTER ARCHITECTURE & FUNDAMENTALS OF MICROPROCESSOR

#### Objective :

To gain knowledge about the architecture of computer and to understand the concepts of CPU, ALU Design, I/O Instruction format and different processors.

#### **UNIT I**

Digital Logic Circuits – Digital Computers – Logic Gates – Boolean Algebra – Map Simplification Combinational Circuits – Flip Flops – Sequential Circuits – Digital Components – Integrated Circuits – Decoders – Multiplexers - Registers – shift registers – Binary Counters – Memory UNIT

#### **UNIT II**

Register transfer and Micro operations - Register Transfer Language - Register Transfer - Bus and Memory Transfer - Arithmetic Micro operations - Logic Micro operations - Shift Micro operations - Arithmetic Logic Shift UNIT.

#### **UNIT III**

Central Processing UNIT – Introduction - General Register organization - Stack organization - Instruction formats - Addressing modes - Data Transfer and Manipulation - Program Control - Reduced Instruction Set Computer (RISC) Computer Arithmetic – Introduction – Addition and Subtraction – Multiplication Algorithm – Division Algorithms.

#### **UNIT IV**

Microprocessor Architecture – Intel 8085 - Instruction Cycle - Timing Diagram –Intel 8085 Instructions - Programming of microprocessors: Introduction – Assembly language – High level language – Areas of Applications of various languages – MACRO – Microprogramming.

#### **UNIT V**

Assembly Language Programming - Simple Examples - Addition and Subtraction of Binary and Decimal Numbers- Complements - Shift – Masking - Microprocessor Applications – 7-Segment LED Display – Measurement of physical Quantities – Temperature measurement & control – Water level indicator - Microprocessor Based Traffic Control.

#### **Text Books :**

1. For UNIT 1, 2, 3

Computer System Architecture, M. Morris Mano Pearson Education, 3<sup>rd</sup> Edition, 4<sup>th</sup> Indian Reprint, 2004.

2. For UNIT 4, 5

Fundamentals of Microprocessor and Microcomputers - Badri Ram-5<sup>th</sup> revised and enlarged edition- Dhanpat Rai Publication-2001.

I UNIT: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7.

II UNIT: 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7

III UNIT: 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 10.1, 10.2, 10.3, 10.4

IV UNIT: 3.1, 3.2, 3.3, 4.6, 5.1, 5.2, 5.3, 5.4, 5.14

V UNIT: 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18-9.3-9.6-9.6.1, 9.6.4, 9.8.

## V Semester – Core Paper – XI

### DATA AND COMPUTER COMMUNICATIONS

#### **Objective :**

To have a depth knowledge about data communication and networks.

**UNIT I :** Data communication-Networks-Protocols and standards –Standards Organizations-Basic concepts- Line configuration –Topology-Transmission mode –Categories of Networks .

**UNIT II :** The OSI Model –The Modal –Functions of the Layers –TCP/IP protocol suite. Signals: Analog and digital – Periodic and Aperiodic signals-Analog signals-Time and frequency domains –Composite signals-Digital signals-Encoding and modulating-Analog to digital conversion-Digital to analog conversion-Transmission of digital data: Interfaces & modems- Digital data Transmission-Modems-Cable modem.

**UNIT III :** Transmission Media-Guided media-Unguided media-Transmission Impairment – Multiplexing-Many to one/one to many-frequency –division multiplexing(FDM)-Wave division multiplexing(WDM)-Time division multiplexing(TDM) Multiplexing application:-The telephone system-Error detection and correction:- Types of errors-Detection-Vertical redundancy check(VRC)-Longitudinal Redundancy check(LRC)-Cyclic redundancy check(CRC)-Checksum-Error correction.

**UNIT IV :** Local Area networks Project 802-Ethernet-Token Bus-Token Ring-Switching-Circuit Switching-Packet Switching Message Switching –Networking and internetworking devices-Repeaters-Bridges-Routers –Gateways-Other devices-Routing algorithms-Distance vector routing –Link state routing.

**UNIT V :** TCP/IP Protocol Suite :Part 2,Application layer –client ,Server model-Domain name system-Telnet-File Transfer Protocol:-Trivial File Transfer Protocol(TFTP)-Simple Mail Transfer Protocol(SMTP)-Simple network Management Protocol(SNMP)-Hypertext Transfer Protocol(HTTP)-World Wide Web- VLANs and VPNs-VPN-Network Security-Four aspects of security – Privacy - Digital signature.

#### **Text Book:**

1. “ Data communications and Networking ” – 2<sup>nd</sup> Edition - Behrouz A Forouzan.

#### **Reference Books:**

1. Computer Networks - Tanen Baum
2. Computer Networks - William Stallings

UNIT – I : Chapter 1,2 (2.1 to 2.4)

UNIT – II : Chapter 3, 4, 5 (5.2, 5.3), 6 (6.1, 6.4, 6.6)

UNIT – III: Chapter 7 (7.1 to 7.3), 8 (8.1to 8.5), 9 (9.1 to 9.7)

UNIT – IV: Chapter 12 (12.1 to 12.5), 14 (14.1 to 14.3), 21 (21.1 to 21.8)

UNIT – V : Chapter 25 (25.1 to 25.10), 26 (26.2), 27 (27.1 to 27.3).

**MICROPROCESSOR AND ANIMATION LAB**

**Microprocessor Experiments**

1. 8-bit addition, subtraction, multiplication and division.
2. 16 bit addition.
3. BCD subtraction.
4. Data transfer from one part of the memory to another.
5. Maximum and minimum values.
6. Searching element in the given numbers.
7. Sorting (Ascending and Descending order).
8. Hexadecimal to decimal and decimal to hexadecimal conversion(simple logic only)
9. Reversing an array element.

**Animation Lab (Flash, Coreldraw, Adobe Photoshop)**

**Flash**

Develop an image(s) and do the following.

1. Basic Drawing and Painting.
2. Working with Strokes and Fills
3. Creating Custom Colors, Gradients, and Line Styles Transforming and Grouping Objects
4. Converting Text into Shapes
5. Animate using motion, shape, Tweening , and actions

**Adobe Photoshop**

1. Study of Pixel graphics.
2. Layer system, different layouts (Development of boards)
3. Photo editing, Drawing tools
4. Study of different colour modes, colour adjustment etc

**Corel Draw**

1. Study of vector graphics
2. Working with shapes and curves and colour
3. Creating artistic text and graphic
4. Creating logos and branding
5. Layout of magazine, brochures
6. Printing techniques



## V Semester – Elective – I – Paper -1

### COMPUTER GRAPHICS

#### Objective :

To impart the basic principles of generating primitives, shapes, package development, interactive graphics, raster graphics, two and three dimensional graphics and their transformations.

#### **UNIT I**

Overview of graphics Systems – Video Display Devices – Raster scan systems – Random scan systems – Monitors and Workstations – Input Devices- Hard-Copy Devices-Graphics software.OUTPUT PRIMITIVES – Points and Lines – Line – Drawing Algorithms-Loading the Frame Buffer-Line function- Circle-Generating Algorithms –Ellipse-Generating Algorithms-Filled-Area Primitives-Fill Area Functions- Cell Array-Character Generation.

#### **UNIT II**

Attributes of output primitives :Line Attributes – Curve Attributes-Color and Grayscale Levels – Area-Fill Attributes – Character Attributes-Bundled Attributes-Inquiry Functions-Antialiasing.TWO-DIMENSIONAL GEOMETRIC TRANSFORMATIONS –Basic Transformations – Matrix Representations and Homogeneous Coordinates – Composite Transformations – Other Transformations .

#### **UNIT III**

Two Dimensional Viewing – The viewing pipeline-Viewing coordinate Reference Frame-Window-to-viewport Coordinate Transformation-Two-Dimensional Viewing Functions-Clipping Operations – Point Clipping-Line Clipping-Polygon Clipping – Curve Clipping-Text Clipping – Exterior Clipping-GRAPHICAL USER INTERFACES AND INTERACTIVE INPUT METHODS – The User Dialogue-Input of Graphical Data-Input Functions-Initial Values for Input-Device Parameters-Interactive Picture-Construction Techniques.

#### **UNIT IV**

Three Dimensional concepts – Three- Dimensional Display Methods-Three- Dimensional Graphics Packages-THREE-DIMENSIONAL GEOMETRIC AND MODELING TRANSFORMATIONS –Translation-Rotation-Scaling-Other Transformations –Composite Transformations –Three Dimensional Transformation Functions- Modeling and Coordinate Transformations.

#### **UNIT V**

Visible Surface Detection Methods – Classification of Visible-Surface Detection Algorithms – Back Face Detection-Depth-Buffer Method-A-Buffer Method-Scan-Line Method-Depth-Sorting Method-BSP-Tree Method-Area-Subdivision Method-Octree Methods-Ray-Casting Method-Curved Surfaces-Wireframe Methods-Visibility Detection Functions.

**Text Book :** “COMPUTER GRAPHICS”-DONALD HEARN , M.PAULINE BAKER 2<sup>nd</sup> Edition, PHI Private Limited.

UNIT 1 – Chap 2 (2.1 to 2.7),Chap 3 (3.1 to 3.6,3.11 to 3.14). UNIT II – Chap 4 (4.1 to 4.8), Chap 5 (5.1 to 5.4). UNIT III – Chap 6 (6.1 to 6.11), Chap 8 ( 8.1 to 8.5).

UNIT IV – Chap 9 (9.1 to 9.2), Chap 11 (11.1 to 11.7) , UNIT V – Chap 13 (13.1 to 13.13)

**Reference Book :** “Principles of interactive Computer Graphics” – William M.Newman and Sproull.

## **V Semester – Elective I - Paper – II**

### **MULTIMEDIA SYSTEMS**

#### **Objective :**

To understand and familiar the concepts of Multimedia by creating multimedia applications.

#### **UNIT I**

Multimedia Introduction – Multimedia Skills - Multimedia Elements : Text – Sound – Images – Animation - Video.

#### **UNIT II**

Multimedia Hardware – Connections – Memory & Storage Device – Input devices – Output hardware – Communication Devices.

#### **UNIT III**

Basic Software Tools : Text editing and Word Processing Tools – OCR Software - Painting and Drawing tools – 3 D Modeling and Animation tools – Image editing tools Sound Editing Tools – Animation, Video & Digital Movie Tools. Multimedia Authoring Tools : Card - and – Page – Based Authoring tools – Icon and Object Based Authoring Tools – Time Based Authoring tools. Tools for World Wide Web : Web Servers, Web Browser, Search Engine.

#### **UNIT IV**

Planning and Costing : Process of Making Multimedia – Scheduling – Estimating – RFP's AND Bid Proposals.

#### **UNIT V**

Designing, Producing and Delivery : Designing - Producing – Delivery – Testing , Preparing for Delivery – Delivery on CD-ROM – Compact Disc Technology – Wrapping – Delivery on WWW.

#### **Text Book :**

Tay Vaughnan, “Multimedia: Making it work” 7<sup>th</sup> Edition, *Tata McGraw - Hill 2001*

UNIT I – Chapters 2, 3, 4, 5, 6, 7, 8

UNIT II – Chapters 9

UNIT III – Chapters 10, 11, 13

UNIT IV – Chapters 15

UNIT V – Chapters 16, 18

## V Semester - Elective I – Paper III

### DIGITAL IMAGE PROCESSING

#### Objective:

To learn the fundamental concepts of Digital Image Processing. To study basic image Processing Operations.

#### **UNIT I**

INTRODUCTION AND DIGITAL IMAGE FUNDAMENTALS: Introduction - What is Image Processing- examples of fields that uses DIP Fundamentals step in DIP. Digital image fundamentals – image sensing and acquisition, Image sampling and quantization – Basic relationship between pixels.

#### **UNIT II**

IMAGE ENHANCEMENT TECHNIQUES: Some basic intensity transformation functions – Histogram processing Fundamental steps of spatial filtering – smoothing spatial filters.

#### **UNIT III**

IMAGE RESTORATION: Model of Image Degradation/restoration process – noise models – restoration in the presence of Noise only Spatial filtering.

#### **UNIT IV**

IMAGE COMPRESSION: Fundamentals – Coding redundancy – Spatial and temporal redundancy – Irrelevant information. Some basic compression methods: Huffman coding – arithmetic coding – LZW coding – Run Length coding – Bit-plane coding.

#### **UNIT V**

IMAGE SEGMENTATION AND REPRESENTATION: Morphological image processing: preliminaries – Erosion and Dilation. Fundamentals – point, line, and Edge detection: Line Detection – Basic edge detection – More advanced techniques for Edge detection – Edge linking and boundary detection – Thresholding

#### **Text Book:**

Digital Image Processing, Third Edition, Rafael C. Gonzalez and Richard E. Woods, Pearson Education, 2008. Chapters: 1.1, 1.3, 1.4, 2.3, 2.4, 2.5, 3.2-3.5, 5.1-5.3, 8.1.1, 8.1.2, 8.2.3-8.2.5, 8.2.7, 9.1, 9.2, 10.1, 10.2.3, 10.2.5-10.2.7, 10.3

#### **Reference Books:**

1. Fundamentals of Digital Image Processing, Anil K. Jain, Prentice Hall of India, 1989.
2. Digital Image Processing and Analysis, B. Chandra and D. Dutta Majumder, PHI, New Delhi, 2006.

## V SEMESTER – PART - IV

### SKILL BASED ELECTIVE COURSE – II

#### OFFICE MANAGEMENT

#### அலுவலக மேலாண்மை

##### அலகு I

அலுவலக மேலாண்மை – விளக்கம் - அலுவலக மேலாண்மையின் அடிப்படை கூறுகள் - அலுவலக மேலாண்மையின் பணிகள்.

##### அலகு II

அலுவலக இட அமைவு – தீர்மானிக்கும் காரணிகள் - அலுவலக அமைப்புத் திட்டத்தின் முக்கிய கோட்பாடுகள் - அலுவலகச் சூழ்நிலைகள்.

##### அலகு III

அலுவலக பதிவுகள் மேலாண்மை - முக்கியத்துவம் - கோப்பு முறையின் இயல்புகள் - கோப்புகளை வகைப்படுத்துதல் - நவீன கோப்பு முறைகள்.

##### அலகு IV

அலுவலக எந்திரங்கள் - நோக்கங்கள் - தேர்ந்தெடுப்பதற்கான தத்துவங்கள் - நன்மைகள், தீமைகள்.

##### அலகு V

அலுவலக கருவிகளின் வகைகள் - படிப்பெருக்கி - கணக்கிடும் கருவிகள் - முகவரி பொறிப்பு கருவிகள் - முத்திரை பொறிக்கும் கருவி.

## **V SEMESTER – PART - IV**

### **SKILL BASED ELECTIVE COURSE – III**

#### **HARDWARE CONCEPTS**

##### **Objective :**

To understand the principles of hardware with their circuits & design. To know about technology, services and the working of various devices with its architecture.

##### **UNIT I**

Introduction to computer - Types of computer - computer case - sizes and types – Layout – Appearance – Microprocessor - Inside a microprocessor - Microprocessor performance.

##### **UNIT II**

Computer memory - Introduction - Types of Memory - Management of memory - Memory Management bugs - Protected memory – DRAM - Cache memory – Operations – Applications – Flash memory – SRAM - Virtual memory - BIOS

##### **UNIT III**

Motherboard – History – Design - CPU sockets - Peripheral card slots - Temperature and Reliability - Chipset - Hard Disk Drive – overview – components - performance characteristics – SCSI – SCSI network - Sound card – Applications - Digital signal Processor - Graphics card.

##### **UNIT IV**

Computer monitor - Monitor types - Color monitors - Types of monitors - CRT monitor - LCD Monitor-Advantages of LCD - Monitor specifications - TV monitors – LED - Flat panel Displays – HDTV - Curved monitors.

##### **UNIT V**

Keyboard - Functioning of computer keyboard – Mouse - variants of mouse - Optical mouse - Interface circuits-Parallel ports-Serial ports- USB features- USB system description.

##### **Reference books:**

“Hardware” - P.Karthikeyan,

“Hardware BiBle”, Winn L.Rosch

##### **Reference sites:**

[www.wikipedia.org](http://www.wikipedia.org), [www.atariarchieves.org](http://www.atariarchieves.org)

## Semester VI - Core Paper – XIII

### DATABASE SYSTEM CONCEPTS

#### **Objective :**

To know the fundamentals of Database systems and file systems. To experience the basic SQL functionalities.

#### **UNIT I**

Introduction : Database - Database Design : Overview of the design Process – ER Model, Constraints, Removing Redundant Attributes in Entity sets – ER Diagram - Reduction to Relational Schema.

#### **UNIT II**

Relational Database – Introduction to Relational Model – Introduction to SQL - Intermediate SQL – Formal Relational Query Language : Relational Algebra.  
Database Design : Features of good relational design – Atomic domains & First Normal Forms – Decomposition using functional dependencies – Algorithms for decomposition – decomposition using multi value dependency.

#### **UNIT III**

Storage and File Structure : Overview of Physical Storage Media – File Organization – Organization of Records in Files - Data Dictionary Storage – Indexing and Hashing : Basic Concepts – Ordered Indices – B+ Tree Index Files – B- Tree Index Files - Static Hashing – Dynamic Hashing.

#### **UNIT IV**

Transaction : Transaction Concept – Simple Transaction model – Storage structure – Transaction Atomicity & durability. Transaction isolation - Serializability - Concurrency Control : Lock Based Protocols – Timestamp Based Protocols – Validation Based Protocols - Recovery System : Failure Classification – Recovery and Atomicity – Recovery Algorithms.

#### **UNIT V**

PL/SQL : PL/ SQL Blocks – How PL/SQL Works – Integrating SQL in a PL/SQL Program – Triggers – Stored Procedures and Functions – Packages – Cursors – Transactions.

#### **Text Book:**

1. “DATABASE SYSTEM CONCEPTS” – 6<sup>th</sup> Edition - Abraham Silberschatz, Henry F. Korth, S. Sudarshan. (UNIT I to V).  
UNIT I – Chapters 1, 7,  
UNIT II – Chapters 2, 3, 4, 6, 8  
UNIT III – Chapters 10, 11  
UNIT IV – Chapters 14, 15, 16
2. UNIT V (Chapters 15 to 20) : Learn Oracle 8i by Jose A. Ramalho, BPB Publications

#### **Reference Book :**

1. “An introduction to database system “ – Bipin C desai
2. Oracle 8i A Beginner’s Guide by Michael Abbey, Ian Abramson, Michael Corey.

## **Semester VI - Core Paper – XIV - PRACTICAL VI**

### **RDBMS LAB**

#### **SQL**

1. Write basic SQL DDL commands such as create, alter, drop and truncate.
2. Write basic SQL DML Commands such as insert, update, select, delete.
3. List out the Employees Name who will celebrate their Birthday during Current Month.
4. To display the Employees in Descending Order those who have their salary greater than 10000.
5. To write queries using SQL aggregate functions.
6. To write queries using Set operations.
7. Write Nested queries using SQL.
8. Creation of Synonym, Sequence & Index in SQL.
9. Creation and manipulation of Views in SQL.

#### **PL / SQL**

10. Write a PL/SQL program using blocks for display the multiplication table upto given number.
11. Write a PL/SQL program to display Employee Details using Cursors.
12. Write a PL/SQL Program that accepts Department no and returns Total Salary of the department using Functions.
13. Write a PL/SQL Program for preparing Student Marklist using Procedures.
14. Write a PL/SQL code to create
  - a) Package Specification
  - b) Package BodyFor insert, retrieve, update and delete operations on a student table.
15. Write a PL/SQL program for counting records using Triggers.

**Semester VI - Core Paper – XV-PRACTICAL- VII**

**PROGRAMMING IN PHP LAB**

1. Write a program using controls and functions
2. Develop a program and check message passing mechanism between pages.
3. Design a program using String function and Arrays.
4. Develop a program using parsing functions (use Tokenizing)
5. Write a program and check Regular Expression, HTML functions, Hashing functions.
6. Develop a program and check File System functions, Network functions, Date and time functions.
7. Design a program using session
8. Develop a program using cookie and session.



## **Semester VI - Elective II- Paper 1**

### **PHP SCRIPTING LANGUAGE**

#### **Objective :**

To understand server side scripting

#### **UNIT I**

Introduction to XHTML : Introduction – Editing XHTML – First XHTML example- W3C XHTML validation service – Headings – Linking c- Images – Special characters and horizontal rules – Lists – Tables – Forms – Internal linking – Meta elements – Web resources.

#### **UNIT II**

JavaScript : Introduction to Scripting – JavaScript Control statements – Control structures – if selection statement – if- else selection statement – while repetition statement – Assignment operators – Increment and Decrement operators – for repetition statement – Examples using for statement – Switch multiple - selection statement – do – while repetition statement – break and continue statements – labeled break and continue statements – Logical operators – Functions – Arrays.

#### **UNIT III**

Essentials of PHP - Operators and Flow Control - Strings and Arrays.

#### **UNIT IV**

Creating Functions - Reading Data in Web Pages - PHP Browser - Handling Power.

#### **UNIT V**

File Handling – Working with Databases – Sessions, Cookies, and FTP

#### **Text Books :**

1. Internet and World Wide Web- How to program 4<sup>th</sup> Edition– P.J.Deitel, H.M.Deitel, Pearson Edition.(UNIT I & II)
2. The PHP Complete Reference – Steven Holzner – Tata McGraw-Hill Edition. (UNIT III,IV,V)

#### **Reference Book:**

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

**SOFTWARE TESTING**

**Objective :**

To facilitate the intakes to obtain knowledge in analyzing the program flow and identify bugs over it in a systematic approach. This paper provides skills to preparing test cases and use cases and test the programs through manual and automated tools.

**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 – Nonfunctional 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 books:**

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.

## **Semester VI - Elective II - Paper III**

### **E – COMMERCE**

#### **Objective :**

To give the concepts of E-Commerce & Internet and their applications of Business.

#### **UNIT I**

An Overview of E-Commerce : Introduction – Definition of Electronic Commerce – Electronic Commerce and Traditional Commerce – Advantage of E - Commerce – Advantage to Business – Advantage to Business – Advantage to Consumers – Advantage to Society – Advantage to Nation – E-Business and E-Commerce Evolution and Growth of E-Commerce : Information Technology and Business – Impact of Internet on business performance – Evolution of E-Commerce – Driving forces of E-Commerce – Revenue of E-Commerce – Growth of E-Commerce in India- Internet usage in the world-Internet users in India

#### **UNIT II**

Classification of Electronic Commerce: Business to Business Electronic Commerce-Models in B2BBusiness to consumer Electronic Commerce- Consumer to Business Electronic Commerce- Consumer to consumer Electronic commerce-Business to Employee Services-Business to Government- Intra Organizational E-Commerce .Framework and application of E-Commerce in various Industries: E-Commerce Framework-Building Infrastructure for a E-Commerce-Anatomy of E-Commerce- E-Commerce applications- Electronic Banking-Difference between International banking Traditional Banking- Electronic Trading- E-Learning

#### **UNIT III**

Internet and Information Super highway: Internet-Commercialisation of Internet - Internet Service Provider - Uses of Internet-Portals-Internet Tools and Application – HTML – XML – HTTP – NSFNET - Internet Governance - Internet Standard Organizations – Information Super Highway. Web Technology and Information System: Categories of Information Systems – Information Systems for Competitive advantage – Networking - Classification of Networks - Local Area Network - Metropolitan Area Network - Local Area Network - Metropolitan Area Network - Wide Area Network - Network Topologies - Data Transmission modes - Internet and World wide web.

#### **UNIT IV**

Electronic Data Interchange: Introduction - Process of EDI - Working of Electronic Data Interchange - EDI Components - Traditional Electronic Data Interchange and E-Commerce - Benefits of EDI - Uses of EDI in B2B Transactions - EDI Standards ASCX12 – EDIFACT - Internet base3d EDI - Value added Networks. E-Marketing and E-Advertising: E-Marketing – Advantages - Market Segmentation - E-Marketing Mix - E-Product - E-Price - E-Place E-Promotion-Marketing Strategies-Email Marketing Strategies-Affiliate Marketing Strategy-Vital Marketing Strategy.

#### **UNIT V**

E-Security: Details of Security Threats-E-Security Protection-Firewalls-Antivirus-Intrusion Detection Systems- Unified Threat Management-Cryptography-based solution-Symmetric Cryptosystems-Asymmetric Cryptosystems.Cyber Crimes and Cyber Laws: Cyber Crimes-The Information Technology Act,2000-Formation of Online Contracts-Cyber Forensics-CERT-IN-E-Governance in India-E-Governance.

**Text book :** E-Commerce - Dr.K.Abirami Devi.Dr.M.Alagammai, MARGHAM Publications.

**Reference book :** E-Commerce-Electronic Communication for Business S.JAISWAL

### **Semester VI - Elective III- Paper -1**

## **SOFTWARE ENGINEERING**

### **Objective :**

To introduce the basic concepts of Software Engineering and the various phases in Software Development.

### **UNIT I**

Introduction – Definitions – Size factors – Quality and productivity factors – Managerial issues - Planning a software project – Introduction – Defining the problem – Developing a solution strategy – Planning the development process – Planning an Organizational structure – Other planning activities.

### **UNIT II**

Software requirements definition – Software requirement specification – Formal specification techniques – Languages and Processors for requirements.

### **UNIT III**

Software design – Fundamental design concepts – Modules and modularization criteria – Design notations – Design techniques – Detailed design considerations – Realtime and distributed system design- Test plans – Milestones, Walkthroughs and Inspections – Design guidelines.

### **UNIT IV**

Verification and validation techniques – Quality assurance – Walkthroughs and Inspections – Static analysis – Symbolic execution – UNIT testing and debugging – System testing – Formal verification.

### **UNIT V**

Software maintenance – Enhancing maintainability during development – Managerial aspects – Configuration management – Source code metrics – Other maintenance tools and techniques.

### **Text Book:**

1. “Software Engineering Concepts” – Richard Fairley.

For UNIT I – Chapters I & II.

For UNIT II – Chapters IV

For UNIT III – Chapter V

For UNIT IV – Chapter VIII

For UNIT V – Chapter IX

### **Reference Book :**

1. Software Engineering a practitioners Approach – Roger S.Pressman

**Semester VI- Elective III- Paper 2**

**SYSTEM ANALYSIS AND DESIGN**

**Objective :**

To give basic concepts and facilitate the learners in the concepts of System, System Analysis, Design and Implementation.

**UNIT I**

Conceptual Foundations: Overview of Systems Development – Concepts of Systems.

**UNIT II**

Concepts of Information and Organizations – Concepts of Data processing.

**UNIT III**

Techniques and Technologies for Systems Analysis and Design: Problem and Opportunity Recognition – Systems and Information Analysis – Information System Design – Selecting Technology and personnel – Systems Development – Implementation and Evaluation – Project Management for Systems Development.

**UNIT IV**

Strategic, Administrative, and Higher-level Concepts and Techniques: Systems Administration – Strategic Planning for MIS.

**UNIT V**

Analysis and Design of Decision Support Systems – End user computing – Future Considerations of Systems Analysis.

**Text Book**

System Analysis and Design – James C.Wetherbe, Galgotia Publications Pvt Ltd, , Third Edition 1990.

**Reference Book**

System Analysis and Design – Elias M.Awad

**Semester VI - Elective III - Paper 3**

**SOFTWARE PROJECT MANAGEMENT**

**Objective**

To introduce the basic concepts of Software Project Management and the various phases in Software Management Framework.

**UNIT I**

Software Management Renaissance: Conventional Software Management – Evolution of Software Economics – Improving Software Economics – The Old Way and the New.

**UNIT II**

A Software Management Process Framework: Live-Cycle Phases – Artifacts of the Process – Model-Based Software Architectures – Work Flows of the Process – Check Points of the Process.

**UNIT III**

Software Management Disciplines-I: Iterative Process Planning – Project Organizations and Responsibilities – Process Automation.

**UNIT IV**

Software Management Disciplines–II: Project Control and Process Instrumentation – Tailoring the Process

**UNIT V**

Risk Management: Introduction – Risk – Categories of risk – A framework for dealing with risk – Risk Identification – Risk assessment – Risk Planning – Risk Management – Evaluating risks to schedule – Applying the PERT Technique – Monte Carlo Simulation – Critical Chain Concepts

**Text Books :**

1. "Software Project Management" - Walker Royce - Pearson Education
2. "Software Project Management" - Bob Hughes & Mike Cotterell - Fourth Edition - 2008 - ISBN: 978 - 0 - 07 - 061985-2

### **III Semester - Part - IV - Non-Major Elective Paper**

## **NMEC - FUNDAMENTALS OF PHOTOSHOP**

### **Objective :**

To impart the knowledge about the Photoshop in order to improve the employability skills of the learners.

### **UNIT I**

Photoshop: Introduction, Photoshop Program Window- Creating a New File, Saving a File. Working with Image: Image Size, Image Resolution, Editing Images, Color Mode, Setting the Current Foreground and Background Colors.

### **UNIT II**

Making and Selections: Making Selection - Moving Portion of an Image – Transforming Selections

### **UNIT III**

Painting and Drawing Tools: The Painting Tools- The Brush Tool, The Pencil Tool, The Color Replacement Tool, The History Brush Tool, The Art History Brush Tool, The Gradient Tool. The Drawing Tools – The Rectangle Tool, The Custom Shape Tool, The Freeform Pen Tool.

### **UNIT IV**

Layers: Layers Palette – Working with Layers – New Layer via Cut – New Layer via Copy – Hiding / Showing Layers – Flattening Images- Working with Adjustment Layers – Layer Effects.

### **UNIT V**

Filters : The Filter Menu – Filter Gallery – Extract Filter – Liquify Filter – Vanishing Point Filter – Artistic Filters – Blur Filters – Brush Stroke Filters – Distort Filters – Noise Filters – Pixelate Filters – Lighting Effects – Difference Clouds – Sharpen Filters – Sketch Filters – Stylize Filters – Other Filters.

### **Text Book :**

Comdex DTP Course Kit by Vikas Gupta Published by Dream Tek Press.

### **Reference Book :**

“ Adobe Photoshop ” CS by Bakkianathan

## **III Semester – Part - IV - Non-Major Elective Paper**

### **INTERNET PROGRAMMING**

#### **Objective :**

To introduce the basic concepts of Internet and Designing the webpage using HTML.

#### **UNIT I**

Internet Connection concepts – What is the Internet - Internet Service – Types of Accounts- Telephone, Cables and Satellite Connections – Choosing an ISP.

#### **UNIT II**

Connecting to dialup Internet Accounts - Elements of Window'98 dialup networking – Setting up a Connection with Windows'98 – High Speed Connection : ISDN, ADSL, Cable Modem: Contenders – Choosing a high Speed connection – Connecting via ISDN – Connecting via ADSL..

#### **UNIT III**

E-mail Concepts – How do you get your E-mail Addressing – Download E-mail – E-mail netiquette – using Smileys, emotions and Abbreviations – Formatted E-mail – Signature and Stationery – E-mail Attachments – Web-based E-mail – Sending and Receiving Secure E-mail – What is E-mail Security.

#### **UNIT IV**

Introduction to HTML - Designing a home page – history of HTML – HTML Generations – HTML documents – anchor tag – hyperlinks – Sample HTML documents – Head and Body Section – Header Section – Title – Prologs – Links – Colorful Webpage – Comment Lines – Some Sample HTML Documents.

#### **UNIT V**

Designing the body Section – Heading and Printing – Aligning the heading – Horizontal rule – Paragraph – Tab Setting – Images and Pictures – Embedding PNG Format Images – DHTML and Style Sheets – Defining Style – Elements of Style – Linking a Style sheet HTML Document – Inline Styles – External Style sheet – Internal Style sheet – Multiple Styles – Frames – Frame Definition – Nested Frame Definition.

#### **Text Book :**

1. For UNIT I, II, III the Complete Reference Internet Millennium Edition – Margaret Levine Young.
2. For UNIT IV, V World Wide Web Design with HTML - C Xavier.



## Allied Paper for B.Sc Mathematics

### PROGRAMMING IN C

#### **Objective :**

To obtain knowledge about the structure of the programming language C and to develop the program writing and logical thinking skill.

#### **UNIT I**

Overview of C : Introduction-Important of C-Sample C Programs-Basic Structure of C Program- Programming Style- Executing a C Program-Constants, Variables ,and Data Types : Introduction- Character Set-C tokens- Keywords and Identifiers- Constants-Variables-Data types-Declaration of Variables-Assigning values to Variables-Defining Symbolic Constants-Operators and Expressions : Introduction-Arithmetic of Operators-Relational Operators-Assignment Operators-Increment and Decrement Operators-Conditional Operators-Bitwise Operators-Special Operators-Arithmetic Operators-Evaluation of Expressions-Precedence of Arithmetic Operators-Some Computational Problems-Types Conversation in Expressions-Operator Precedence and Associativity-Mathematical Functions.

#### **UNIT II**

Decision Making and Branching : Introduction-Decision making with IF Statement-Simple If Statement-The IF ELSE statement- Nesting of IF ...ELSE statement-The 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 : Introduction-One Dimensional Array - Two Dimensional Arrays - Initializing two Dimensional Arrays – Multidimensional Array

#### **UNIT III**

Handling of Character Strings : Introduction- Declaring and Initializing String Variable – Reading String from Terminal – Writing String to Screen – String Handling Function – User-Defined Function : Introduction -Need for User Defined Function – A Multi-Function Program – Form of C Function – Return Values and their types – Calling a Function – Category of Function – No argument and no return values – Argument but no return values – Argument with return values – Recursion.

#### **UNIT IV**

Structures and Unions : Introduction- Structure Definition – Giving values of members – Structure Initialization – Comparison of Structure Variables- Arrays of Structures – Introduction to Pointers – Understanding Pointers – Accessing the address of Variable – Declaring and Initialization Pointer – Accessing a Variable through its Pointer – Pointer Expression- Pointer Increment and Scale Factor- Pointer and Arrays.

#### **UNIT V**

Introduction of File Management in C- Defining and opening a file- Closing a file- Input/output operation on file-Error Handling during I/O operations- Random access to files- Command Line arguments.

#### **Text Book**

1. Programming in C- E BALAGURUSAMY 2<sup>nd</sup> Edition

#### **Reference Book-:**

1. Programming in C Ashok N. Kamthane.

**OBJECT ORIENTED PROGRAMMING WITH C++**

**Objective :**

To gain the basic knowledge of object oriented programming concepts and to understand the detail idea of C++ streams, templates and error handling concepts of C++ programming.

**UNIT I**

A Look at Procedure oriented programming – Object Oriented Programming Paradigm – Basic Concepts of Object Oriented Programming - Benefits of OOPS - Object Oriented Languages - Applications of OOPS - What is C++? - Simple C++ program.

**UNIT II**

Tokens – Keywords - Identifiers and constants - Basic data types - Use defined datatypes - derived data types - symbolic constants - Declaration of variables - operators in C++ - Scope resolution operators – manipulators - control structures - main functions – function prototyping - call by reference - return by reference.

**UNIT III**

Specifying a class - defining member functions - C++ programs with class – constructors - parameterised constructors – Inheritance - defining derived classes - single level inheritance.

**UNIT IV**

Multilevel inheritance - Multiple inheritance - hierarchial inheritance - hybrid inheritance - Basics of exception handling - exception handling mechanism - throwing mechanism.

**UNIT V**

Introduction to pointers - pointers to objects - creating string objects - manipulating string objects - relational operations - string characteristics.

**Text Book :** OBJECT ORIENTED PROGRAMMING WITH C++ - E.BALAGURUSAMY. ( 2nd Edition).

For UNIT I – chapter 1,2.

For UNIT II – chapter 3,4.

For UNIT III – chapter 5,6,8

For UNIT IV – chapter 8,13.

For UNIT V – chapter 9,15.

**Reference Book :** C++-Robert Lafore.