

**REGULATION 2020-21****B.Sc. INFORMATION TECHNOLOGY****SEMSTER III B.Sc. INFORMATION TECHNOLOGY**

SL.	COMPONENTS	HOURS	CREDITS
	PART III CORE SUBJECTS		
1.	Numerical Method and Operation Research	4	4
2.	Object Oriented Programmingwith C++	4	4
3.	Object Oriented Programmingwith C++ - LAB	6	3
	ALLIED SUBJECTS - 1		
4.	Data Structure	4	4
5.	Data Structure – LAB	4	2
6.	Skill Based Core Subject – I DTP	5(IT+4P)	4
7.	Non – Major Elective – I	2	2
8.	Common Yoga	--	2
	TOTAL (5T + 3P = 8 COURSE)	30*	25

\*Library/ Mentoring/ Association/ Club Activities

**SEMSTER IV B.Sc. INFORMATION TECHNOLOGY**

SL.	COMPONENTS	HOURS	CREDITS
	PART III CORE SUBJECTS		
1.	Java Programming	4	4
2.	Java ProgrammingLab	6	3
3.	Operating System	4	4
	ALLIED SUBJECTS - 1		
4.	Relational Data Base Management System	4	4
5.	ORACLE – LAB	4	2
6.	Skill Based Core Subject – II VISUAL PROGRAMMING	5(2T+3P)	4
7.	Non – Major Elective – II	2	2
8.	Computers for Digital Era	--	2
9.	Extension Activity	--	1
10.	Library Mentoring and Associations	1	--
	TOTAL (5T + 3P = 8 COURSE)	30*	26

\*Library/ Mentoring/ Association/ Club Activities

**SEMSTER V B.Sc. INFORMATION TECHNOLOGY**

SL.	COMPONENTS	HOURS	CREDITS
	PART III CORE SUBJECTS		
1.	Scripting Language	4	4
2.	Software Engineering and Testing	4	4
3.	Data Communication and Networking	4	4
4.	Scripting Language – LAB	6	3
5.	Major Elective – I (Group – A)	4	4
6.	Skill Based Common Subject – Personality Development /EffectiveCommunication/Youth Leadership	2	2
7.	Mini Project	5	5
	TOTAL (5T + 1P + 1Project = 7 COURSE)	30*	26

\*Library/ Mentoring/ Association/ Club Activities

**SEMSTER VI B.Sc. INFORMATION TECHNOLOGY**

SL.	COMPONENTS	HOURS	CREDITS
	PART III CORE SUBJECTS		
1.	Mobile Computing	4	4
2.	Graphics and Multimedia Technology	4	4
3.	.Net Programming	4	4
4.	.Net Programming Lab	6	3
5.	Major Elective – II (Group – B)	4	4
6.	Major Project	7	7
	TOTAL (4T + 1P + 1Project = 6 COURSE)	30*	26

\*Library/ Mentoring/ Association/ Club Activities

<b>Major Elective</b>	
Major Elective – I (Group – A)	Python Programming
	E-Commerce
	Data Mining
Major Elective – II (Group – B)	Robotics Engineering
	E Governance
	Cyber Security

## ALLIED THEORY IV

### Numerical Methods and Operations Research

#### UNIT I APPROXIMATION AND ERRORS IN COMPUTATION

Introduction - numbers - Errors - Error in the approximation of a function - Errors in a series approximation - order of approximation .

#### UNIT II SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS

Introduction - Basic properties of equations - bisection method - Regula falsi method - Secant method - Iteration method - Newton Raphson method

#### UNIT III SOLUTION OF SIMULTANEOUS ALGEBRAIC EQUATIONS

Solution of linear simultaneous equations - Direct methods of solution - Gauss elimination method, Gauss - Jordan method, Gauss Jacobi Method - Gauss Seidal Method –

Numerical integration - - Trapezoidal rule, Simpson's one - third rule - Simpson's three - eighth rule

**UNIT IV ASSIGNMENT PROBLEM:**Mathematical formulation – Hungarian method – Unbalanced assignment problem – various types.

**UNIT V TRANSPORTATION MODEL:**Mathematical formulation – Matrix form – Methods for finding Initial Basic Feasible Solution and optimal solution – Degeneracy in Transportation problems – Unbalanced Transportation problem.

#### TEXT BOOKS

1. B.S. Grewal, "Numerical methods in Engineering & Science", Khanna Publishers, Fifth Edition, April 1999.
2. S.D. Sharma, "Operations Research", Kadamath Ramnath & Co. Meerut.

#### PRACTICAL: NUMERICAL METHODS AND OPERATION RESEARCH

1. Solution of simultaneous equations Bisection and Regula Falsi Method
2. Solution of simultaneous equations Gauss elimination method
3. Solution of simultaneous equations Gauss-seidel iteration method
4. Solution of simultaneous equations Gauss Jordan method
5. Numerical integration Trapezoidal rule Simpson's one-third rule & three eighth rule

## MAJOR THEORY –

### OBJECT ORIENTED PROGRAMMING WITH C++

#### Unit – I

**Introduction to C++ :** Evolution of C++ - ANSI Standard – Object Oriented Technology – Disadvantage of Conventional Programming – Programming Paradigms – Preface to Object – Oriented Programming – Key Concepts of Object – Oriented Programming – Advantages of OOP – Object Oriented Languages.

**Input and Output in C++ :** Streams in C++ - Pre-Defined Streams – Buffering – Stream Classes – Formatted and Unformatted Data – Unformatted Console I/O Operations – Typecasting with cout Statement – Member Functions of Istream Class – Formatted Console I/O Operations.

**C++ Declarations :** Parts of C++ Program – Types of Tokens – Keywords – Identifiers – Dynamic Initialization – Data Types in C++ - Basic Data Type – Derived Data Type – User – Defined Data Type – The void Data Type – Type Modifiers – Wrapping Around – Typecasting – Constants – Constant Pointers – Operators in C and C++ Precedence of Operators in C++.

#### Unit – II

**Control Structures :** Decision – Making Statements – The if-else Statements – The jump Statement – The goto Statement – The break Statement – The Continue Statement – The switch case statement – Loops – The for Loop – Nested for Loops – The While Loop – The do-while Loop.

**Functions in C++ :** The main() Function – Parts of Function – Passing Arguments – L Values and R Values – Return by Reference – Default Arguments – Inline Functions – Function Overloading – Principles of Function Overloading – Library Functions.

#### Unit – III

**Classes and Objects :** Classes in C++ Declaring Objects – The Public Keyword – The Private Keyword – The protected keyword – Defining Member Functions – Data Hiding or Encapsulation – Classes, Objects and Memory – Static Member Variables and Functions – Static Object – Array of Objects – Objects as Functions Arguments – Friend

**Functions** – Recursive Member Function – Local Classes – The main() as a Member Function – Overloading Member Functions – Overloading main() Function.

**Constructor and Destructors :** Characteristics of Constructors and Destructors – Applications with Constructors – Constructors with Arguments – Overloading Constructors – Constructor with Default Argument – Copy Constructors – The const Object – Destructors – Calling Constructor and Destructors – Qualifier and Nested Classes – Anonymous Objects – Recursive Constructor – Local vs Global Object.

## Unit – IV

**Operator Overloading and Type Conversion** : The Keyword Operator – Overloading Unary Operators – Operator Return Type – Constraint on Increment and Decrement Operators – Overloading Binary Operators – Type Conversion – Rules for Overloading Operators.

**Inheritance** : Access Specifiers and Simple Inheritance – Types of Inheritances – Single Inheritance – Multilevel Inheritance – Multiple Inheritance – Virtual Base Classes.

**Pointers and Arrays** : Pointer Declaration - Pointer to Class – Pointer to Object – The this Pointer – Base Classes – Arrays – Characteristics of Arrays – Arrays of Classes.

## Unit – V

**C++ and Memory** : Memory Models – The New and delete Operators – Dynamic Objects.

Binding, Polymorphism and Virtual Functions : Binding in C++ - Virtual Functions – Rules for Virtual Functions – Pure Virtual Functions – Abstract Classes – Working with Virtual Functions.

**Applications with Files** : File Stream Classes – Steps of File Operations – Finding End of a File – File Opening Modes – File Pointer and Manipulators – Manipulators with Arguments – Sequential Read and Write Operations- Binary and ASCII Files – Random Access Operations.

### Text Book :

1. Ashok N.Kamthane, “Object Oriented Programming with ANSI and Turbo C++”, Pearson Education, New Delhi.

### Reference :

1. Herbert Schildt, “C++ : The Complete Reference” Tata McGraw Hill Publishing Company Limited, New Delhi.

2. E. Balagurusamy, “Object- Oriented Programming C++”, Tata McGraw Hill Publishing Company Limited, New Delhi.

3. D. Ravichandran, “Programming with C++”, Tata McGraw Hill Publishing Company Limited, New Delhi.

## MAJOR PRACTICAL – III LIST

### OBJECT ORIENTED PROGRAMMING WITH C++ - LAB

1. Write a C++ Program to declare all members of a class as public. Access the element using objects.
2. Write a C++ Program to print sum of sin series.
3. Write a C++ Program to calculate simple interest. Hide the data element of the class using private keyword.

4. Write a C++ Program to show difference between static and non-static member variables.
5. Write a C++ Program to declare array of objects. Initialize and display the contents of array.
6. Write a C++ Program to access private data using non-member function. Use friend function.
7. Write a C++ Program to create a class MAT of size of m x n. Define the matrix operations addition, subtraction, input and output by overloading +, -, >> and << operators respectively.
8. Write a C++ Program to create an abstract class "Queue". Create two subclasses "StaticQ" and "DynamicQ". Class "Queue" contains member functions insert, delete, create, isempty, isfull and display functions. DynamicQ overrides insert to change size of queue at runtime if queue is already full.
9. Write a C++ Program to overload member function of class.
10. Write a C++ Program to invoke constructor and destructor.
11. Write a C++ Program that overload + & relational (suitable) operator to perform the following operations.
  - i) Concatenation of two Strings
  - ii) Comparison of two Strings
12. Write a C++ Program to create multilevel inheritance. Create classes A1, A2 and A3.
13. Write a C++ Program to derive a class student from multiple base classes mark and sports. Print the details of the student including percentage.
14. Write a C++ Program to show hierarchical inheritance.
15. Write a C++ Program to declare an object and pointer to the class. Invoke member functions using pointer.
16. Write a C++ Program to create a class employee that contain two functions getdata() & putdata(). Create array of objects for the specified class and read the values using getdata(). Print the values using putdata().
17. Write a C++ Program to print the details vehicle using virtual function. Create a class vehicle and have a virtual function make(). Create another class two wheeler is inherited from vehicle class that invoke the virtual function make(). Print details of two wheeler. Create another class four wheeler is inherited from the two wheeler that invoke virtual function make(). Print details of four wheeler.
18. Write a program to read a line of text and replace one word with another word.
19. Write a C++ Program function template for finding the minimum value contained in an array.

20. Write a C++ Program to perform read and write operations with objects using write() and read() functions.

### **ALLIED THEORY III**

### **DATA STRUCTURES**

#### **Unit – I**

**Introduction and Overview** : Definitions – Concept of Data Structures – Overview of Data Structures – Implementation of Data Structures. One – Dimensional Array – Memory allocation of an Array – Operation on Arrays – Application of Arrays – Multidimensional Arrays – Two – dimensional Array – Sparse Matrices – Three Dimensional and n – dimensional arrays – Pointer Arrays.

#### **Unit – II**

**Linked Lists** : Definition – Single Linked List – Representation of a Linked List in memory – Operations on a Single Linked List – Circular Linked List – Double Linked List – Operations on a Double Linked List – Circular Double Linked List – Operations on Circular Double Linked List – Applications of Linked List – Sparse Matrix Manipulation – Polynomial Representation – Dynamic Storage Management – Memory Representation – Fixed Block Storage – Variable Block Storage.

#### **Unit – III**

**Stacks** : Definitions – Representation of a Stack – Array Representation of Stacks – Linked List Representation of Stacks – Operations on Stacks – Application of Stacks – Evolution of Arithmetic Expressions – Implementation of Recursion – Factorial Calculation – Quick Sort.

**Queue** : Definition – Representation of Queues – Representation of Queues using an Array – Representation of a Queue using a Linked List – Various Queue Structures – Circular Queue – Dequeue – Priority Queue.

#### **Unit – IV**

**Tables** : Hash Tables – Hashing Techniques – Collision Resolution Techniques – Closed Hashing – Open Hashing - Comparison of Collision Resolution Techniques. Representation of Binary Tree – Linear Representation of Binary Tree- Linked Representation of Binary Tree – Physical Implementation of a Binary Tree in Memory – Operation on a Binary of Binary Tree – Physical Implementation of a Binary Tree in Memory – Operation on a Binary Tree – Insertion – Deletion – Traversals – Merging together Two Binary Trees – Types of Binary Trees – Expression Tree – Binary Search Tree – Heap Tree – Thread Binary Tree.

#### **Unit – V**

**Sorting** : Sorting Techniques – Straight Insertion Sort – Straight Selection Sort – Heap Sort – Bubble Sort – Shell Sort – Quick Sort – Merge Sort. Searching – Linear Search Techniques – Linear Search with Array – Linear Search with Linked List – Linear Search with Ordered List – Binary Search.

### **Text Book :**

1. "Classic Data Structures" Debasis Samanta, PHI Learning Limited, New Delhi, 2009 Second Edition.

### **ALLIED PRACTICAL – III**

#### **DATA STRUCTURES – LAB LIST**

1. Search an element in an array using Binary Search.
2. Stack Implementation using Array.
3. Queue implementation using Array.
4. To manipulate a linked list.
5. Infix to postfix expression.
6. Evaluation of Postfix expression
7. Tree Traversal
8. Merge Sort
9. Selection Sort
10. Quick Sort

## **SEMESTER – IV**

### **MAJOR THEORY – JAVA PROGRAMMING**

#### **Unit – I**

**The Genesis of Java :** Overview of Java – Development of Java – JDE – Data Types – Variables – Arrays – Type Conversion and Casting – Operators – Precedence – Control Statements.

#### **Unit – II**

**Introduction Classes :** Objects – OOPs Concepts – Declaring Objects – Introducing Methods – Constructors – Overloading – this keyword – Garbage Collection – finalize () method – More Examples. Objects as parameters – returning objects – recursion – Access Control – Static – Final – Nested and Inner Classes – Command Line Arguments – Sample Programs.

#### **Unit – III**

String and String Buffer Class Inheritance : Types of Inheritance – Method Overriding – Dynamic method Dispatch – Abstract Class – Final with Inheritance – More Examples. Packages – Access Protection – Importing Packages – Interfaces – Implement and Applying Interfaces – Sample Programs.

## **Unit – IV**

**Exception Handling:** Exception Types – Our Own Exception – Handling Exception – Java’s Built in Exception – Thread Class and Runnable Interface – Extending Thread – Creating Multiple Threads – isAlive () and join() methods – Synchronization – suspend (), resume () and stop() threads – Example Programs. I/O packages – Input Stream – Output Stream – File Input and Output Stream – Applet Class – An Applet Skeleton – Simple Applet Display Methods – Example Programs.

## **Unit – V**

**Event Handling :** Delegation Event Model – Event Classes – Sources of Events – Event Listener Interface – AWT Controls – Labels – Buttons – Check Boxes – Check Box Group – Lists – Scroll Bar – Text Area – Menu Bars and Menu – Layout Managers – Examples.

### **Text Book :**

1. Herbert Schildt, “Java 2” Fourth Edition, Tata McGraw – Hill Publishing Company Ltd, New Delhi.

### **Reference :**

1. Peter Norton and William Stanek, “Guide To Java Programming”, Techmedia, New Delhi.

2. Martin Rinehart, “Java Database Development” Ed – 1998, Tata McGraw – Hill Publishing Company Ltd, New Delhi.

## **MAJOR PRACTICAL – IV**

### **JAVA PROGRAMMING – LAB LIST**

1. Create a Simple program with your own detail.
2. Use Overload i) Method ii) Constructor
3. Create a Program for object as parameters and returning objects.
4. Create a program with abstract class.
5. Create a program using Multilevel Inheritance.
6. Develop a Program using Interface.
7. Create and Import Package (Minimum Three Classes)
8. Create Our Own Exception for Employees.  
(Constraints 1.Age > 18 and < 58 2.Dept No. 10 || 20 || 30 || 40)
9. Suspend, Resume and Stop Threads (Minimum 3 Threads)
10. Read and Write the content of a file using I/O Packages.

11. Display a Simple Banner Applet.
12. Event Handling Mechanism for Keyboard and Mouse.
13. Create a Login form.
14. Simple Web Presentation using HTML Tag (Use 3 Pages)
15. Create a Program for Moving Ball (Start and Stop)
16. Create a Simple Java Database with 4 fields.

## **MAJOR THEORY**

### **OPERATING SYSTEM**

#### **Unit – I**

**Operating System** : What is an Operating System? – Computing System Architecture : Desktop Systems – Multiprocessor Systems – Distributed Processing – Cluster Systems – Hand held Systems – Functions and Structure – Difference services of the Operating System – Users of system Calls – issue of portability – users view of the operating system – Graphical user interface – Operating System Structure – virtual machine – booting.

#### **Unit – II**

**Information Management** : File System – Device Driver – Terminal I/O – CD – ROM. Process Management : Introduction – What is process? Evolution of multiprogramming – Context Switching – Process States – Process State Transitions – Process Control Block – Process hierarchy – Operation on a process – create a process – kill a process – dispatch a process – change the priority of a process – Block a process – dispatch a process – time up a process wake up a process – Suspend/resume operation – Process Scheduling – Multithreading.

#### **Unit – III**

**InterProcess Communication** : the producer/Consumer Problems – solutions to the producer – consumer problems – Classical IPC problems.

**Deadlocks**: Introduction – Graphical representation of deadlock – deadlock prerequisites – deadlock strategies.

#### **Unit – IV**

**Memory Management** : Introduction – Single Contiguous memory management – fixed partition memory management – variable partitions – non contiguous allocation – paging – segmentation – combined system – virtual memory management system.

#### **Unit – V**

**Information Management :** File System – Device Driver – Terminal I/O – CD – ROM. Case Study : LINUX – Introduction – UNIX and LINUX : A Comparison – Process Management – Process Scheduling – Memory Management – File Management – Device Drivers – Security.

**Text Book :**

1. Operating Systems – Achyut S Godbole, Tata McGraw – Hill Publishing Company, New Delhi, 2nd Edition, 2005.
2. Operating System – Harvey M. Deitel, Paul J Deitel. David R. Choftness, Third Edition, Pearson.

**Reference :**

1. Operating Systems, Internals and Design Principles, William Stallings, PHI, 2008.
2. Operating System Concepts – Silverschatz and Galvin, 6th Edition, John Wiley & Sons, Inc., 2004.
3. An Introduction to Operating Systems – Concepts and Practice, Pramod Chandra P. Bhatt, Prentice Hall of India, 2007.

**MAJOR THEORY**

**RELATIONAL DATA BASE MANAGEMENT SYSTEM**

**Unit - I**

**Introduction :** Purpose of Database Systems – Data Models – Database Languages – Transaction Management – Storage Management – DBA – Database Users – System Structure. E-R Model – Entities and Entity sets – Relationship Sets – Mapping Constraints – E-R Diagram.

**Unit – II**

**Structure of Relational Databases :** Relational Algebra – Tuple Relational Calculus – Domain Relational Calculus – Integrity Constraints – Normalization – Boyce – Codd Normal Form – Third Normal Form – Fourth Normal Form – Domain – Key Normal Form.

**Unit – III**

**Basic SQL Operations :** Creating a Table – Insert – Rollback – Commit – Auto commit – Delete – Update – Select, From, Where and Order by – Single value tests – LIKE – Simple tests against a list of values – Combining Logic – Dropping tables – Dropping a Column – Creating a table from a table – Data Functions – Conversation functions – Translate – Decode – Creating a view – Advanced Sub queries – Outer Joins – Natural and Inner Joins – Union, Intersect & Minus – Synonyms – Indexes – Tables space – Clusters – Sequences.

**Unit – IV**

**Basics of Object :** Relational Databases : Objects – Abstract Data Types – Nested tables – Varying arrays – Large Objects – References Object Views – Naming conventions for objects – structure of an

object – Users, Roles and Privilege : Creating a user – Password management – Three Standard roles – Format for grant command – Revoking privileges – What users can Grant : Moving to another user – Create Synonym – Create a role – Granting privileges to a role – Granting a role to another role – Adding Password to a role – Removing password from a role – Enabling & Disabling Roles – Revoking Privilege from a role – Drop role.

## **Unit – V**

**An Introduction to PL/SQL** : PL/SQL Overview – Declaration section – Executable commands section – Exception handling Section – Triggers : Syntax – Types of Triggers : Row – Level – Statement – Level – before & after – Instead of Schema – Database – Level Triggers – Enabling & Disabling Triggers – Replacing & Dropping Triggers – Procedures, Functions & Packages : Syntax – Compile – Replace – Drop Procedure, Functions & Packages – Cursor Management.

### **Text Books:**

1. Abraham Silberschatz, Henry F.Korth, S.Sudarshan “Database System Concepts” McGraw – Hill Education, 2010.
2. Kevin Loney, George Koch And the Experts at TUSC, “ORACLE 9i The Complete Reference”, Tata McGraw – Hill Publishing Company Ltd., New Delhi.
3. Database Systems RamezElmasri, Shankant B. Navathe – 6th Edition – Pearson.

### **Reference :**

1. Rajesh Narang – “Database Management Systems”, PHI Learning Pvt. Ltd., 2006.
2. Raghu Ramakrishnan, Johannes Gehrke, “Database Management Systems”, McGraw – Hill Education, 2002.
3. Michael Abbay, Mike Corey, Ian Abramson, “ORACLE 9i A Biginner“s Guide”, TataMcGraw – Hill Publishing Company Ltd., New Delhi, 2002.
4. The Database Application Book using the MYSQL Database Gehani – Universities Press.

## **ORACLE LAB**

### **ORACLE PRACTICAL**

1. Creating, Modifying and Describing Tables
2. Inserting, Modifying and Deleting Rows
3. Dropping, Disabling/Enabling Constraints
4. Retrieving Records/Rows from the Table
5. Retrieving Rows with Character Functions

6. Retrieving Rows with Number & Date Functions
7. Retrieving Rows with Group functions & HAVING
8. Retrieving Rows by Joining Tables.
9. Retrieving Rows with Set Operators.
10. Creating Views ,Sequences and Synonyms
11. Simple PL/SQL Programs.
12. PL/SQL Programs with Control Structures.
13. PL/SQL Programs with Looping Structures.
14. PL/SQL Programs with Cursors.
15. PL/SQL Programs with Cursor for loop.
16. PL/SQL Programs with Pre Defined Exception Handling.
17. PL/SQL Programs with User Defined Exception Handling.
18. Creating and Calling Procedures.
19. Creating and Calling Functions.
20. Creating and Executing Packages.
21. Working with Triggers.

## **REFERENCES**

1. “Database Systems Using Oracle”, Nilesh Shah, Second Edition
2. [www.w3schools.com](http://www.w3schools.com) – Oracle

## **SCRIPTING LANGUAGES**

### **UNIT I VB SCRIPT**

VB Script’s Popularity – VB Script Defined – Platform or Host Dependence – Scripting Languages – Basics Embedding VB Script in HTML – VB Script to Display Information – Hiding VB Script from Older Browsers – Code Documentation and Formatting.

### **UNIT II VB SCRIPT ARRAYS AND OPERATORS**

Variables – Subtypes – Constants – Variables Deformed – Declaring Variables – Naming Variables Variants and Subtype – Data Subtypes Conversion – Numeric and Literal Constants – Arrays Groups of Similar Variables – One Dimensional Arrays – Multi Dimensional Arrays – VB Script Operators Logic Operators – Arithmetic Operator Precedence – Comparison Operators Logic Operators – String Concatenation.

### **UNIT III JAVA SCRIPT**

**Introduction to JavaScript:** Adding JavaScript to HTML Documents – Event Handlers – Linked Scripts – JavaScript Pseudo-URL – JavaScript Entities – JavaScript Applications – History of JavaScript.

### **UNIT IV JAVASCRIPT CORE FEATURES**

**Overview:** Basic Definitions – Language Characteristics – Variables – Basic Data Types – Composite Types – Flow Control Statements – Loops – Functions – Input and Output in JavaScript – Regular Expressions – Comments Line.

### **UNIT V TYPESCRIPT**

Basics – Variables – Operators – Decision Variables - Loops – Functions – Numbers – Strings – Arrays – Tuples – Union – Interfaces – Classes – Objects – Namespaces – Modules - Ambient

### **REFERENCE BOOKS**

1. Jusanner Clark and Team, "VB Script Programmer Reference", Shroff Publications and Distributors Pvt. Ltd., 2000.
2. Adrian Kingsley-Hughes, Kathie Kingsley-Hughes, Daniel Read, "VBScript Programmer's Reference", Third Edition, Wiley Publishing.
3. Thomas Powell and Fritz Schneider, "JavaScript 2.0 The Complete Reference", Second Edition, McGraw-Hill.
4. Yehuda Shiran and Tomer Shirar, "Learn Advanced Java Script Programming", BPB Publications, New Delhi.
5. TypeScript Tutorial

## **MAJOR THEORY**

### **Software Engineering and Testing**

#### **UNIT I SOFTWARE ENGINEERING**

The Nature of Software – The Changing Nature of Software – Software Engineering – Defining the Discipline – The Software Process – Software Engineering Practice – Software Development Myths – Software Process Structure – A Generic Process Model – Defining a Framework Activity – Identifying a Task Set.

Process Patterns – Process Assessment and Improvement – Process Models – Prescriptive Process Models – Specialized Process Models – The Unified Process – Personal and Team Process Models – Process Technology – Product and Process – Agile Development – Agility and the Cost of Change – Extreme Programming – Other Agile Process Models.

#### **UNIT II MODELING**

Requirements Engineering – Establishing the Groundwork – Eliciting Requirements – Developing Use Cases – Building the Analysis Model – Negotiating Requirements – Requirements Monitoring – Validating Requirements.

Avoiding Common Mistakes – Requirements Modelling: Scenario – Based Methods – Requirements Analysis – Scenario-Based Modelling – UML Models That Supplement the Use Case.

#### **UNIT III DESIGN CONCEPTS**

The Design Process – Design Concepts – The Design Model – Architectural Design – Software Architecture – Architectural Styles – Architectural Design – Agility and Architecture – Component Level Design – Designing Class-Based Components – Conducting Component Level Design – Component Level Design for WebApps – Component-Level Design for Mobile Apps.

Designing Traditional Components – Component-Based Development – User Interface Design – The Golden Rules – User Interface Analysis and Design – Interface Analysis – Interface Design Steps – WebApp and Mobile Interface Design – Design Evaluation.

#### **UNIT IV SOFTWARE TESTING: AN OVERVIEW**

Introduction – Software Testing – The Three Step Process to Become a World-Class Testing Organization – Software Testing Guidelines – Software Testing Tools – Selecting and Installing Software Testing Tools – Integrating Tools into the Tester's Work Process – Selecting and Using Test Tools – Training Testers in Tool Usage.

## UNIT V VERIFICATION AND VALIDATION TESTING

The Seven-step Testing Process – Overview of the Software Testing Process – Verification Testing – Validation Testing – Rapid Application Development Testing – Testing a Multiplatform Environment.

### TEXT BOOK

1. Roger S. Pressman, “Software Engineering: A Practitioner Approach”, Eighth Edition, McGraw Hill, 2015.
2. William E. Perry, “Effective Methods for Software Testing”, Third Edition, John Wiley, 2015

### REFERENCE BOOKS

1. Somerville, “Software Engineering”, Tenth Edition, Pearson Edition, 2018.
2. Ali Behforroz, Frederick J.Hudson, “Software Engineering Fundamentals”, Oxford Indian Reprint, 2012.
3. Yogesh Singh, “Software Testing” First Edition, Cambridge University Press, 2012.
4. Glenford J. Myres, Tom Badgett, Corey Sandler, “The Art of Software Testing”, Third Edition, Pearson Education, 2011.

## MAJOR THEORY

### DATA COMMUNICATIONS AND NETWORKING

#### Unit – I:

**Data Communication:** Standard Organizations – Line Configuration – Topology – Transmission Mode – Categories of Networks – Internet Works – The Model – Functions of the Layers. Transmission of **Digital Data:** Interfaces and Modems – Digital Data Transmission – DTE – DCE Interface – other Interface Standards.

#### Unit – II

**Transmission Media:** Guided Media – Unguided Media – Multiplexing – Many to one/one to Many, Frequency – Division Multiplexing (FDM), Wave – Devision Multiplexing (WDM), Time – Division Multiplexing (TDM).

#### Unit – III

**Error Detection and Correction :** Types of Errors – Detection – Redundancy – Vertical Redundancy Check (VRC) – Longitudinal Redundancy Check (LRC) – Cycle Redundancy Check (CRC) – Checksum – Error Correction. Data Link Control – Line Discipline – Flow Control – Error Control.

#### Unit – IV

**Switching** : Circuit Switching – Packet Switching – Message Switching – Integrated Services – Digital Network (ISDN) – Services – History – Subscribe Access to the ISDN – The ISDN Layers – Broadband ISDN – Future of ISDN.

#### **Unit – V**

**Frame Relay** : Introduction – Frame Relay Operation – Frame Relay Layers – Congestion Control Leaky Bucket Algorithm – Traffic Control. Networking and Internetworking devices – Repeaters – Gateways – Other Devices – Routing Algorithm, Distance Vector Routing – Link State Routing.

#### **Text Book :**

1. Data Communications and Networking – “Behrouz A Foruzan”, Tata McGraw Hill Publishing Company Limited, New Delhi. 2nd Edition 2006.
2. Data Communications and Networking – Wayne Tomain – Pearson.

#### **Reference Book :**

1. Computer Networks – “Andrew S. Tanenbaum”, - Prentice Hall of India, 4th Edition, 2006.
2. Data and Computer Communications “William Stallings Prentice Hall of India 2007

### **Scripting language - Lab**

1. Write a script code to show alert message
2. Write script code to add 10 each time you click sum button.
3. Write javascript to display today's date and time.
4. Write script to display week name when week number is entered.
5. Write script to change string to uppercase letters.
6. Write script to display random numbers in a given range.
7. Write script to get sum of natural numbers in a given range.
8. Write a script to validate a form.
9. Write script to print a message after delay of 10 seconds.
10. Write script using for each loop to increment numbers of integer array by 5
11. Write script to enter positive numbers in an array and generate an exception if negative numbers are entered.
12. Write script to calculate number of days between two dates
13. Write script to change text color when button is clicked.
14. Develop a auto refreshing digital clock using Javascript.

15. Develop javascript application to display the visitors page count.

## **MOBILE COMPUTING**

### **UNIT I**

Introduction: Wireless Transmission: Frequencies for radio transmissions – Signals – Antenna – Signal Propagation – Multiplexing – Modulation – Spread Spectrum – Cellular systems.

### **UNIT II**

Medium Access Control : Motivation for Specialized MAC - SDMA – FDMA – TDMA – CDMA - Comparison of S/T/F/CDMA. Tele communications : GSM – DECT – TETRA

### **UNIT III**

Satellite Systems: Basics- Routing- Localization- Handover- Broadcast Systems: Overview – Cyclic Repetition of Data- Digital Audio Broadcasting –Digital Video Broadcasting. Wireless Networks: Infrared Vs Radio Transmission – Infrastructure and ad-hoc network.

### **UNIT IV**

Wireless LAN: IEEE 802.11 – HIPERLAN – Bluetooth. Mobile Network Layer: MobileIP – Dynamic Host Configuration Protocol (DHCP) – Mobile Ad-hoc Networks

### **UNIT V**

Mobile Transport layer: Traditional TCP- Classical TCP Improvements. Support for Mobility: File Systems – World Wide Web (WWW) – Wireless Application Protocol (WAP).

### **TEXT BOOK**

1. J.Schiller, Mobile Communication, Addison Wesley,2003

### **REFERENCE BOOKS**

1. William C.Y.Lee, Mobile Communication Design Fundamentals, John Wiley,1993.
2. William Stallings, Wireless Communication and Networks, Pearson Education,2003.
3. Singhal, WAP-Wireless Application Protocol, Pearson Education.

### **MAJOR THEORY**

## **Graphics and Multimedia Technology**

### **Unit I: Introduction & Graphics Hardware**

Basic elements of Computer graphics, Applications of Computer Graphics. Architecture of Raster and Random scan display devices, input/output devices.

### **Unit II: Fundamental Techniques in Graphics**

Raster scan line, circle and ellipse drawing, thick primitives, Polygon filling, line and polygon clipping algorithms

### **Unit III: Transformations & Modelling**

2D and 3D Geometric Transformations, 2D and 3D Viewing Transformations (Projections- Parallel and Perspective), Vanishing points. Representing curves & Surfaces.

### **Unit IV: Multimedia Components**

Introduction to multimedia, components, uses of multimedia, multimedia applications, virtual reality. Fonts & Faces, Using Text in Multimedia, Font Editing & Design Tools, Hypermedia & Hypertext.

### **Unit V: Making Multimedia**

Still Images – bitmaps, vector drawing, 3D drawing & rendering, natural light & colors, computerized colors, color palettes, image file formats. Digital Audio, MIDI Audio, MIDI vs Digital Audio, Audio File Formats. How video works, analog video, digital video, video file formats, video shooting and editing. Stages of a multimedia project

### **BOOKS**

1. J.D.Foley, A.Van Dan, Feiner, Hughes Computer Graphics Principles & Practice 2nd edition Publication Addison Wesley 1990.
2. D.Hearn, Baker: Computer Graphics, Prentice Hall of India 2008.
3. D.F.Rogers Procedural Elements for Computer Graphics, McGraw Hill 1997.
4. Tay Vaughan, —Multimedia: Making it work, TMH, Eighth edition.2011
5. Ralf Steinmetz and KlaraNaharstedt, —Multimedia: Computing, Communications Applications, Pearson.2012
6. K. Andleigh and K. Thakkar, —Multimedia System Design, PHI.2013

## **MAJOR THEORY**

### **.NET PROGRAMMING**

#### **Unit – I**

**The .NET Frame Work** : Learning the .NET Languages – Introduction to ASP.NET and IIS – Types, Objects and Name Spaces – ASP .NET Application – Building ASP.NET Website.

#### **Unit – II**

**Web Form Fundamentals** : HTML Controls – Web Controls – Validation Controls – Navigation Controls – Data Controls – Login Controls – CSS – Working with CSS in Web Developer – More Programs.

#### **Unit - III**

**State Management** : Session – View – Query String – Cookies – Tracing – Logging – Error Handling – User Controls – ASP.NET Ajax – Example Programs.

## **Unit – IV**

**ADO.NET** : Over View of ADO.NET – ADO.NET Access – Data Binding – Data List – DATA Grid and Repeaters – Working with Data base – Sample Programs.

## **Unit – V**

**XML** : Using XML – XSD – XSLT – Web Services – Creating Web Services – Using Web Services – Caching – ASP.NET Security.

### **Text Book :**

1. Mathew Mac. Donald, “ASP.NET The complete Reference”, Tata McGraw – Hill Publishing Company Ltd., New Delhi.
2. ImarSpanjaars, ASP.NET 3.5 in C# and V.B. : “Wiley India Pvt Ltd.

### **Reference :**

1. O'REILLY, Jesse Liberty, Dan Hurwitz and Brain Mac Donald, “Learning ASP.NET 3.5”, II Edition.

### **MAJOR PRACTICAL**

#### **.NET PROGRAMMING – LAB LIST**

1. Arithmetic Operations Using Text Box and Button
2. Adding and Removing Items in runtime using Drop Down List and List Box.
3. Upload and display Image using File Up Load Control.
4. Display Date, Day, Month, Year, Day of Week, Day of the Year using Calendar Control.
5. Create an Advertisement using Ad rotator Control.
6. Create a Registration form and apply ASP.NET validation Controls.
7. Binding data in Grid view using Source.
8. Create small pay roll.
9. Create user control with Source.
10. Create a Login Page using Session Variable.
11. Create Student Mark List using SQL Provider.
12. Grid View, Edit, Update, Cancel and Delete using Source.
13. Create a Crystal Report.
14. Create a Simple Web Page Using CSS.
15. Create a Master Page.

## GROUP A (MAJOR ELECTIVE – I)

### MAJOR ELECTIVE THEORY :

### Python Programming

#### UNIT I:

Introduction to Python: Structure of a Python Program<sup>1</sup>, Elements of Python. Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators

#### UNIT II:

Creating Python Programs: Input and Output Statements<sup>4</sup>, Control Statements (Looping while Loop, for Loop, Loop Control, Conditional Statement-if...else, Difference between break, continue and pass).

#### UNIT III:

Structures & Functions: Numbers, Strings, Lists, Tuples, Dictionary, Date & Time, Modules, Defining Functions, Exit function, default arguments

#### UNIT IV:

Classes, Object-oriented Programming and Exception: Abstract Data Types and Classes, Inheritance, Encapsulation and Information hiding, handling exceptions

#### Unit V:

Searching, Sorting and Plotting: Linear Search, Binary search, Selection Sort, Plotting using Pylab

#### Text Book:

1. John V Guttag. —Introduction to Computation and Programming Using Python, Prentice Hall of India

#### Reference Books:

1. T. Budd, Exploring Python, TMH, 1st Ed, 2011
2. Python Tutorial/Documentation [www.python.org](http://www.python.org)2010
3. Allen Downey, Jeffrey Elkner, Chris Meyers, How to think like a Computer Scientist: Learning with Python, Freely available online.2012

## E- COMMERCE

#### Unit – I

**Introduction to E-Commerce :** Networks – Transactions – Commercial Transactions – Why use E – Commerce – Internet and other Novelties – Advantages of E – Commerce – Electronic Transactions Today - World Wide Web.

#### Unit – II

**Security Technologies:** Why Internet Is Unsecure – Internet Security Holes – Cryptography: Objectives – Codes and Ciphers – Breaking Encryption Schemes – DES Cryptographic Applications – Digital Signature – Nonrepudiation an Message Integrity.

### **Unit – III**

**Traditional Transactions** : Updating – Offline and Online Transaction – Secure Web Servers – Required Facilities – Digital Currencies and Payment Schemes – Protocol for the Public Transport – Security Protocols – Credit Card Business Basics.

### **Unit – IV**

**Online Commerce Options** : Functions and Features – Payment Systems : Electronic, Digital and Virtual Internet Payment Schemes – Account Setup and Costs – Virtual Transaction Process – InfoHaus – Security Considerations.

### **Unit – V**

**CyperCash** : Model – Security – Customer Protection – Client Application – Selling through CyperCash – Servers and Commercial Environments – Payment Methods – Server Market Orientation – Netscape Commerce Server – Microsoft Internet – Servers – Smart Cards.

### **Text Books:**

1. Pete Loshin, “Electronic Commerce”, 4th edition, An imprint of dlaxmi publications pvt. Ltd., New Delhi 2004.
2. Greestein, “E-Commerce”, Tata Mc – Graww Hill Pvt. Ltd., 2000.
3. E-Commerce Kenneth C.Lauden Carel Guercio Traver-10th Edition-Pearson.

## **DATA MINING**

### **Unit -I**

**Data Warehousing:** Introduction- Definition and description, need for data ware housing, need for strategic information, failures of past decision support systems, OLTP vs DWH-DWH requirements-trends in DWH-Application of DWH.

### **Unit - II**

**Data Warehousing Architecture:** Reference architecture- Components of reference architecture - Data warehouse building blocks, implementation, physical design process and DWH deployment process. A Multidimensional Data, Model Data Warehouse Architecture.

### **Unit -III**

**Data Mining:** Data mining tasks-Data mining vs KDD- Issues in data mining, Data Mining metrics, Data mining architecture - Data cleaning- Data transformation- Data reduction - Data mining primitives.

### **Unit - IV**

**Association Rule Mining:** Introduction - Mining single dimensional Boolean association rules from transactional databases - Mining multi-dimensional association rules.

### **Unit -V**

**Classification and Prediction:** Classification Techniques - Issues regarding classification and prediction - decision tree - Bayesian classification –Classifier accuracy – Clustering – Clustering Methods - Outlier analysis.

**Applications and Other Data Mining Methods:** Distributed and parallel Data Mining Algorithms, Text mining- Web mining.

**Books Recommended:**

1. Jiawei Han and Micheline Kamber, ” Data Mining Concepts and Techniques”, Morgan Kaufmann Publishers, USA, 2006.
2. Berson,”Data Warehousing, Data Mining and OLAP”, Tata McGraw Hill Ltd, New Delhi, 2004.
3. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, , Pearson Education.
4. Arun K Pujari,”Data mining techniques”, Oxford University Press, London, 2003.

**ROBOTICS ENGINEERING**

**UNIT I**

Introduction to robotics, classification of robots, workspace analysis, Manipulator Kinematics: Convention for affixing frames to links – DH Representation,

**UNIT II**

Derivation of Direct kinematic equations for various types of robots. Inverse Manipulator Kinematics: Solvability, algebraic vs. geometric, Pipers solution when three axes intersect, Examples of inverse manipulator kinematics, repeatability and accuracy.

**UNIT III**

Jacobians: Velocities and static forces: Linear and rotational velocity of rigid bodies, velocity propagation from link to link, jacobians, singularities, static forces in manipulators, jacobians in force domain, Cartesian transformation of velocities and static forces.

**UNIT IV**

Trajectory Generation: General consideration in path description and generation, joint space schemes, collision free path planning, Robot programming.

**UNIT V**

Sensing and vision – range sensors, proximity sensors, touch sensors, force and torque sensors – Low level and high-level vision. Robot intelligence and task planning.

**Text Book:**

1. John J Craig, Introduction to Robotics, Mechanics and control, second edition Addison – Wesley, 1999.

**Reference Books:**

1. K S Fu R C Gonzales, C S G Lee: Robotics Control, Sensing, Vision and intelligence, McGraw Hill 1987.
2. Mark W Spong & M Vidyasagar, Robot Dynamics and Control, John Wiley & Sons, 1989.
4. R P Paul: Robot Manipulators Mathematics Programming, Control, The computer control of robotic manipulators, The MIT Press 1979.

5. Robert J Schilling: Fundamentals of Robotics, Analysis and Control. Prentice Hall of India, 1996.
6. Gonzalez / Woods, Digital Image Processing, Addison Wesley, 1993.

## **E-Governance**

### **Unit-I**

**Introduction** to E-Government and E-Governance: Difference between E-Government and E-Governance; E-Government as Information System; Benefits of E-Government; E-Government Life Cycle; Online Service Delivery and Electronic Service Delivery; Evolution, Scope and Content of E-Governance; Present Global Trends of Growth in E-Governance

### **Unit-II**

**Models of E-Governance:** Introduction; Model of Digital Governance: Broadcasting / Wider Dissemination Model, Critical Flow Model, Comparative Analysis Model, Mobilization and Lobbying Model, Interactive – Service Model / Government-to-Citizen-to-Government Model (G2C2G); Evolution in E-Governance and Maturity Models: Five Maturity Levels; Characteristics of Maturity Levels; Towards Good Governance through E-Governance Models

### **Unit- III**

**E-Government Infrastructure Development:** Network Infrastructure; Computing Infrastructure; Data centers; E-Government Architecture; Interoperability Framework; Cloud Governance; E-readiness; Data System Infrastructure; Legal Infrastructural Preparedness; Institutional Infrastructural Preparedness; Human Infrastructural Preparedness; Technological Infrastructural Preparedness

### **Unit –IV**

**Security for e-Government:** Challenges and Approach of E-government Security; Security Management Model; E- Government Security Architecture; Security Standards

### **Unit – V**

**Applications of Data Warehousing and Data Mining in Government:** Introduction; National Data Warehouses: Census Data, Prices of Essential Commodities; Other Areas for Data Warehousing and Data Mining: Agriculture, Rural Development, Health, Planning, Education, Commerce and Trade, Other Sectors.

### **Text / Reference books:**

1. Richard Heeks, Implementing and managing e-Government
2. C.S. R Prabhu, e-Governance: Concepts and Case studies, prentice hall of India Pvt. Ltd.
3. J. Satyanarayana, e-Government, , prentice hall of India Pvt. Ltd
4. Backus, Michiel, e-Governance in Developing Countries, IICD Research Brief, No. 1, March 2001

# **CYBER SECURITY**

## **UNIT I**

**INTRODUCTION TO CYBER SECURITY** Introduction -Computer Security - Threats -Harm - Vulnerabilities - Controls - Authentication - Access Control and Cryptography - Web—User Side - Browser Attacks - Web Attacks Targeting Users - Obtaining User or Website Data - Email Attacks

## **UNIT II**

**SECURITY IN OPERATING SYSTEM & NETWORKS** Security in Operating Systems - Security in the Design of Operating Systems -Rootkit - Network security attack- Threats to Network Communications-Wireless Network Security –Denial of Service - Distributed Denial-of-Service.

## **UNIT III**

**DEFENCES: SECURITY COUNTERMEASURES** Cryptography in Network Security - Firewalls - Intrusion Detection and Prevention Systems - Network Management - Databases - Security Requirements of Databases - Reliability and Integrity - Database Disclosure - Data Mining and Big Data.

## **UNIT IV**

**PRIVACY IN CYBERSPACE** Privacy Concepts -Privacy Principles and Policies -Authentication and Privacy - Data Mining -Privacy on the Web - Email Security - Privacy Impacts of Emerging Technologies - Where the Field Is Headed.

## **UNIT V**

**MANAGEMENT AND INCIDENTS** Security Planning - Business Continuity Planning - Handling Incidents - Risk Analysis - Dealing with Disaster - Emerging Technologies - The Internet of Things - Economics - Electronic Voting - Cyber Warfare- Cyberspace and the Law - International Laws - Cyber crime - Cyber Warfare and Home Land Security.

## **REFERENCESBOOKS**

1. Charles P.Pfleeger Shari Lawrence P fleeger Jonathan Margulies, Security in Computing, 5th Edition , Pearson Education ,2015

2. George K.Kostopoulous, Cyber Space and Cyber Security, CRC Press, 2013.
3. MarttiLehto, PekkaNeittaanmäki, Cyber Security: Analytics, Technology and Automation edited, Springer International Publishing Switzerland 2015
4. Nelson Phillips and EnfingerSteuart, —Computer Forensics and Investigations, Cengage Learning, New Delhi,2009.

### **SEMESTER III**

#### **SKILL BASED SUBJECT SYLLABUS**

##### **Subject : DTP**

##### **Page Maker**

1. Design of ID Card (3" \* 2").
2. Design of Visiting Card (3.5" \* 2").
3. Design of an attractive invitation Card (5.5" \* 8").
4. Design Letter Pad. (7.5" \* 9").
5. Preparation of a small booklet with 6 pages (3.5" \* 4.5").
6. Design a hand bill (5.5" \* 8.5").
7. Create a advertisement for your college.
8. Design your college progress card.
9. Create a receipt bill with counter foil.
10. Create a graph/pie chart.

##### **Photoshop**

1. Design of a brochure for an institution.
2. Seasonal Greeting Card.
3. Transporting an image from one background to another.
4. Design a web page poster (1004 \* 750)/text book cover page.
5. Crop and image/rotate an image.

##### **CorelDraw**

1. Create an object and fill with multiple colours.
2. Design a book cover.
3. Create a frame and enter a paragraph with different formats of text.
4. Export any five image in a single applications.
5. Design page frame by inserting image and objects.

**SEMESTER IV**  
**SKILL BASED SUBJECT SYLLABUS**

**VISUAL PROGRAMMING**

**Unit I**

**Getting started with Visual Basic 6.0:** Introduction to Visual Basic - Visual Basic 6.0 Programming Environment – Working with Forms – Variables, Data types and Modules – Procedures and Control Structures – Arrays in Visual Basic.

**Working with Controls:** Creating and using Controls – Working with Control Arrays.

**Unit II**

**Menus, Mouse Events and Dialog Boxes:** Introduction – Mouse Events – Dialog Boxes - **Graphics, MDI, and Flex Grid:** Graphics for Applications – Multiple Document Interface (MDI) – Using the Flex Grid Control.

**Unit III**

**ODBC and Data Access Objects :** Data Access Options

**ODBC using Data Access Objects and Remote Data Objects:** Open Database Connectivity (ODBC) – Remote Data Objects (RDO).

**Unit IV**

**Data Environment and Data Report :** Introduction – Data Environment Designer - Data Report

**Object Linking and Embedding:** Introduction - OLE Fundamentals – Using OLE Container Controls – Using OLE Automation Objects - OLE Drag and Drop

**Unit V**

**Built-In ActiveX Controls :** Working with Built-In ActiveX Controls – Additional ActiveX Controls

**Working with ActiveX Data Objects:** An Overview of ADO and OLE DB – ADO Object Model **Files and File System Controls:** File System Controls – Accessing Files.

**Text Book:**

1. Visual Basic 6.0 Programming – Content Development Group – Tata McGraw-Hill Publishing Company Limited, New Delhi.

**Reference Books:**

1. VISUAL BASIC 6 in Record Time by Steve Brown, BPB Publications.
2. VISUAL BASIC 6 from the Ground UP – GARY CORNELL – Tata McGraw Hill.

## **SEMESTER V**

### **Mini Project**

Students are to take up sample project development activities with the guidelines given below  
Preparing a project- brief proposal including

- Problem Identification
- Developing a model for solving the problem
- A statement of system /process specification proposed to be developed (Data Flow Diagram)
- List of possible solution including alternatives and constraints
- Cost benefit analysis
- Time line activities

A report highlighting the design finalization [Based on functional requirements & standards (if any)]

A presentation including the following Implementation phase (Hardware/Software/both)

- Testing & Validation of the developed system
- Learning in the project Consolidated report preparation

## **SEMESTER VI**

### **Major project**

The objective of the project is to enable the students to work in a project of latest topic/research area/industrial applications. Each project student shall have a guide who is a faculty member.

During this semester the students are expected to do literature survey, formulate the problem and form a methodology of arriving at the solution of the problem. Also during this semester, the students are expected to complete the project and submit a full-fledged report comprising of the complete system developed along with implementation and test results.

The departmental committee shall examine the students and the evaluation is based on continuous internal assessment comprising of two reviews.

After two reviews internal marks is based on seminar, demo and Internal viva-voce will be given by the guide. At the end of the semester, a viva-voce examination will be conducted.

## **NON – MAJOR ELECTIVE PAPERS – I Other than B.Sc. (IT) & B.Sc. (CIT)**

### **INTRODUCTION TO INFORMATION TECHNOLOGY**

#### **Unit – I**

**Information Technology Basics :** Introduction, Information, Technology, Information Technology, Present Scenario, Role of Information Technology, Information Technology and Internet, Careers in IT industry. Computer Organization and Architecture: Central Processing Unit, Inside a Computer, Data representation in Computer, Coding Schemes.

#### **Unit – II**

**Computer Memory and Storage Introduction:** Memory Hierarchy, Random Access Memory (RAM), Read Only Memory (ROM), RAM, ROM and CPU Interaction, Types of Secondary Storage Devices, Magnetic Tape, Magnetic Disk, Types of Magnetic Disk, Optical Disk, type of optical disks.

#### **Unit – III**

**Input Output Media :** Introduction, types of input devices, types of output devices. Multimedia Essentials : Introduction, Multimedia : Definition, Building Blocks of multimedia, multimedia system, multimedia applications, Virtual reality.

#### **Unit – IV**

**The Internet :** Introduction Evolution of Internet – Basic Internet Terms – Getting Connect to Internet – Internet Applications – Data over Internet. Internet Tools : Introduction – Web Browser – Browsing Internet using Internet Explorer – E – Mail – Search Engines – Instant Messaging.

#### **Unit – V**

**Emerging Trends in IT :** Introduction, E-Commerce – Electronic Data Interchange – Mobile Communication – Bluetooth – Global Positioning System – Infrared Communication – Smart Card – Imminent Technologies.

#### **Text Books:**

1. Introduction to Computers and Information Technology, D. Glory Ratna Mary, S. Selvanayahi, V. Joseph Peter, Shekina Publications.

#### **Reference Books:**

1. Introduction to Information Technology ITL Education Solutions Limited, Pearson Education.

2. Fundamentals of Information Technology By Alexis Leon & Mathews Leon Vikas Publication – New Delhi.

## **NON – MAJOR ELECTIVE PAPERS – II Other than B.Sc. (IT) & B.Sc. (CIT)**

### **BASIC PROGRAMMING DESIGN**

#### **Unit – I**

**Introduction:** Algorithms, Flowcharts, Types of Programming Languages, Selection of Programming Languages, Program Writing Debugging.

#### **Unit – II**

**Flow Charts:** Elementary Concepts – Introduction, Kinds of flow charts, symbols used in flow charts, Advantages of flow charts, examples, constants and variables.

#### **Unit – III**

**Flow Charting Simple Computation:** Introduction, illustrating examples, conclusions.

#### **Unit – IV**

**Subscripted Variables:** Introduction, basic concepts of subscripted variables, one dimensional array, illustrating examples, conclusions.

#### **Unit – V**

**Multidimensional Arrays:** Introductions, definitions, matrix operations, illustrating examples, beyond two dimensions, conclusions – Introduction to File Structure.

Introduction, Concept of data files, Types of Data Files, File Organization methods, File Processing activities, Conclusions.

#### **Text Book :**

1. Basic Programming Design, D.S. Arul Selvan & A.A. Regieson Sylum Shalom Publications, Green St, Nagercoil.

#### **Reference :**

1. Insight into Flowcharting Raj K. Jain By S. Chand & Company Ltd.