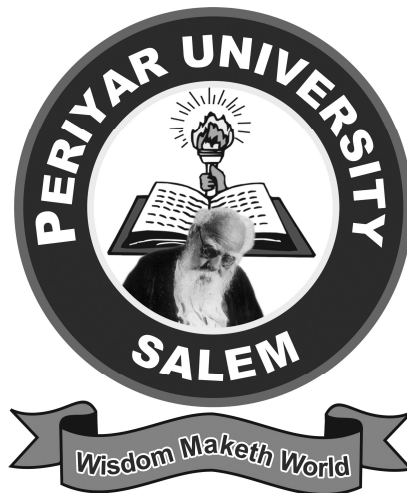


PERIYAR UNIVERSITY  
SALEM 638 011

PERIYAR INSTITUTE OF DISTANCE EDUCATIONS  
(PRIDE)



MASTER OF COMPUTER APPLICATIONS  
(M.C.A)

SEMESTER PATTERN  
CHOICE BASED CREDIT SYSTEM

REGULATIONS AND SYLLABUS

[Candidates admitted from 2020 onwards]



## MASTER OF COMPUTER APPLICATIONS (M.C.A)

### INSTRUCTIONAL DESIGN

#### Curriculum Design

#### SEMESTER - I

S.No	Paper Code	Course	Int. Marks	Ext. Marks	Total Marks	Credits
1.		Computer Organization and Architecture	25	75	100	4
2.		Data Structures Using C	25	75	100	4
3.		Design and analysis of Algorithms	25	75	100	4
4.		Practical – Programming in C Lab	40	60	100	2
5.		Practical – Office automation Lab	40	60	100	2
		<b>Total</b>	<b>155</b>	<b>345</b>	<b>500</b>	<b>16</b>

#### SEMESTER - II

S.No	Paper Code	Course	Int. Marks	Ext. Marks	Total Marks	Credits
1.		Object Oriented programming	25	75	100	4
2.		Microprocessor and Applications	25	75	100	4
3.		Computer Oriented Statistical and Numerical methods	25	75	100	4
4.		Practical – C++ Lab	40	60	100	2
5.		Practical – Multimedia Lab	40	60	100	2
		<b>Total</b>	<b>155</b>	<b>345</b>	<b>500</b>	<b>16</b>



**SEMESTER III**

<b>S.No</b>	<b>Paper Code</b>	<b>Course</b>	<b>Int. Marks</b>	<b>Ext. Marks</b>	<b>Total Marks</b>	<b>Credits</b>
1.		Database Management Systems	25	75	100	4
2.		Visual Programming	25	75	100	4
3.		Operating Systems	25	75	100	4
4.		Practical -RDBMS Lab	40	60	100	2
5.		Practical – Visual Basic Lab	40	60	100	2
		<b>Total</b>	<b>155</b>	<b>345</b>	<b>500</b>	<b>16</b>

**SEMESTER IV**

<b>S.No</b>	<b>Paper Code</b>	<b>Course</b>	<b>Int. Marks</b>	<b>Ext. Marks</b>	<b>Total Marks</b>	<b>Credits</b>
1.		Computer Graphics	25	75	100	4
2.		Internet and Web Programming	25	75	100	4
3.		Computer Networks	25	75	100	4
4.		Practical - Graphics Lab	40	60	100	2
5.		Practical – Internet and Web Lab	40	60	100	2
		<b>Total</b>	<b>155</b>	<b>345</b>	<b>500</b>	<b>16</b>

**SEMESTER V**

<b>S.No</b>	<b>Paper Code</b>	<b>Course</b>	<b>Int. Marks</b>	<b>Ext. Marks</b>	<b>Total Marks</b>	<b>Credits</b>
1.		Data Mining and Warehousing	25	75	100	4
2.		Java Programming	25	75	100	4
3.		Dot Net Programming	25	75	100	4
4.		Practical –Java Programming Lab	40	60	100	2
5.		Practical – Dot Net Programming Lab	40	60	100	2
		<b>Total</b>	<b>155</b>	<b>345</b>	<b>500</b>	<b>16</b>



## SEMESTER VI

S.No	Paper Code	Course	Int. Marks	Ext. Marks	Total Marks	Credits
1.		Open Source Technologies	25	75	100	4
2.		Soft Computing	25	75	100	4
3.		Cyber Security	25	75	100	4
4.		Project - Dissertation and Viva voce	50	150	200	4
		<b>Total</b>	<b>125</b>	<b>375</b>	<b>500</b>	<b>16</b>

<b>No. of credits per semester - 16</b>
<b>Total No. of credits programme – 6 x 16 = 96</b>
<b>Total Marks- 3000</b>

### DURATION OF THE PROGRAMME:

The course shall extend over a period of three years comprising of Six semesters with two semesters in one academic year. Examination shall be conducted at the end of every semester for the respective subjects.

### PROCEDURE FOR ADMISSION, CURRICULUM TRANSACTION AND EVALUATION

#### CONDITION FOR ADMISSION:

A candidate who has passed any degree in any discipline of minimum three-year duration with mathematics at +2 level or any degree with at least one paper in mathematics / statistics / business mathematics / business statistics at degree level shall be permitted to appear and qualify for the Master of Computer Applications (M.C.A) degree examination of this University after a course of study of three academic years.



**Examinations:**

The theory and practical examination shall be three hours duration to each paper at the end of semester. The Candidate failing in any subject(s) will be permitted to appear for each failed subject(s) in the subsequent examination.

**(a) Passing Minimum****Theory and Practical**

The candidate shall be declared to have passed the examination if the candidate secures not less than 50% marks in the University examination in each paper / practical. However submission of a record notebook is a must.

**Dissertation**

For the project work and viva-voce a candidate should secure 50% of the marks for pass. The candidate should compulsorily attend viva-voce examination to secure pass in that paper.

**Marks Distribution and Question Paper Pattern for M.C.A****Theory –Marks Distribution**

<b>Maximum Marks</b>	<b>: 100 Marks</b>
<b>External [EA]</b>	<b>: 75 Marks</b>
<b>Internal [CIA]</b>	<b>: 25 Marks</b>



### **Theory - Question Paper Pattern [External]**

Time: 3 Hours

Max. Marks: 75

Passing Minimum:38

#### **PART – A: 10X2 = 20**

(Answer all Questions)

(Two Questions from each unit with Internal Choice)

#### **PART – B: 5X5 =25**

(Answer all Questions)

(Two Questions from each unit with Internal Choice)

#### **PART – C: 3X10 =30**

(Answer all Questions)

(Two Questions from each unit with Internal Choice)

### **Theory - Internal Marks Distribution (Total Marks: 25)**

Attendance : 5 Marks  
Assignment : 5 Marks  
Test : 15 Marks

### **PRACTICAL – MARKS DISTRIBUTION**

#### **Paractical - Evaluation of Internal Assessment**

Test 1	:	10 Marks
Test 2	:	10 Marks
Test 3	:	15 Marks
Record	:	05 Marks
		-----
Total	:	40 Marks
		-----
The Passing minimum shall be 50% out of 40 marks (20 Marks)		
<b>EVALUATION OF EXTERNAL EXAMINATIONS</b>		
Time duration: 3 Hours		Max. Marks : 60

### **QUESTION PAPER PATTERN**

1. One compulsory question from the given list of programmes : 30 Marks
2. One either or type question from the given list of programmes : 30 Marks



**Distribution of Marks**

For Writing procedures/programs in the main answer book -	40%
For listing and debugging	- 40%
For correct and formatted output	- 20%

**Dissertation and Project work**

Evaluation (Internal)	: 50 Marks
Evaluation (External)	: 100 Marks (Joint Viva Voce) 50 Marks (External Evaluation)

**Regulations of Project Work**

- a. Students should do their Project work in Company/ Institutions.
- b. The students should prepare three copies of the dissertation and submit the same to the study centre. one copy is to be retained in the centre library and one copy is to be submitted to the University (Director-Pride) and the student can hold one copy.
- c. A Sample format of the dissertation is enclosed in **Annexure-I**.
- d. Format of the **Title page** and **certificate** are enclosed in **Annexure II**.



## **ANNEXURE - I**

### **PERIYAR UNIVERSITY**

Name of the PRIDE Center :

Course :

Student Name :

Register Number :

Title of the Dissertation :

Address of Organization / Institution :

Name of the External Guide :

Designation :

Place :

Date :

Guide

Signature of External

(with seal)

Name of the Internal Guide :

Qualification :

Teaching Experience :

Place :

Date :

Guide

Signature of Internal

Coordinator

[Approved or not Approved]

[ University Use]



BONAFIDE CERTIFICATE  
COMPANY ATTENDANCE CERTIFICATE  
ACKNOWLEDGEMENT

**CONTENTS**

Chapter No	Title	Page No.
	SYNOPSIS	
1.	INTRODUCTION	
	ORGANIZATION PROFILE	
	SYSTEM CONFIGURATION	
	HARDWARE CONFIGURATION	
	SOFTWARE CONFIGURATION	
2.	SYSTEM STUDY	
	EXISTING SYSTEM	
	DEMERITS	
	PROPOSED SYSTEM	
	SYSTEM STUDY	
	FEATURES	
3.	SYSTEM DESIGN AND DEVELOPMENT	
	INPUT DESIGN / FORM DESIGN	
	OUTPUT DESIGN	
	CODE DESIGN	
	DATABASE DESIGN	
	SYSTEM DEVELOPMENT	
4.	TESTING AND IMPLEMENTATION	
	CONCLUSION	
	BIBLIOGRAPHY	
	APPENDICES	
	A. DATA FLOW DIAGRAM	
	B. TABLE STRUCTURE	
	C. SAMPLE INPUT / FORMS	
	D. SAMPLE OUTPUT / REPORT	

Note : Based on the Dissertation on Work The Above Titles May Be Varied



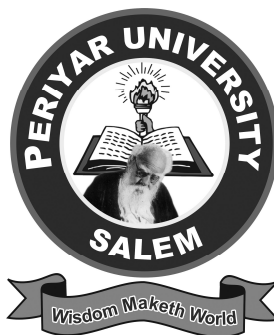
**A. Format of the title page**

**TITLE OF THE DISSERTATION**

A Dissertation submitted in partial fulfillment of  
the requirements for the degree of  
**Master of Computer Applications**  
to the  
**Periyar University, Salem – 11**  
By

**STUDENT NAME**

**Register Number**



**NAME OF THE CENTRE**  
**(AFFILIATED TO PERIYAR UNIVERSITY)**  
**PLACE with Pin Code**

**MONTH – YEAR**

**B. Format of the Certificate**

**Name of the Internal Guide**

Designation

Department Name

College Address



## CERTIFICATE

This is to certify that the dissertation entitled \_\_\_\_\_ submitted in partial fulfillment of the requirement for the degree of Master of omputer Applications to the PRIDE, Periyar University, Salem is a record of bonafide work carried out by \_\_\_\_\_ under supervision and guidance and that no part of the dissertation has been submitted for the award of any degree or diploma.

Date :

Place:

Guide

Signature of the

\_\_\_\_\_  
Signature of the Coordinator

Submitted for the Viva-Voce Examination held on \_\_\_\_\_

Internal Examiner  
Examiner

External



**Classification of Successful Candidates:**

Candidates who secure not less than 60% of the aggregate marks in the whole examination shall be declared to have passed the examination in **First Class**. All other successful candidates shall be declared to have passed in **Second Class**. Candidates who obtain 75% of the marks in the aggregate shall be deemed to have passed the examination in **First Class with Distinction** provided they pass all the examinations prescribed for the course at the first appearance. Candidates who pass all the examinations prescribed for the course in the first instance and within a period three academic years from the year of admission to the course only are eligible for University Ranking.



**SEMESTER-I**  
**COMPUTER ORGANIZATION AND ARCHITECTURE    Credits 4**

**Unit I**

Number system Binary, Decimal, Octal, and Hexadecimal – Conversion from one to another – Complements – Binary Codes. Basic logic Gates – Basic Theorems and Properties of Boolean Algebra – NAND, NOR implementation – Sum of Products – Product of Sums – Karnaugh Map – Tabulation – Don't Care Conditions.

**Unit II**

Combinational Logic Circuit Design: Multiplexers – Demultiplexers – Decoders – Encoders - Half Adder – Full Adder - Subtractor – Parallel Adder. Flip-flops: RS, D, JK Flip-flop – Registers – Shift Registers – Ripple Counters Synchronous Counters.

**Unit III**

Register Transfer and Micro Operation : Arithmetic Register Transfer Language – Register Transfer, Logic Bus and Memory Transfers. Shift micro operations – Arithmetic Logic Shift unit – CPU: Stack Organization – Instruction Formats – Addressing Modes – Data Transfer and Manipulation, Program Control.

**Unit IV**

Micro programmed Control: Control Memory – Address Sequencing Conditional Branching - Mapping of Instructions – Microprogram Example: Computer Configuration – Micro instructions format – Symbolic Micro Instructions – Fetch Routine – Symbolic Micro Programme – Binary Microprogram – Computer Arithmetic: Addition and Subtraction, Multiplication Algorithm – Division Algorithm – Floating Point Arithmetic Operation.

**Unit V**

Input – Output Organization: Peripheral Devices – Input - Output Interface – Asynchronous Data Transfer (Strobe & Handshaking Method) – Modes of Transfer – Priority Interrupt – DMA – IOP. Memory Organization: Memory



Hierarchy – Main Memory – Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory.

**TEXT BOOKS:**

1. Morris Mano, “Digital Logic and Computer Design”, PHI/Pearson, 1995.(Unit I & II)
2. Morris Mano, “Computer System Architecture”, Third Edition, PHI/Pearson Education 1995. (Unit III, IV & V)

**REFERENCE BOOKS:**

1. Malvino leech, “Digital Principles and Applications”, TMH, Edn. 1991.
2. J. P. Hayes, ”Computer Organization and Architecture”, TMGH, Second Edition, 1988.
3. William Stallings, “Computer Organization & Architecture – Designing for Performance”, Pearson Education, Sixth Edition, 1997.



## **DATA STRUCTURES USING C**

**Credits 4**

### **Unit I**

An Overview of C – Keywords and Identifiers - Constants – Variables -Data Types – Input – Output Operations – Operators and Expressions – Decision Making and Branching – Loop Control Structures. Function – Arrays – Strings.

### **Unit II**

Structures - Pointers – Introduction – Pointers and Arrays – Pointers and Strings – Pointers and Structures – Pointers and Functions – Dynamic Memory Allocation. File Handling : Introduction – Operations on Files – File I/O functions – Random Access – Error Handling – Command Line Arguments – Preprocessor – Graphics Primitives.

### **Unit III**

Introduction to Data Structures: Definitions – Concept of Data Structures – Overview of Data Structures – Implementation. Arrays: Definition – Terminology – One-Dimensional Array – Multi-Dimensional Arrays – Pointer Arrays. Linked Lists: Definition – Single Linked List – Circular Linked List – Double Linked List – Circular Double Linked List. Stacks: Introduction – Definition – Representation of Stack – Operations on Stacks – Applications of Stacks – Evaluation of Arithmetic Expression – Implementation of Recursion. Queues: Introduction - Definition – Representation of Queues – Various Queue Structures.

### **Unit IV**

Trees: Definition – Binary Trees – Properties – Representation – Operations – Threaded Binary Trees – Trees and Forest. Graphs: Introduction – Terminologies – Representation - Linked Representation – Matrix Representation – Operations on Matrix Representation of Graphs.

### **Unit V**

Sorting: Insertion Sort - Shell Sort – Heap Sort – Merge Sort – Quick Sort



- Sorting Large Structures – Bucket Sort – External Sorting: Needs – Model For External Sorting – The Simple Algorithm – Multiway Merge. Search trees: The Search Tree ADT-Binary Search Trees – AVL Trees – B-Trees.

**TEXT BOOKS:**

1. M.T.Somashekara, “Programming in C”, PHI, 2005. ( UNIT I& II )
2. D.Samanta, “Classic Data Structures”, Prentice-Hall India Pvt Ltd, Sixth Printing, August 2005. ( UNIT III, IV&V )

**REFERENCE BOOKS:**

1. Ashok N.Kamthane, “Programming with ANSI and Turbo C”, Pearson Education Asia, 2003.
2. T.Jeyapoovan, “A First Course in Programming with C”, Vikas 2002.
3. John Paul Tremly and Paul G.Sorenson, “An Introduction to Data Structures with Applications”, TMH, 1995.
4. Horowitz.E. and Sahani, “Fundamentals of Data Structures”, Galgotia Pub-1982.



**Unit I**

Introduction – Performance Analysis. Divide and conquer Method: Binary Search, Finding Maximum and Minimum, Merge Sort and Quick Sort.

**Unit II**

Greedy Methods: Knapsack Problem, Minimum Cost Spanning Trees, Optimal Storage on Tapes and Single Source - Shortest Path Problem.

**Unit III**

Dynamic Programming: Multistage Graphs, 0/1 knapsack and Traveling Salesman Problem. Basic Traversal and Search Techniques: Techniques for Binary Tree, Techniques for Graphs: Depth First Search and Breadth First Search - Connected Components and Spanning Tree - Biconnected Components and DFS.

**Unit IV**

Backtracking: 8 Queens Problems, Sum of Subsets, Graph Colouring, Hamiltonian Cycle and Knapsack Problem.

**Unit V**

Branch and Bound: 0/1 Knapsack Problem, Travelling Salesman Problem. Least Cost Search, 15 Puzzle Problem, FIFO Branch and Bound and LC Branch and Bound.

**TEXT BOOK:**

1. E.Horowitz and S.Sahani, “Fundamentals of Computer Algorithms”, Galgotia, 1985.

**REFERENCE BOOKS:**

1. S. K. Basu, “Design Methods and Analysis of Algorithms”, PHI, 2005.
2. Goodman and S. T. Hedetniem, “Introduction to the Design and Analysis of Algorithms”, MGH, 1977.
3. A.V. Aho, J.D. Ullman and J.E.Hoscraft, “The Design and Analysis of Computer Algorithms”, Pearson Education.



## **PRACTICAL - PROGRAMMING IN C LAB**

**Credits 2**

1. Control Structures.
2. Arrays.
3. String Manipulations.
4. Function.
5. Recursion.
6. Structures.
7. Pointers and
  - Arrays.
  - Strings.
  - Structures.
8. File Manipulations.
9. Command Line Arguments.



**PRACTICAL – OFFICE AUTOMATION LAB      Credits 2**

**MS-WORD**

1. Create a document with tables and apply various properties
2. Create a multiple page document using mail merge

**MS – EXCEL**

3. Create a table and apply the various formatting properties and generate a chart for the table
4. Create a table and apply the various mathematical functions

**MS – POWER POINT**

5. Create a slide with different layout and background with links
6. Create a slide with custom animation using access button

**MS – ACCESS**

7. Create a database with various tables and assign the relationship between them
8. Create a form with column and table style

**Case studies**

9. Design a newspaper document with diagrams and import the tables and chart from the excel sheet
10. Create an address book using tables in MS-Access and generate the labels using forms



**SEMESTER II**  
**OBJECT ORIENTED PROGRAMMING**      **Credits 4**

**Unit I**

Basic Concepts of OOP – Structure of C++ - Data types - Variables – Control Structures – Functions – Classes and Objects – Constructors and Destructors.

**Unit II**

Overloading: Function, Operator – Inheritance – Pointers – Virtual Function – Polymorphism.

**Unit III**

Streams in C++ - Stream Classes – Formatted and Unformatted data – Manipulators – User Defined Manipulators – File Streams – Opening and Closing a File – File Pointer Manipulation – Template Classes and Functions – Exception Handling: Try, Catch, Throw.

**Unit IV**

Introduction to Java – Features of Java – Methods and Classes – Array, Strings and Vector – Inheritance – Packages and Interfaces.

**Unit V**

Exception Handling – Multithreading – Applets – Graphics Programming.

**TEXT BOOKS:**

1. E.balagurusamy, “Object Oriented Programming with C++”, TMH, Second Edition, 2001.
2. E.Balagurusamy, “Programming with Java A Primer”, TMH, Second Edition, 1999.

**REFERENCE BOOKS:**

1. D. Ravichandran, “Programming with C++”, TMH, 1996.
2. Bjarne Stroustrup, “The C++ Programming Language”, Addison Wesley, 2004.
3. Patrick Naughton and Hilbert Schildt, “The Complete Reference Java 2”, TMH, 2003.



## **MICROPROCESSOR AND APPLICATION    Credits 4**

### **Unit I**

Evolution of Microprocessor – Typical Micro Computer Architecture – Single Chip Microprocessor – Memory – Input/Output.

### **Unit II**

Intel 8085: Introduction – Register Structure- Memory Addressing – 8085 Addressing modes – 8085 Instruction Set – Timing Methods- 8085 CPU pins and Associated Signals – 8085 Instruction Timing and Execution – Programmed I/O – Interrupt System – DMA – SID and SOD Lines – 8085 Based System Design.

### **Unit III**

Interfacing Devices: Introduction – Types of Interfacing Devices – Addressing Decoding for I/O – Input/Output Ports – Programmable Interrupt Controller – Programmable DMA Controller: 8257 Programmable DMA Controller, Dynamic RAM Refresh using DMA – Communications Interface – Analog Input Devices – Analog Output Devices.

### **Unit IV**

16-bit Microprocessor: Intel 8086:Introduction – Architecture – Addressing Modes – 8086 Input/Output. Motorola MC 68000:Introduction – Registers – Memory Addressing – Instruction Format – Addressing modes – Motorola 68000 I/O. Advanced Microprocessor – Pentium: Architecture and Addressing Modes.

### **Unit V**

Peripheral Interfacing: Parallel versus Serial Transmission – Synchronous and Asynchronous Serial Data Transmission- Interfacing of Hexa Decimal Keyboard and Display unit to microprocessor – CRT (Cathode Ray Tube) Terminal Interfacing to a microprocessor- Applications of Microprocessor: A Temperature Monitoring System – Automotive Applications.



**TEXT BOOKS:**

- 1 M.Rafiquzzaman, “Microprocessors Theory and Applications : Intel and Motorola”, Prentice Hall India, Revised Edition, 2004.
2. Aditya P. Mathur, “Introduction to Microprocessors”, Tata McGraw Hill, Third Edition, 1990.

**REFERENCE BOOKS:**

1. R.S.Gaonkar, “Microprocessor Architecture,programming and Applications with the 8085”, 1995.
2. M.Rafiquzzaman, “Microprocessor and MicroComputerBased System Design”,UBS, 1995.
3. N.K.Srinath, “8085 Microprocessor Programming and Interfacing”,PHI.



# **COMPUTER ORIENTED STATISTICAL AND NUMERICAL METHODS**

**Credits 4**

## **Unit I**

Statistical Methods: Probability and expected values – Correlation Analysis – Meaning – Types - Degrees of Correlation – Scatter diagram – Correlation graph – Karl pearson's coefficient of Correlation – Rank correlation. Regression Analysis – Meaning – Types of Regression – Regression equations – Regression equations from mean – Regression coefficients – Properties of Regression coefficients – correlation and Regression a comparison.

## **Unit II**

Theoretical distributions: Binomial, Poisson, Normal distributions – tests of hypothesis – types of errors – estimation – large sample tests – small sample tests –  $\chi^2$  test – F test.

## **Unit III**

Numerical Methods: Introduction - Errors - Machine computation - Transcendental and polynomial equation - Initial approximation - bisection, secant, Newton - Raphson, the muller, the chebyshev and multipoint iterative methods - polynomial equation - The Birge-vieta, Bairstow and Graeffe's root squaring methods.

## **Unit IV**

System of linear algebraic equations and eigen value problems – Gauss elimination, Gauss Jordon, Triangularization, choleskey methods – Gauss Jacobi and Gauss Siedel methods.

## **Unit V**

Interpolation and approximation –Newton, Lagrange's methods – Numerical differentiation and Intergration – methods based on Interpolation – Trapezoidal rule – Simpson's rule – Romberg Integration.



**TEXT BOOKS:**

1. S.P.Gupta, “Statistical Methods”, Sultan Chand & Sons, New Delhi, 2001. ( Units I & II)
2. M.K.Jain, SRK Iyengar, R.K.Jain, “Numerical Methods for Scientific and Engineering Computation”, weisly eastern ltd – New Delhi – 1997. (Units III , IV & V )

**REFERENCE BOOKS :**

1. Dr. M.K.Venkatraman, “Numerical methods for science & Engg”, 1997.
2. Guptha kapoor, “Mathematics statistics”, S. Chand & co.
3. Hozg R.V.Craiz a.t, “Introduction to Mathematical Statistics”, macmillan publishing Inc. – 1997.
4. Kandasamy, Thilagavathy, Gunawathy, “Numerical Methods”, S.Chand & Company Ltd EdYn, 2000.



## **C++ PROGRAMMING LAB**

**Credits 2**

**C++:**

1. Matrix Manipulation.
2. Implementation of stack using Arrays.
3. Implementation of queue using Arrays.
4. Implementation of Linear Linked List and its Operations.
5. Write a program to convert infix to postfix expressions using arrays.
6. Write a program to add two polynomials using pointers.
7. Implementation of Insertion Sort and Heap Sort.
8. Implementation of Sparse Matrix Addition.



## **MULTIMEDIA LAB**

**Credits 2**

### **SOFTWARE: FLASH**

1. Simple animation.
2. Tweened animation.
3. Creating movies.
4. Using action Scripts.

### **SOFTWARE: MACROMEDIA – DIRECTOR**

1. Text handling [Size changing, Animation etc.,]
2. Play school teaching aid [Like alphabet teaching with pictures]
3. Company annual report presentation [should include any type of graph denoting the sales of the company and the other important features]
4. Advertisement for Products, Film, Institutions, Automobile Products etc., [Include appropriate pictures, text and Animation]
5. Animation of 3D object with sound.

### **SOFTWARE: FREEHAND**

1. Designing the gate, grill, windows etc.,
2. Text handling [Moving, Duplicating, Scaling, Rotating, Changing the alignment and Orientation]
3. Greetings card design [Like scenery, group of birds, bunch of flowers, etc.,]

### **SOFTWARE: ADOBE –PHOTOSHOP**

1. Editing the Images.
2. Design a Greeting Card, Invitation etc.,

The experiments listed are only samples. The concern centre can design or modify the samples.



## **SEMESTER III**

### **DATABASE MANAGEMENT SYSTEMS**

**Credits 4**

#### **Unit I**

File Systems and Databases: Introducing the Database – The Historical Roots of the Database: Files and File Systems – A File System Critique – Database Systems – Database Models – Wrap-Up: The Evolution of Data Models. The Relational Database Model: A Logical view of data – Keys – Integrity Rules Revisited – Relational Database Operators – The Data Dictionary and the System Catalog – Relationships Within the Relational Database – Data Redundancy Revisited.

#### **Unit II**

Entity Relationship (E-R) Modeling: Basic Modeling Concepts – Data Models: Degrees of data Abstraction – The Entity Relationship (E-R) Model – Normalization of Database Tables: Database Tables and Normalization – Higher-Level Normal Forms – Denormalization.

#### **Unit III**

Relational Databases: Structured Query Language – Other Relational Languages - Transaction Management and Concurrency Control: What is a Transaction – Concurrency Control – Concurrency Control with Locking Methods – Concurrency Control with Time Stamping Methods – Concurrency Control with Optimistic Methods – Database Recovery Management. Distributed Database Management Systems: The Evolution of Distributed Database Management Systems – Distributed Processing and Distributed Databases – Functions of Distributed Database Management System- DDBMS Components – Levels of Data and Process Distribution – Distributed Database Transparency Features – Distribution Transparency – Transaction Transparency – Performance Transparency and Query Optimization – Distributed Database Design – Data Fragmentation – Data Replication – Data Allocation – Client/Server vs. DDBMS – C.J. Date's Twelve Commandments for Distributed Databases.



#### **Unit IV**

Query Processing: Overview – Measures of Query Cost – Selection Operation – Sorting – Join Operation – Other Operations – Evaluation of Expressions. Query Optimization: Overview – Estimating Statistics of Expression Results – Transformation of Relational Expressions – Choice of Evaluation Plans – Materialized Views. Distributed Databases: Homogeneous and Heterogeneous Databases – Distributed Data Storage – Distributed Transactions – Commit Protocols – Concurrency control in Distributed Databases – Availability – Distributed Query Processing – Heterogeneous Distributed Databases – Directory Systems.

#### **Unit V**

Object Oriented Databases: Object-Oriented Concepts - Characteristics of an Object-Oriented Data Model – OODM and Previous Data Models: Similarities and Differences – Object-Oriented Database Management Systems – How Object Orientation Affects Database Design – OODBMS: Advantages and Disadvantages – OO Concepts in Relational Model – The Next Generation of Database Management Systems. Advanced Data Types and New Applications: Motivation – Time in Databases – Spatial and Geographic data – Multimedia Databases – Mobility and Personal Databases.

#### **TEXT BOOKS:**

1. Peter Rob Carlos Coronel, “Database Systems – Design, Implementation and Management “, Thomson Course Technology, Fifth Edition – 2002. (Units I, II, III & IV).
2. Abraham Silberschatz, Henry F.Korth, S.Sudarshan, “Database System Concepts”, McGraw-Hill, Fourth Edition-2002. (Units IV & V)



**REFERENCE BOOKS:**

1. Alexis Leon, Mathews Leon, “Essentials of Database Managements Systems”, Vijay Nicole imprints PVT LTD, 2006.
2. C.J.Date, “An Introduction to Database Systems”, 7<sup>th</sup> Edition, Pearson.
3. Raghu Ramakrishnan and Johannes gehrke, “Database Mangement System”, Mc Graw Hill, 2000.
4. Gerald V.Post, “Database Management Systems –Designing & Building Business Applications”, Mc Graw Hill, 2000.



**Unit I**

Windows: Introduction – Windows and Messages : A Window of One's Own: An Architectural Overview – Registering The Window Class – Creating The Window – Displaying The Window – The Message Loop – The Window Procedure - Processing the Messages – Playing a Sound File – The WM\_PAINT Message – The WM\_DESTROY Message – Painting and Repainting – An Introduction to GDI – Formatting Text – Scroll Bar Range and Position – Scroll Bar Messages – The Keyboard – The Mouse – Menus and Other Resources – Dialog Boxes – The Clipboard – Using the Printer – Text and Fonts – The Old Metafile Format - Dynamic-Link Libraries – Library Basics – Library: One Word, Many Meanings – A Simple DLL – The Library Entry and Exit Point – Shared Memory in DLLs – Dynamic Linking Without Imports – Resource-Only Libraries.

**Unit II**

VC++: Introduction – Microsoft Foundation Classes (MFC) Programming – MFC Window Messages – MFC Class Library – Resources – Keyboard – Mouse – Menus.

**Unit III**

Dialog Boxes , Controls , Common controls – Common Dialogs , Active x , Data base Applications.

**Unit IV**

VB: Introduction – Data Types – Constants , Variables , Statements , Procedures and Functions , Built in Functions – Forms – Tool Box – properties.

**Unit V**

Events – Menus – Dialog Boxes – Graphics – Ms Flexgrid – Datagrid – Accessing Backend Data using Data Controls, DAO, ADODB – Creating Active X Control.



**REFERENCE BOOKS:**

1. Charles Petzold, "Programming windows", Microsoft Corporation, fifth edition, 1999.
2. Hitesh Sanghavi, "Programming with vc++", Vikas Publishing house, 2002.
3. Steven Holzner, "Visual C++ 6.0", BPB publications, 2002.
4. Yashavant P.Kanetkar, "Visual c++ programming", BPB Publications 2002.
5. Chris. H.Pappas & William H.Murray, "The Complete Reference VC++ 6.0", Tata Mc Graw-hill, 1999.
6. Steven Holzner, "Visual Basic 6 programming-BlackBook", Coriolis Group, 2003.
7. Garry Cornel, "Visual Basic 6 from the Ground up", Tata McGraw-Hill, 2005.



## **OPERATING SYSTEMS**

**Credits 4**

### **Unit I**

Introduction: Definition – History of Operating Systems – Different Kinds of Operating System - Operating System Concepts – System Calls – Operating System Structure.

### **Unit II**

Process Management: Processes – Inter process Communication – The Dining Philosophers Problem. Scheduling: Introduction to Scheduling – Scheduling in Batch Systems – Scheduling in Interactive Systems – Scheduling in Real-Time Systems – Policy versus Mechanism - Deadlocks: Introduction – Ostrich Algorithm – Detection and Recovery – Deadlock Avoidance – Deadlock Prevention.

### **Unit III**

Memory Management: Logical versus Physical Address Space – Swapping – Contiguous Allocation – Paging – Segmentation. Virtual Memory: Demand Paging – Page Replacement – Page-Replacement Algorithms – Thrashing.

### **Unit IV**

Files – Directories – File System Implementation: File System Layout – Implementing Files – Implementing Directories – Shared Files – Disk Space Management - File System Reliability – File System Performance.

### **Unit V**

Principles of I/O Hardware: I/O Devices – Device Controllers. I/O Software Layers: Interrupt Handlers – Device Drivers – Device-Independent I/O Software – User-Space I/O Software. Security: The Security Environment – Basics of Cryptography – User Authentication – Attacks From Inside the System: Trojan Horses – Login Spoofing – Logic Bombs – Trap Doors. Attacks From Outside the System: Virus Damage Scenarios – How Viruses Work – How Viruses Spread - Antivirus and Anti-Antivirus Techniques.

### **TEXT BOOKS:**

1. Andrew S.Tanenbaum, “Modern Operating Systems”, Pearson Education, Second Edition, 2004.
2. Silberschatz.A, Galvin.Pand Gagne.G, “Operating System Concepts”, John Wiley & Sons, Fifth Edition, 2002. (Unit – III).



**REFERENCE BOOKS:**

1. Andrew S.Tanenbaum, “Operating Systems-Design And Implementation”, Albert S.Woodhull, Second Edition, PHI/Pearson Education.
2. William Stallings, “Operating Systems”, Fifth Edition, Pearson Education Asia, 2005.



## **RDBMS LAB**

**Credits 2**

1. Creation of tables - executing All Queries.

### **PACKAGES IN D2K.**

2. Library Management systems.
3. Payroll.
4. Tourist Information System.
5. Banking System.

## **VISUAL BASIC**

**Credits 2**

### **VISUAL BASIC:**

1. Student Information System.
2. Stock Management System.
3. Reservation System for any one of the following  
(i).Bus,(ii)Airline,(iii)Railways.
4. Employee Information System.
5. Hospital Management System.



## **SEMESTER IV**

### **COMPUTER GRAPHICS**

**Credits 4**

#### **Unit I**

A Survey of Computer Graphics - Overview of Graphics Systems : Video Display Devices – Raster-Scan Systems – Random-Scan Systems – Input Devices – Hard-Copy Devices

#### **Unit II**

Output Primitives: Points and Lines – Line Drawing Algorithms - Loading the Frame Buffer – Circle-Generating Algorithms – Ellipse-Generating Algorithms – Other Curves – Parallel Curve Algorithms – Pixel Addressing and Object Geometry – Filled-Area Primitives - Character Generation – Attributes of Output Primitives : Line Attributes – Curve Attributes – Color and Grayscale Levels – Area-Fill Attributes – Character Attributes – Antialiasing.

#### **Unit III**

Two-Dimensional Geometric Transformations : Basic Transformations – Matrix Representations and Homogeneous Coordinates – Composite Transformations - Other Transformations – Two-Dimensional Viewing : The Viewing Pipeline – Viewing Coordinate Reference Frame – Windows-to-Viewport Coordinate Transformation – Clipping Operations – Point Clipping – Line Clipping : Cohen-Sutherland Line Clipping – Liang-Barsky Line Clipping – Polygon Clipping: Sutherland-Hodgeman Polygon Clipping – Weiler-Atherton Polygon Clipping – Curve Clipping – Text Clipping – Exterior Clipping.

#### **Unit IV**

Three-Dimensional Concepts : Three-Dimensional Display Methods - Three-Dimensional Geometric and Modeling Transformations : Translation – Rotation – Scaling – Other Transformations – Composite Transformations - Three-Dimensional Viewing : Viewing Pipeline – Viewing Coordinates – Projections – Clipping.



## **Unit V**

Graphical User Interfaces and Interactive Input Methods : The User Dialogue – Input of Graphical Data – Input Functions – Interactive Picture – Construction Techniques. Visible-Surface Detection Methods : Classification of Visible-Surface Detection Algorithms – Back-Face Detection – Depth-Buffer Method. Basic Illumination Models. Color Models and Color Applications : Properties of Light – Standard Primaries and the Chromaticity Diagram – Intuitive Color Concepts – RGB Color Model – YIQ Color Model – CMY Color Model – HSV Color Model.

### **TEXT BOOK:**

1. Donald Hearn and M. Pauline Baker, “ Computer Graphics C Version”, Second Edition, Pearson Education, 2005.

### **REFERENCE BOOK:**

1. William M.Newman,Robert F Sproul,”Principles of Interactive computer Graphics”,Tata McGraw-Hill,Singapore,2002.
2. StevenHarrington, “Computer Graphics- A Programming Approach” McGraw-Hill Book Company,1988.
3. Foley James D.,Vandam Andries and Huges John F.,”Computer Graphics:Principles and Practices”, Pearson Education.
4. Roy.A.Plastock and Gordon Kalley,”Theory and Problems of Computer Graphics”,Schaum’s Outline Series,McGraw Hill,2000.



**Unit I**

Introduction to Computers and the Internet: History of the World Wide Web – Hardware Trends – The key Software Trend: Object Technology – Java Script: Object-Based Scripting for the Web - Browser Portability - Hyper Text Markup Language : Introduction – Markup Languages – Editing HTML – Common Tags – Headers – Text Styling – Linking – Images – Formatting text with <FONT>- Special Characters, Horizontal rules and more line Breaks – Intermediate HTML: Introduction – Unordered Lists – Nested and Ordered Lists – Basic HTML Tables – Intermediate HTML Tables and Formatting – Basic HTML Forms – More Complex HTML forms – Internal Linking – Creating and Using Image maps <META> Tags -<FRAMESET> Tags.

**Unit II**

Java Script: Introduction – Memory Concepts – Arithmetic – Decision Making: Equality and Relational Operators – Selection Structures: if, ifelse, switch – Repetition Structures: while, for, do/while - Break and Continue Statements – Labeled Break and Continue Statements – Logical Operators - Functions: Introduction – Program Modules in Java Script – Programmer – Defined Functions – Function Definitions – Duration of Identifiers – Scope Rules – Recursion – Recursion Vs Iteration – Java Script Global Functions.

**Unit III**

Arrays: Introduction – Arrays – Declaring and Allocating Arrays – References and Reference Parameters – Passing Arrays to Functions –Sorting Arrays – Searching Arrays – Multiple Subscripted Arrays - Objects: Introduction – Math, String, Date, Boolean and Number Objects - Dynamic HTML: Cascading Style Sheets: Introduction – Inline Styles – Creating Style Sheets with the STYLE Element – Conflicting Styles – Linking External Style Sheets – Positioning Elements – Backgrounds – Element Dimensions – Text Flow and the Box Model – User Style Sheets.



## **Unit IV**

Object Model and Collections: Introduction – Object Referencing – Collections all and Children – Dynamic Styles – Dynamic Positioning – Using the frames Collection – navigator Object - Event Model: Introduction – Event ONCLICK – Event ONLOAD – Error Handling with ONERROR – Tracking the Mouse with Event ONMOUSEMOVE – Rollovers with ONMOUSEOVER and ONMOUSEOUT – form processing with ONFOCUS and ONBLUR – more form processing with ONSUBMIT and ONRESET - event Bubbling - Filters and Transitions: Introduction – Flip Filters: flipv and fliph – Transparency with the chroma Filter – Miscellaneous Image Filters: invert, gray and xray – Adding shadows to Text – Creating Gradients with alpha – Making Text glow – Creating Motion with blur – Using the wave Filter – Advanced Filters: dropShadow and light – Transitions Filter – Filter blendTrans - Filter revealTrans - Client Side Scripting with VBScript: Introduction - Operators – Data Types and Control Structures – VBScript Functions – Arrays – String Manipulation Classes and Objects.

## **Unit V**

Active Server Pages: Introduction – Work – Client-Side Scripting Versus Server-Side Scripting – Using Personal Web Server or Internet Information Server – Server-Side ActiveX Components – File System Objects – Session Tracking and Cookies – Accessing a Database from an ASP - CGI and Perl: Common Gateway Interface – Introduction to Perl – Configuring Personal Web Server for Perl / CGI – String Processing and Regular Expressions – Viewing Client/Server Environment Variables – Form Processing and Business Logic – Server-Side Includes – Verifying a user name and password – Sending E-Mail from a Web Browser – Using ODBC to Connect to a Database – Cookies and Perl - Extensible Markup Language: Introduction – Structuring Data – Document Type Definitions – Customized Markup Languages – XML Parsers –XHTML.



**TEXT BOOK:**

1. H.M.Deitel, P.J.Deitel and T.R.Nieto, “Internet and World Wide Web – How to Program”, Pearson Education Asia, 2003.

**REFERENCE BOOKS:**

1. Thomas A. Powell, “The Complete Reference HTML and XHTML”, Fourth Edition, Tata McGraw Hill Pub. Company Ltd.
2. Achyut S. Godbole, Atul Kahate, “Web Technologies – TCP/IP to Internet Application Architectures”, Tata McGraw Hill Pub. Company Ltd, 2003.
3. Ivan Bayross, “Web enabled Application Development using HTML, DHTML, JAVASCRIPT, PERL, CGI”, BPB 2000.



**Unit I**

Introduction: Uses of Computer Networks – Network Hardware – Network Software – Reference Models - The OSI Reference Model – The TCP/IP Reference Model – A Comparison and Critique of the OSI and TCP/IP Reference Models – The Physical Layer: Transmission Media: Twisted Pair – Coaxial Cable – Fiber Optics – Wireless Transmission – Communication Satellites: Geostationary Satellites - Satellites versus Fiber – The Public Switched Telephone Network: Structure of the Telephone System - Modems – Trunks and Multiplexing – Switching – The Mobile Telephone System: Analog Voice – Digital Voice – Digital Voice and Data.

**Unit II**

The Data Link Layer: Design Issues – Error Detection and Correction – Elementary Data Link Protocols – Sliding Window Protocols – Protocol Verification - The Medium Access Control Sublayer: Bluetooth – Data Link Layer Switching: Local Internetworking – Spanning Tree Bridges – Remote Bridges – Repeaters, Hubs, Bridges, Switches, Routers and Gateways.

**Unit III**

The Network Layer: Design Issues – Routing Algorithms – Congestion Control Algorithms – Quality of Service – Requirements – Techniques for Achieving Good Quality of Service – Internet Working – The Network Layer In The Internet: The IP Protocol – IP Addresses – Internet Multicasting – Mobile IP.

**Unit IV**

The Transport Layer: The Transport Service – Elements of Transport Protocols – The Internet Transport Protocols: UDP – TCP: Introduction – The TCP Service Model – The TCP Protocol – The TCP Segment Header – TCP Connection Establishment – TCP Connection Release – Wireless TCP and UDP – Transactional TCP.



## **Unit V**

The Application Layer: DNS-The Domain Name System – Electronic Mail: Architecture and Services – The User Agent, SMTP, POP3. Network Security: Cryptography: Introduction to Cryptography – Substitution Ciphers – Transposition Ciphers – Symmetric-Key Algorithms: The Data Encryption Standard – Public-Key Algorithms: RSA – Social Issues: Privacy – Freedom of Speech – Copyright.

### **TEXT BOOK:**

1. Andrew S. Tanenbaum, “Computer Network”, Fourth Edition, PHI 2002.

### **REFERENCE BOOKS:**

1. William Stallings, “Data and Computer Communications”, PHI, 2000.
2. R.S. Rajesh, K.S.Eswarakumar, R.Balasubramanian, “Computer Networks – Fundamentals & Applications”, Vikas Publishing House PVT LTD, 2002.
3. Behrouz A. Forouzan, “Data Communication and Networking”, 2<sup>nd</sup> Edition, TMH, Reprint 2002.
4. Brijendra Singh, “Data Communications and Computer Networks”, PHI.
5. Charlie Kaufman, Radia Perlman, Mike Speciner, “Network Security – Private Communication in aPublic World”, PHI, 2005



## **GRAPHICS LAB**

**Credits 2**

### **GRAPHICS USING C:**

1. Drawing a line, circle and ellipse using Bresenham's Algorithm.
2. 2D Transformations.
3. Windowing and Clipping.
4. 3D Transformations.
5. Simple Animation. (Bouncing ball, Blinking eyes etc.,)
6. Histogram and Bar Chart.
7. Free hand drawing.
8. Displaying text in different fonts.

## **INTERNET AND WEB LAB**

**Credits 2**

### **Simple Web Page and website design for a department, college, company etc.,**

1. Using HTML
2. Using Java Script
3. Using DHTML
4. Using ASP
5. Using Perl and XML



## **SEMESTER V**

### **DATA MINING AND WAREHOUSING**

**Credits 4**

#### **Unit I**

Introduction to Data Mining – Knowledge Discovery in Databases - Data Mining Issues - Data Mining from a Database perspective - Data Mining Tasks - Applications - Data Processing - Data Cleaning - Data Integration and Transformation - Data Reduction - A Statistical Perspective on Data Mining - Similarity Measures.

#### **Unit II**

Classification: Introduction - Statistical Based Algorithm - Distance based Algorithm - Decision Tree Based Algorithm - ID3 - NN based Algorithm - Propagation - Rule Based Algorithm - Generating Rules for DT - Combining Techniques.

#### **Unit III**

Clustering - Introduction - Similarity and Distance Measures - Outlines - Hierarchical Agglomerative - Divisive Clustering - Partitional - K-means Clustering Large db - BIRCH - Clustering with Categorical Attributes - Rock.

#### **Unit IV**

Association Rules - Large Itemsets - Basic Algorithm - A Priori Algorithm - Partitioning - Advanced ARtec - Correlation Rules - Measuring the Quality of Rules - Advanced Topics - Concepts of Web Mining - Text Mining - Spatial Mining.

#### **Unit V**

Data Warehousing: Introduction - What is a Data Warehouse - Definition - Multidimensional Data Model - OLAP Operations - Warehouse



Schema - Data Warehousing Architecture - Warehouse Server - Metadata - OLAP Engine - Data Warehouse Backend Process.

**TEXT BOOKS:**

1. Jiawei Han and Micheline Kamber, “Data Mining Concepts and Techniques”, Harcourt India Pvt Ltd., New Delhi, 2001. (Unit I)
2. Dunham, “Data Mining – Introducing and Advanced Topics”, Pearson Education, New Delhi, 2003. (Unit I, II, III & IV)
3. Arun K. Pujari, “Data Mining Techniques”, Universities Press India Pvt Ltd., New Delhi, 2002. (Unit V)

**REFERENCE BOOKS:**

1. Hand, Mannila and Smyth, “Principles of Data Mining”, PHI, New Delhi, 2004.
2. K.P.Soman, Shyam Diwakar, V.Ajay, “Insight into Data Mining Theory and Practice”, PHI, New Delhi ,2006.
3. C.S.R Prabhu, “Data Warehousing Concepts, Techniques, Products and Applications”, PHI, Second Edition.



**Unit I**

An Overview of Java: Object Oriented Programming-Lexical Issues- class Libraries. Data Types, Variables, and Arrays: Primitive Types-Literals-Variables-Type Conversion and Casting- Arrays. Operators: Arithmetic-Bitwise – Relational - Boolean Logical- Assignment – Conditional - operator Precedence. Control Statements: Selection statements-Iteration Statements-Jump Statements. Classes and Methods: Fundamentals- Declaring objects- Methods- Constructors-Garbage Collection- Overloading Methods-Recursion – Access Control- Nested and Inner Classes- Command Line Arguments.

**Unit II**

Inheritance: Basics- Super Class- Method overriding- Abstract Class. Packages and Interfaces: Packages-Access Protection-Importing Packages- Interfaces- Default Interface Methods. Exception Handling: Fundamentals- types- Uncaught Exceptions- Try and Catch- throw-throws-finally-built-in exceptions. Multi-threaded programming: Thread Model-Creating a Thread- Thread Priorities- Synchronization-Interthread Communication.

**Unit III**

String Handling: Constructors- Length - Special String Operations - Character Extraction - String Comparision - Modifying a String - String Buffer. Input/Output: The I/O Classes and Interfaces – File - I/O Exceptions - Byte Streams - Character Steams – Serialization. The Applet Class: Basics-Architecture - Applet Skeleton - Display methods - Status Window - Passing Parameters. Event Handling: Event Model – Classes - KeyEvent Class- Event Listner Interfaces.

**Unit IV**

AWT: Window Fundamentals - Working with Frame Windows – Graphics - Working with Color - Working with fonts - Controls – Labels- Buttons- Check Box - Choice Controls- Lists- Scroll Bars- Text Field- Text Area - Layout Menubars and Menus. Java Beans: Advantages - Introspection – properties - Java Beans API. Servlets: Life Cycle-Simple Servlet-Servlet API-Packages-Cookies-session tracking.



## **Unit V**

Using Relational Databases: Introduction- JDBC Drivers for RDBM Systems - Using Java.sql API - Using Javax.sql API - Connection Pooling. Network Programming: Introduction- Working with URLs-Working with Sockets- Remote Method Invocation.

### **TEXT BOOK:**

- [1] Herbert Schildt, “The Complete Reference Java J2SE”, 9th ed., TMH Publishing Company Ltd, New Delhi, 2014. Chapter: 2-11, 16, 22, 23,24,25,26,37,38
- [2] Joe Wiggles worth and Paula McMillan, “Java Programming Advanced Topics”, 3rd ed., TMH, 2009. Chapter: 9, 11.

### **REFERENCES:**

1. John Dean, Raymond Dean, “ Introduction to Programming with JAVA – A Problem Solving Aproach”, Tata McGrawHil, 2012
2. Ralph Bravaco, Shai Simonson, “Java Programming : From the Ground Up”, Tata McGraw Hil Edit on, 2012
3. Herbert Schildt, Dale Skrien, “Java Fundamentals – A Comprehensive dxfIntroduction”, Tata McGrawHil, 2013.



**Unit-I**

Introduction to .NET-VB and VB.NET differences –Data types-Variables-Operators-Arrays-Conditional Logic

**Unit-II**

Procedures-Dialog Boxes-File IO and System Objects-Error Handling-Namespace-Classes and Objects

**Unit-III**

Introduction to Data Access in .NET-ADO.NET-Data Access in Visual Studio.NET-Windows Forms: Controls-Specific Controls

**Unit-IV**

Introduction to Web Development-ASP.NET-Page Framework-HTML Server controls-Web controls

**Unit-V**

Validation controls-User controls-Events-Cascading Style Sheets-State Management-Asp.Net Applications-Tracing-Security

**Text Book:**

Bill Evjen Janson Beres ET AL Visual Basic .Net Programming Bible -2014

**Chapters:**

1,2,5,6,7,8,9,10,12,13,14,21,22,23,25,26,27,31,33,34,35,36,37,38,39,40,41,42,43.

**Reference Books:**

1. Jason N.Gaylord, Christian Wenz, Pranav Rastogi, Todd Miranda, Scott Hanselman, Scott Hunter, “Professional ASP.NET 4.5 in C# and VB”- 2013.
2. Bill Evjen, Scott Hanselman, Devin Rader, “Professional ASP.NET 3.5 SPI Edition: in C# and VB- 2009
3. Thearon willis, Jonathan Crossland Blair ,“Beginning VB .NET 2003”,Wiley Dreamtech Publishers, 2004.



Use JAVA Programming Language to implement the following:

1. Concept of different types of inheritance.
2. Concept of Interface.
3. Concept of Package.
4. To handle mouse events.
5. To handle keyword events
6. To create applets incorporating the following Features:
  - a. Create a color palette with matrix of buttons
  - b. Set background and foreground of the control text area by selecting a color from color palette.
  - c. In order to select Foreground or background use check box control as radio buttons
  - d. To set background images
7. Use GridLayout to design a calculator and simulate the functions of simple calculator.
8. To Create Input output and Random files
9. To develop chat application with datagram sockets and datagram packets.
10. To invoke servlet from HTML forms.
11. To invoke servlet from Applets.
12. To invoke servlet from JSP.
13. Simple client/server application.
14. JDBC to interact with database.
15. To create multiple chat applications using TCP packets.



1. Create minimum two simple applications using controls. Eg: Calculator, Drawing Pictures using GDI, Animation and Trainer Kit.
2. Write a program to simulate MS – OFFICE word and Excel packages with minimum five features.
3. Develop a website using ADO.Net to implement online shopping with registration, login, product page (minimum 3 pages), and contact-us page. While clicking cart icon allow to modify and display final purchase details for check-out.
4. Develop a website using ADO.Net to implement online Banking with login page, account details, deposit, withdraw, fund transfer and report of transaction with following options –  
last 10 days, last 1 month, last 6 month, last 1 year.
5. Develop a web page to insert, update, delete student details using web service for accessing database
6. Develop Console application.
  - i) Using Structure
  - ii) Using arrays
  - iii) Creating functions and Procedures
  - iv) Create a new class, add methods and properties.



**SEMESTER VI**  
**OPEN SOURCE PROGRAM**

**Credits: 4**

**Unit I**

Configuring your installation – Creating PHP pages using PHP6 – Using PHP with MYSQL – Using Tables to display Data.

**Unit II**

Form Elements: Letting the user work with Data – Letting the user Edit the Database – Manipulating and creating images with PHP – Validating user Input – Handling and avoiding errors.

**Unit III**

Building Databases – Sending E-mail – User Logins, profiles and personalization – Building a content Management system – Creating a Bulletin Board System – Using Log files to improve your site.

**Unit IV**

PYTHON: Programming Basics and strings – Numbers and operators – Variables – Functions – Classes and objects – Files and Directories – Building a module – Accessing Database.

**Unit V**

PERL: The Basics of PERL – Idiomatic PERL – Regular Expressions – Subroutines – File and File handles.



**TEXT BOOK:**

1. “Beginning PHP 6, Apache, My SQL web development”, “ Timothy BoronCZyk, Elizabeth Naramore, Jason Gerner, Yann Le Souarnec, Jeremy Stolz, Michael K.Glass”. 2014 Edition. (Chapter 1-13, 16, 17)
2. “Beginning Python”, “Nortan, Samuel, Aitel, Foster – Johnson, Richardson, Diamond, Parker, Roberts”, Wiley dreamtech India pvt. Ltd., 2005.(Chapter 1,2,3,5,6,8,10,14)
3. “Effective PERL Programming”, “Hall, MC Adams, Foy”, Second Edition. (2012). (Chapter 1-5)

**REFERENCE BOOK:**

1. “PHP 6 and My SQL Bible”, “Steve suehring, Tim converse, Joyce park”, Wiley India pvt. Ltd., 2012.
2. “PHP 6”, Julie Meloni, Matt Telles”, Cengage Learning India pvt. Ltd., (2009).



## **SOFT COMPUTING**

**Credits: 4**

### **Unit I**

Fundamentals of Neural Networks Basic Concepts of Neural Network-Model of an Artificial Neuron - Neural Network Architectures - characteristics of Neural Networks - Learning Methods-Taxonomy-History of Neural Network - Early Neural Network Architectures.

### **Unit II**

Back propagation Networks Architecture of Backpropagation Network - Backpropagation Learning-Illustrations applications - Effect of Tuning Parameters of the Backpropagation Neural Network-Selection of various parameters in Backpropagation Neural Network-Variations of Standard Backpropagation algorithms.

### **Unit III**

Fuzzy Sets and Systems Fuzzy Sets - Fuzzy Relations-Fuzzy Logic-Fuzzy Rule based system-Defuzzification Methods-Applications.

### **Unit IV**

Genetic Algorithms Genetic Algorithms: History – Basic concepts – Creation of offsprings – Working principle – Encoding – Fitness function – Reproduction.

### **Unit V**

Genetic Modelling Inheritance operators – Cross over – Inversion and deletion – Mutation operator – Bitwise operators – Bitwise operators used in GA - Generation cycle – Convergence of Genetic algorithm- Applications.



**TEXT BOOK:**

1. Rajasekaran. S and Vijayalakshmi Pai, Neural Networks, Fuzzy Logic and Genetic Algorithms, PHI, 2008 (Chapters: 2.1, 2.3-2.9, 3.1-3.7, 6.3, 6.5, 7.3-7.6, 8.1-8.7, 9.1- 9.9)

**REFERENCE BOOKS:**

1. Fakhreddine O. Karray, Clarence De Silva, Soft Computing and Intelligent Systems Design, Pearson, 2009.
2. Sivanandam. S. N and Deepa S. N, Principles of Soft Computing, Wiley India, 2008.
3. Randy L. Haupt, Sue Ellen Haupt, Practical Genetic Algorithms, Second Edition, Wiley Interscience, A John Wiley & Sons, Inc., Publication. (Chapters 1, 2 & 6.1).



# **CYBER SECURITY**

**Credits 3**

## **Unit I**

Foundations: Information Security Overview: The importance of information Protection-The evolution of Information Security –Justifying Security Investment – Security Methodology –Build a Security Program-The Impossible Job- the Weakest Link-Strategy and Tactics-Business Process vs. Technical Controls –Risk Analysis: Threat Definition –Types of Attacks- Information Security Standards –Regulations Affecting Information Security Professionals-Laws Affecting Information Security Professionals-Secure Design Principles-Authentication and Authorization.

## **Unit II**

Introduction to cyber security science: The scientific method-cyber security theory and practice-Human factors-The role of Metrics-Conducting cyber security experiments: Asking Good questions and Formulating Hypotheses-Designing a Fair Test-Analyzing Your Results-Putting Results to work-A checklist for conducting Experimentation –Cyber security Experimentation and Test Environments: Modeling and simulation-Open Datasets for Testing-Desktop Testing –Cloud Computing –Cyber security Test beds-A checklist for selecting an Experimentation and Test Environment.

## **Unit III**

Software Assurance: An example scientific Experiment in Software Assurance – Fuzzing for Software Assurance –The scientific Method and the software Development Life Cycle-Adversarial Models -How to find More Information-Intrusion Detection and Incident Response: An example Scientific Experiment in Intrusion Detection –False Positives and False Negatives- Performance, Scalability , and Stress Testing –Situational Awareness and Data Analytics: An example Scientific Experiment in Situational Awareness -Experimental Results to Assist Human Network Defenders- Machine Learning and Data mining for Network Monitoring.



#### **Unit IV**

Cryptography: An Example Scientific Experiment in Cryptography –Experimental Evaluation of Cryptographic Designs and Implementation- Provably Secure Cryptography and security Assumptions-Cryptographic Security and the Internet of the Things-Digital Forensics: An Example Scientific Experiment in Digital Forensics–Scientific Reproducibility and Repeatability– Malware Analysis: An Example Scientific Experiment in Malware Analysis-Scientific Data Collection for simulators and Sandboxes-Game Theory for Malware Analysis.

#### **Unit V**

System security Engineering: An Example Scientific Experiment in System security Engineering –Regression Analysis –Moving Target Defense –Human-Computer Interaction and Usable Security: An Example Scientific Experiment in Usable Security –Double –Blind Experimentation-Usability Measures: Effectiveness, Efficiency, and Satisfaction – Methods for Gathering Usability Data-Visualization :An Example Scientific Experiment in Cyber security Visualization –Graphical representations of Cyber security Data – Experimental Evaluation of security Visualization.

#### **TEXT BOOK:**

1. Mark Rhodes Ousley, The Information security the complete Reference ,2013 Second EditionChapters:1-4,6,7
2. Josiah Dykstra ,Essential Cyber Security Science, 2016 First Edition Chapters:1-12