MADURAI KAMARAJ UNIVERSITY
(University with Potential for Excellence)
B.Sc. Computer Science (Non-Semester)

REGULATIONS AND SYLLABUS
(Effective from 2013-2014 and afterwards)

Objectives

The Syllabus for B.Sc. Computer Science degree under non-semester system has been enabling the students to understand the knowledge of computer.

Eligibility:

Candidates who have undergone 10+2 pattern with Mathematics as one of the subjects in +2 level are eligible for admission to I year of the B.Sc. (CS) Degree program.

Syllabi for B.Sc. (Computer Science) under Non-Semester pattern
I Year

1. Mathematical Foundation-I
2. Programming in C
3. Digital principles and application
4. Office Automation
5. Computer organization
6. Systems Software
7. Programming in C Lab
8. Office Automation Lab

II Year

1. Mathematical Foundation-II
2. OO Programming in C++
3. Data Structures and Computer Algorithms
4. Operating System
5. Software Engineering
6. Visual Programming
7. C++ and Data Structures Lab
8. Visual Programming Lab

III Year

1. Computer Graphics
2. Relational Database Management system
3. Computer Networks
4. Web Technology
5. Programming in Java
6. Operation Research
7. RDBMS Lab
8. Web programming Lab

Question Pattern

Section-A (Answer All Questions) 10 X 3 = 30 Marks

Section-B (Either or Choice) 5 X 6 = 30 Marks

Section-C (4 Out of 6) 4 X 10 = 40 Marks

A candidate shall be declared as passed if he/she scored a minimum of 35% marks in each subject.

I YEAR

Sl.No.	Subject:	Max. Mark	Pass Mark
1	Mathematical Foundation-I	100	35
2	Programming in C	100	35
3	Digital principle and application	100	35
4	Office Automation	100	35
5	Computer organization	100	35
6	System Software	100	35
7	Programming in C Lab	100	35
8	Office Automation Lab	100	35

II YEAR

Sl.No.	Subject:	Max. Mark	Pass Mark
1	Mathematical Foundation-II	100	35
2	OO Programming in C++	100	35
3	Data Structures and computer algorithms	100	35
4	Operating System	100	35
5	Software Engineering	100	35

6	Visual Programming	100	35
7	C++ and Data structure Lab	100	35
8	Visual Programming Lab	100	35

III YEAR

Sl.No.	Subject:	Max. Mark	Pass Mark
1	Computer Graphics	100	35
2	Relational Database Management system	100	35
3	Computer Networks	100	35
4	Web Technology	100	35
5	Programming in Java	100	35
6	Operation Research	100	35
7	RDBMS Lab	100	35
8	Web Programming Lab	100	35

The following list of parameters taken into account for the evaluation of the practical examinations

For Language-based programming.

(C/C++/JAVA/VISUAL BASIC etc.,)

Algorithm-Coding-Compilation-Debugging – Result - Viva Voce.

I YEAR
1. MATHEMATICAL FOUNDATION- I

435

UNIT I

Set theory - Relations, equivalence relations - partial order - Function - binary operations - groups: definitions and examples - elementary properties

UNIT II

Logic - introduction - connectives - truth tables - Tautology implication and equivalence of formulae

UNIT III

Matrices: Elementary transformation - Inverse of a matrix - Rank of a matrix- Simultaneous linear equations - Cayley Hamilton theorem.

UNIT IV

Graph theory: Introduction - definition and examples - degrees and sub graphs - matrices - connectedness :walks, trials and paths, connectedness and components.

UNIT V

Eulerian graphs - Hamiltonian graph - trees: characterization of trees, centre of a tree.

TEXT BOOKS:

1. Modern Algebra by S.Arumugam & A. Thangapandi Issac,Scitech publications 2005(for units I,III)

2. Discrete Mathematics by Dr.M.K.Venkkatraman, Dr.N.Sridharan, Dr.N.Chandrasekaran,National Publishing Company,2000.(for unit II)

3. Invitation to Graph Theory by S.Arumugam and S.Ramachandran,Scitech Publications,2005,CDhennai.(for units IV,V)

Unit I : Chapters 1,2,3.1,3.2

Unit II : Chapter IX

Unit III: Chapters 7.3 - 7.7

Unit IV: Chapters 2.1,2.2,2.3,2.8,4.0,4.1,4.2

Unit V : Chapters 5,6

2.PROGRAMMING IN C

UNIT I

Overview of C: History of C-Importance of C-Basic structure of C-Programming style-Contends, Variables and Data types-declaration of variables, storage class- defining symbolic constants- declaring a variable as constant, volatile-overflow and underflow of data. Operator and expressions: arithmetic, relational, logical, assignment operators-increment and decrement operators, conditional operators, bitwise operators, special operators- arithmetic expression- evaluation of expressions- precedence of arithmetic operators – type conversions in expression –operator precedence and associativity – mathematical functions – managing I/O Operations: reading and writing a character – formatted input, output.

UNIT II

Decision making and branching: if statement, if… else statement-nesting of if….else statement- Else if ladder-Switch statement- the?: Operator- goto statement.The While statement – do statement – The for statement –jumps in loops.

UNIT III

Arrays: One dimensional array – declaration ,initialization – two dimensional array – multi dimensional array – initialization. Strings: declaration, initialization of string variables –reading and writing string – arithmetic operations on strings – putting strings together – comparison – sting handling function –table of string –features of string.

UNIT IV

User defined functions: need – multi function program –elements of user defined functions –definition – return values and their types – function calls, declaration, category of all types of arguments and return values –nesting of functions – recursion – passing arrays ,strings to functions – scope visibility and life time of variables – multi file programs. Structure and unions: defining a structure – declaring structure variables – accessing structure members – initialization – copying and comparing – operations on individual members – arrays of structures – arrays within structures –structure within structures – structures and functions – Unions – size of structures – bit fields.

UNIT V

Pointers: accessing the address of s variable –declaring, initialization of pointer variable –accessing a variable through its pointer – chain of pointers – pointer expressions – pointer increment and scale factors – pointer and arrays – pointers and character strings – array of pointers – pointers as function arguments – function returning pointers – pointers to functions – pointers and structures. Files: defining opening, closing a file. I/O Operation on files –error handling during I/O Operations –random access to file – command line arguments.

Text Book:

1. E. Balagurusamy, "Programming in ANSI C", Edition3, Tata McGraw Hill Publishing Company,2005.

UNIT I: Chapters: 1-5
UNIT II: Chapter 6
UNIT III: Chapters 7,8

UNIT IV: Chapters:9,10
UNIT V: Chapter 11,12

Reference book:

Programming with C (Schaum's Outline Series), Gottfried, Tata McGraw Hill,2006

3.DIGITAL PRINCIPLES AND APPLICATIONS

Unit - I Numbers Systems and Discrete Logic

Why Binary– binary to decimal – decimal to binary – octal – hexa decimal – ASCII code – Excess-3 Code – Gray Code – transistor inverter – OR gates – AND gates – Boolean Algebra – NOR gates – NAND gates

Unit - II Circuit Analysis and Design

Boolean Law and theorems –sum of product method – K-Map truth tables – Pairs, Quads, Octets – K-Map simplifications – Don't care – product of sum method – product of sum simplifications.

Unit – III Data Processing and Arithmetic circuits

Multiplexers – De-multiplexers – 1-of- 16- Decoders – BCD-to-Decimal Decoders – 7 segment decoders – Encoders – Exclusive-OR gates – parity generators-checkers – Binary Addition – Binary Subtraction – 2's & 1's complement representation – Complement Arithmetic – Arithmetic building blocks.

Unit – IV Flip-Flops, Clocks and timers

RS flip-flop – D Flip-Flop – JK Flip-Flop – JK Master Slave Flip-Flop – Schmitt Trigger – 555 Timer Astable – 555 Timer Monostable – 555 Timer Schmitt Trigger.

Unit – V Shift Registers and Counters

Types of Registers – Serial in serial out – serial in parallel out – parallel in serial out – parallel in parallel out– Ring counter – Ripple Counter – Synchronous Counter – MOD counters – Preset-able counters

Text Book:

Digital Principles and Applications, by Albert Paul Malvino & Donald P. Leach, Fourth Edition, Tata McGraw-Hill Edition, 2005

Unit I: Chapters: 1, 4
Unit II: Chapters: 2
Unit III: Chapters: 3.1 to 3.8, 5.1 to 5.7
Unit IV: Chapters: 8.1, 8.3,8.6,8.7,8.8, 9.3,9.4
Unit V: Chapters: 10, 11.1,11.3,11.5,11.6

Reference Books:

Digital Logic and Computer Design, M.Morris Mano, PHI, 2005

4. OFFICE AUTOMATION

UNIT I:

Windows Operating System: Overview of different version of windows Opening, closing and resizing windows-enlarging-reverting, reducing the windows-basic windows elements-saving, printing file-qutting a program-file and folder-Working in Explorer-opening and closing a folder in Explore-Entertainment-working in paint-working in Wordpad and Notepad-system tools

UNIT II:

Introduction to Microsoft Office 2000-Word Processing & Microsoft Word-Introduction to Word   Processing-Some Important Terms of Word Processing-Starting Word-Microsoft Word Screen-File Menu-Edit Menu-View Menu-Insert Menu-Format Menu

Tools Menu-Table Menu-Window Menu-Help Menu-Formatting the Text-Alignment of Text-Applying Fonts-Size of Text-Font of the Text-Color of the Text.

UNIT III:

Spreadsheets & Microsoft Excel: Understanding Microsoft Excel for Windows-Starting Microsoft Excel 2000-Understanding Spreadsheets-File Menu-Edit Menu-View Menu-Insert Menu-Format Menu-Tools Menu-Data Menu-Window Menu-Help Menu.

UNIT IV:

Creating a Worksheet in Excel for Windows-Copying Formula-Formulas That Make Decisions-Styles-Functions in Excel-Using Autosum-Using autocalculate-References-Sum Function-Average Function-Creating Charts in Excel-Creating Graphs-Modifying Chart-Adding Data to Chart-Add a Data table to a Chart-Add a Trendline-Creating a Pivot Table Report-Modifying the Chart Type.

UNIT V:

Introduction to access-Tables-Simple Queries-Form.

Text Book:

IT Tools and Applications-Vikas Gupta-Dreamtech Press-First edition-2003.

5. COMPUTER ORGANIZATION

UNIT I:

Basic Computer Organization: Instruction Codes – Computer Registers – Computer Instructions – Timing and Control – Instruction Cycle – Control Memory – Address Sequencing

UNIT II:

CPU: General Register Organization – Stack Organization – Instruction Formats – Addressing Modes – Program control

UNIT III:

Computer Arithmetic: Hardware Implementation and Algorithm for Addition,

Subtraction, Multiplication, Division – Booth Multiplication Algorithm – Floating Point Arithmetic

UNIT IV:
I/O and Memory Organization: I/O Interface – Asynchronous Data Transfer – Modes of I/O Transfer – Priority Interrupt – Direct Memory Access - Memory Hierarchy – Main Memory – Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory

UNIT V :
Advanced Processing:RISC, CISC Characteristics - Parallel Processing – Pipe Lining – vector processing – array processors – Multi processors – Interconnections structures

Text Book:

M. Morris Mano, "Computer System Architecture", Third Edition, Prentice Hall of India, 2003.

Chapters:

Unit I:5.1 to 5.5, 7.1 to 7.2,   Unit II:8.1 to 8.5, 8.7,   Unit III:10.1 to 10.5

Unit IV:11.2 to 11.6, 12.1 to 12.6 & Unit V:8.8, 9.1, 9.2, 9.6, 9.7, 13.1, 13.2

Reference Books:

1. Structured Computer Organization, A. S. Tanenbaum, PHI.
2. M.Morris Mano , "Digital Logic & Computer Design" PHI 2006.
3. Alan B.Marcovitz, "Introduction to Logic design", TMH ,2nd edition,2005

6. SYSTEM SOFTWARE

UNIT I
Introduction to system software and machine Architecture – Simplified instructional Computer – Traditional machines – RISC Machines
Assemblers: Basic assembler functions, machine dependent and machine independent assemblers features – Assemblers design options.
UNIT II
Loader and Linkers: Basic Loader functions, machine dependent and machine independent loader features – Loader design options.

UNIT III
Macro Processors: Basic Macro Processor functions – machine independent Macro Processor features – Macro Processor design options.

UNIT IV

Compliers: Basic Complier functions − machine independent Complier features − Complier design options.

UNIT V

Other System Software: Database Managements Systems − Text Editors − Interactive Debugging Systems

Text book:

1. System Software An Introduction to System Programming by Leland L. Beck, Addison-Wesley Publication, 2005

Chapters: 1 − 5, 7 (Without Implementation Examples).

Reference Book:

System programming and operating system, Dhamdhere, Tata McGraw Hill, 2006.

7.LAB : PROGRAMMING IN C

1. To reverse a given number and check if it is a palindrome.
2. To evaluate Sine Series.
3. To find the nth Fibonacci number.
4. To check if a number is Prime or not.
5. To Sort an Array.
6. To check if a number is Adam or Not.
7. To reverse a given String and check if it is a Palindrome.
8. To find Factorial value using Recursion
9. To add and subtract two Matrices
10. To multiply two Matrices
11. To solve Quadratic Equation –Switch
12. To find NCR and NPR values using Function
13. To prepare Pay Bill – Structure
14. To prepare Mark Sheet – Structure
15. To demonstrate the use of bitwise operators
16. To prepare Mark Sheet – File

8. LAB -OFFICE AUTOMATION

MS-WORD

1. Open a word document to prepare your Resume by performing the following operations.

(a) Formatting the Text-Alignment & Font style

(b) Page setup (margin alignment, page height & width)

2. Create a word document to prepare an application form (College, Bank, etc)

3. Create a student mark sheet using table, find out the total & average marks and display the result.

4. Design an invitation of your course inauguration function using different fonts, font sizes, bullets and Word Art / Clip Art.

5. Mail Merge concept

(a) Prepare a business letter for more than one company using mail merge.

(b) Prepare an invitation and to be sent to specific addresses in the data source.

MS – EXCEL

6. Create suitable work sheet with necessary information and use Data sort to display results. Also use Data filters to answer at least five different criteria.

7. Create suitable work sheet with necessary information and make out a suitable chart showing gridlines, legends and titles for axes.

8. Prepare salary bill in a worksheet showing Basic Pay, DA, HRA, Gross salary, PF, Tax and Net salary using suitable Excel Functions.

9. Create, display and interact with data using Pivot Tables and Pivot Charts of Excel feature.

POWER POINT

10. Create a power point presentation to explain various aspects of your college using Autoplay.

11. Create a power point presentation to explain the sales performance of a company over a period five years. Include slides covering the profile of the company , year wise sales and graph with gridlines, legends and titles for axe. Use Clip Art and animation features.

12. Create a power point presentation from template.
13. Prepare a power point presentation using Auto Wizard and see its various views.
14. Prepare a power point presentation with audio and video effect.

MS-ACCESS

15. Create a table for storing marks of 10 students. The fields of the table are given below: Reg. No., Name, Mark1, Mark2, Mark3, Test average (Best Two/2), assignment seminar and total marks (test average + alignment + seminar). The fields Mark1, Mark2, Mark3 should not allow the user to enter a mark greater than 25 and should display proper message in such case. Similar constraint for the field 'Assignment' is 5 marks and for the field 'seminar', it is 10 marks.

16. Create a table showing names of authors of at least 10 different books, title of books, the prices of these books, name of publishers and year of publication. Also create select, action and cross-tab queries to display the records from this table meeting the criteria used in these queries.

17. Create a form to enter the data directly into this form. The fields required are: Basic Pay, DA, HRA, Gross salary, PF, Income tax and Net salary.

18. Create a report that displays the customer name, address, phone number, Item code, product quantity of the customers whose orders have been pending for over a month.

II YEAR
1. MATHEMATICAL FOUNDATION - II

UNIT I
Introduction to statistics – primary and secondary data – classification, tabulation and Diagrammatic Representation of statistical data – Bar-charts, Pie-diagrams' – Graphical Representation of data – Histograms, Frequency polygon, Ogives

UNIT II
Measures of dispersion – characteristics – coefficient of dispersion - Coefficient of variation – Moments – skewness and kurtosis – Pearson's coefficient of skewness - Bowley's coefficient of Skewness – Coefficient of skewness based upon moments.

UNIT III
Simple correlation – Karl Pearson's coefficient of correlation – correlation coefficient for A bivariate frequency distribution – Rank correlation – Regression – lines of regression – Properties of regression coefficient.

UNIT IV
Events and sets – sample space – concept of probability – addition and multiplications Theorem on probability – conditional probability and independence of evens – Baye's Theorem – concept of random variable – Mathematical Expectation

UNIT V
Concept of sampling distributions – standard error – Tests of significance based on t, Chi-square and F distributions with respect to mean, variance

Text Books
        "Statistical methods",S.P.Gupta,Sultan chand and sons,2004.
Unit I - Chapter 1,2.2,2.2.1,2.2.2,2.2.3,4,5.
Unit II -Chapter 7,8
Unit III-Chapter 9,9.1,9.2,9.3,10,10.1,10.2,10.2.1,10.2.2,10.2.3,10.3.
Unit IV-Chapter 16.
Unit V -Chapter 18.3,18.4,18.7.1,18.7.2,19.
 Reference Book
        "Statistics",Dr.S.Arumugam,and A.Thangapandi Issac , New Gamma Publication House,2002.

2.OBJECT ORIENTED PROGRAMMING IN C++

UNIT I

Basic concepts of Object oriented programming – Benefits of OOP's – Application of OOP – Structure of C++ program – Basic data type – Derived data type – User defined data type, operators in C++, Control statements, inline function, function overloading .

UNIT II

Class Introduction: Specifying a class – defining member function- nesting of member function-array of object – friend function –constructor- parameterized constructor- copy constructor-destructor.

Defining operator overloading- overloading unary operator –overloading binary operator –rules for operator overloading

UNIT III

Inheritance-single inheritance-multilevel inheritance-multiple inheritance-hierarchical inheritance-hybrid inheritance- virtual base class- polymorphism- pointer – pointer to object- this pointer-virtual function-pure virtual function - pointers to object-this pointer-pointers to derived class-virtual function-pure virtual function.

UNIT IV

I/O Operation: Introduction- C++ Streams –C++ stream classes-unformatted I/O operations-formatted console I/O Operation, Managing Output with manipulators

UNIT V

Files: Introduction-class for file stream operations-opening and closing files-detecting end of file-more about open ()- File modes-File pointer and their manipulation-sequential input and output operations-updating a file: Random access-error handling during file operation-Command line argument.

Text Book:

1. E. Balagurusamy, "Object Oriented Programming with C++", Edition3, Tata McGraw Hill Publishing Company,2007.

Reference Books:

1. The Complete reference , Schildt, Tata McGraw Hill, 2006.
2. C++ Programming ,AL Stevensen ,Wiley 7th Edition ,2003.

3. DATA STRUCTURES AND COMPUTER ALGORITHMS

UNIT I:

Algorithms-importance of developing efficient algorithms-Analysis-order-Divide and Conquer: Binomial coefficients-Floyds algorithm for shortest paths-Dynamic programming and optimization problems-chained matrix multiplication-Optimal binary search tree-The travelling salesperson problem.

UNIT II:

Greedy Approach: Minimum spanning trees-Dijkstra's algorithm for single source shortest path-Scheduling-Huffman code.

UNIT III:

Data Structure-Arrays-Linear array, Representation of linear array in memory-Traversing linear array-sorting-linear search-Binary search-Multidimensional array-Pointers-records-Representation of records in memory.

UNIT IV:

Linked List –Introduction-representation of linked list in memory-Traversing a linked list-searching a linked list-memory allocation-insertion and deletion in a linked list –implementation of Stack using array and linked representation-an application of stack recursion-Queues-Linked representation of queues.

UNIT V:

Trees-Introduction-Binary Trees –Types of Binary Trees-Representation of Binary Trees –Binary Tree Traversals-Binary trees –searching and inserting in binary search trees

Text Books:
1. Fundamentals of Computer Algorithms, Ellis Horowitz, SartajSahni, Galgotia Publications, 2005
2. Fundamentals of Data Structures , Ellis Horowitz, SartajSahni, Galgotia Publications,2005.

Reference Books:
1. Object-Oriented Programming With C++, PoornachandraSarang, 2nd Edition, PHI Learning Private Limited, New Delhi,2009
2. Data Structures-Seymour Lipschutz-Tata McGrawhill-Year 2006

4.OPERATING SYSTEM

UNIT I

Introduction To Operating System: Introduction, What Is An Operating Systems, Operating System Components And Goals, Operating System Architecture. Process Concepts: Introduction, Process States, Process Management, Interrupts, Interprocess Communication

UNIT II

Asynchronous Concurrent Execution: Introduction, Mutual Exclusion, Implementing Mutual Exclusion Primitives, Software Solutions To The Mutual Exclusion Problem, Hardware Solution To The Mutual Exclusion Problem, Semaphores.Concurrent Programming: Introduction, Monitors.

UNIT III

Deadlock And Indefinite Postponement: Introduction, Examples Of Deadlock, Related Problem Indefinite Postponement, Resource Concepts, Four Necessary Conditions For Deadlock, Deadlock Solution, Deadlock Prevention, Deadlock Avoidance With Dijkstra's Banker's Algorithm, Deadlock Detection, Deadlock Recovery.Processor Scheduling: Introduction, Scheduling Levels, Preemptive Vs Non-Preemptive Scheduling Priorites, Scheduling Objective, Scheduling Criteria, Scheduling Algorithm

UNIT IV

Real Memory Organization And Management: Introduction, Memory Organization, Memory Management, Memory Hierarchy, Memory Management Strategies, Contiguous Vs Non ContiguousMemory Allocation, Fixed Partition Multiprogramming, Variable Partition Multiprogramming

Virtual Memory Management : Introduction, Page Replacement, Page Replacement Strategies , Page Font Frequency, Page Size

UNIT V

Disk Performance Optimization: Introduction, Why Disk Scheduling Necessary, Disk Scheduling Strategies, Rotational Optimization

File and Database System: Introduction, Data Hierarchy, File System, File Organization, File Allocation, Free Space Management, File Access Control

Text Book:

Operating Systems by Deitel Deitel Choffnes- Pearson education Third Edition-2008

Unit I

Chapter-1   1.1,1.2,1.12,1.13,
Chapter-3   3.1,3.2,3.3,3.4,3.5

Unit II

Chapter 5   5.1,5.2,5.3,5.4,(up to 5.42),5.5,5.6
Chapter -6   6.1,6.2

Unit-III

Chapter-7   7.1,7.2,7.3,7.4,7.5,7.6,7.7,7.8,7.9,7.10
Chapter-8   8.1,8.2,8.3,8.4,8.5,8.6,8.7

Unit-IV

Chapter-9   9.1,9.2,9.3,9.4,9.5,9.6,9.8,9.9
Chapter-11   11.1,11.5,11.6,11.8,11.9,11.10

Unit-V

Chapter-12   12.1,12.4,12.5,12.6
Chapter-13   13.1,13.2,13.3,13.4,13.5,13.6,13.7,13.8,

Reference Book

An Introduction to Operating Systems Concepts and Pratice By Pramod Chandra P.Bhatt-PHI 2nd Edition-2008

5. SOFTWARE ENGINEERING

UNIT I

Introduction to software engineering: Some definitions –Some size factors –Quality and productivity factors - Managerial issue.

Planning a software project: Defining the problem –Developing a solution strategy – planning the development process –planning an organization structure–other planning activities.

UNIT II

Software Cost Estimation: Software – Cost factors - Software cost estimation techniques - Specification techniques staffing –level estimation –estimating software maintenance costs.

UNIT III

Software requirements definition: The software requirements specification – format languages and processors for requirements specification.

UNIT IV

Software Design : Fundamentals Design concepts- Modules and modularizing Criteria Design Notations –Design techniques –Detailed Design Consideration –Real time and distributed system design –Test plan- Mile stones walk through and inspection –Design guide lines.

UNIT V

Verification and validation Techniques: Quality assurance –Static analysis – symbolic exception – Unit testing and Debugging –system testing – formal verification.

Software maintenance : Enhancing maintainability during development – managerial aspects of software maintenance –configuring management –source code metrics –other maintenance tools and techniques.

TEXT BOOK:

SOFTWARE ENGINEERING CONCEPTS – RICHARD FAIRLEY – Tata McGraw - Hill Publishing Company Limited, NewDelhi 1997.

Chapters
Unit – I : 1. 1 – 1.4, 2.1-2.5,   Unit – II: 3.1 - 3.4,   Unit – III   :4.1–4.3
Unit – IV: 5.1 – 5.9 &   Unit – V: 8.1, 8.3 – 8.7, 9.1 – 9.5

REFERENCE BOOKS:

1. FUNDAMENTALS OF SOFTWARE ENGINEERING – RAJIB MALL, Prentice Hall of India Pvt. Ltd. , New Delhi – 2003
2. Software Engineering: A practitioner's approach by Roger S. Pressman McGrawHill International Book Company, 2001.
3. SOFTWARE ENGINEERING – K. L. JAMES, Prentice Hall of India Pvt. Ltd. , New Delhi – 2009.

6.VISUAL PROGRAMMING

UNIT I - INTRODUCTION

Visual Basic Overview – The Visual Basic Development Environment – The Visual Basic language: Declaring Constants, Variables – Selecting Variable Types – Converting between Data types – Setting variable scope – Verifying Data types – Declaring Arrays and Dynamic Arrays - Declaring subroutines – Declaring functions – Preserving variables Values between calls to their procedures – Handling String – Converting Strings to Numbers and Back again – Handling operators and Operator Precedence – Using IF..Else Statements – Using Select…case –   Making Selections with Switch( ) and Choose( ) – Looping – Using Collections – Handling Dates and Times – Ending a Program at any Time.

UNIT II - FORMS AND MENUS

Managing Forms in Visual Basic – Visual Basic Menus: Adding a Menu to a Form – Modifying and Deleting Menu Items – Adding a Menu Separator – Adding access characters – Adding shortcut keys – Creating sub Menus – Creating immediate bang Menus – Using the Visual Basic Predefined Menus – Adding a check mark to a Menu Item – Disabling Menu Items – Handling MDI Form and MDI child Menus – Adding a list of Open Windows To an MDI form's Window Menu – Making Menus and Menu Items Visible or Invisible – Creating and Displaying Popup Menus – Adding and Deleting Menu Items at Runtime – Adding bitmaps to Menus.

UNIT III - CONTROLS

Text Boxes and Rich Textboxes –Command buttons, Checkboxes and Option buttons-List boxes and Combo boxes- Picture Boxes and Image Controls – The Timer Control – The Frame Control – The Label Control – The Shape Control.

UNIT IV - DATABASE CONCEPTS

Databases: Using DAO, RDO, And ADO: Creating and Managing Databases with the Visual Data Manager – Creating a Table, Filed with the Visual Data Manager – Entering a Data in Database with the Visual Data Manager – Adding a Data control – Opening a Database with the Data control, Remote Data Control, ADO Data Control – Connecting a Data bases using controls-Working with Database Objects in Code.

UNIT V – ACTIVEX AND OLE CONCEPTS

Creating ActiveX controls and Documents – OLE : Adding an OLE control to Form – Creating, Linking and Embedding an OLE Object at Design Time –Auto sizing an OLE Control – Using the OLE Control's Pop-Up Menus at Design Time – Inserting an OLE Object into an OLE Control at Runtime – Deactivating OLE Objects – Activating OLE Objects with a Pop-Up Menu that lists All OLE Verbs – Activating OLE Objects from Code –Handling Multiple OLE Objects – Using OLE Control Arrays to handle Multiple OLE Objects.

TEXT BOOK

1. Steven Holzner, 2002, Visual Basic 6 Programming Black Book, 16th Reprint Edition, Dreamtech Press Publications, New Delhi

REFERENCE BOOKS

1. Petroutsos, E., 1998, Mastering Visual Basic 6, First Edition, Edition Reprint 2001,BPB Publications, New Delhi.
2. Jerke, N., Nineteenth Reprint 2004, Visual Basic 6.0: The Complete reference, Tata-McGraw Hill Publishing Company Ltd., New Delhi.
3. Gary Cornell, Second Reprint 1999, VB 6 from Ground Up, Tata Mc Graw Hill Private Ltd, NewDelhi.
4. Brown, S., 1998, Visual Basic 6 in Record Time, BPB Publications, New Delhi.

7.LAB - C++ AND DATA STRUCTURES

Write programs in C++ for the following:

1.To perform Area calculation using Function overloading (Min three functions).
2. To perform String manipulation (three different types) using function overloading.
3.To swap two values between two classes objects using friend function.
4. To find minimum of two numbers between two classes objects using friend function.
5. To overload unary minus operator which changes sign of given vector (3elements)
6. To overload Binary operator which adds two complex numbers?
7. To process students mark list using multiple inheritance
8. To Process employee details using hierarchical inheritance
9.To Process family details using hybrid inheritance
10. To process electricity billing using binary file.
11.To process mark listing using binary file.
12.To perform stack operations.
13.To perform queue operations.
14.To manipulate singly linked list
15.To manipulate doubly linked list
16.To perform tree traversals

8.LAB -VISUAL BASIC

1. Simulating Calculator using control arrays.
2. Quick Search in List/Combo box.
3. Building a Color Panel for Red, Green and Blue using Scroll bars.
4. Program to perform string copy and concatenation.
5. Program to perform an animation of a picture using Timer Control.
6. Create a "Text Styler" with font, Size and Style utilities.
7. Database creation using Data Manager.
8. Program to maintain Library books.
9. Program to prepare a payroll.

10. Program to prepare an electricity bill.
11. Program to prepare students mark sheet.
12. Program for inventory control.
13. Program for Student grade list using DAO/ RDO/ADO
14. Program for online quiz using OLE/ocx/dll
15. Report Generation

III YEAR

1. COMPUTER GRAPHICS

UNIT I

A survey of computer graphics: Computer-Aided Design - Presentation Graphics – Computer Art – Entertainment – Education and Training – Visualization – Image Processing – Graphical User Interfaces
Overview of Graphics Systems: Video Display Devices – Raster Scan Systems – Random Scan Systems – Input Devices – Hard Copy Devices.

UNIT II

Output Primitives: Points and Lines – Line Drawing Algorithms – Circle Generating Algorithms – Filled Area primitives

UNIT III

Attributes of Output Primitives: Line Attributes – Curve Attributes – Color and Gray Scale Levels – Area Fill Attributes – Character Attributes – Bundled Attributes– Antialiasing

UNIT IV

Two –Dimensional Geometric Transformations : Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations – Transformations Between Coordinate Systems

UNIT V

Two –Dimensional Viewing : The Viewing Pipeline – Viewing Coordinate Reference Frame – Window –to- Viewport Coordinate Transformation – Two-Dimensional Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Polygon Clipping – Curve Clipping – Text Clipping – Exterior Clipping.

Text Book

1. Donald Hearn and Pauline Baker M., Computer Graphics, C Version, Pearson Education, Second Edition Indian Reprint , New Delhi, 2012.
Chapters

Unit – I   : 1.1 – 1.8, 2.1-2.3, 2.5, 2.6
Unit – II   : 3.1, 3.2, 3.5, 3.11
Unit – III   : 4.1 – 4.8
Unit – IV   : 5.1 – 5.5
Unit – V   : 6.1 – 6.11

REFERENCE BOOK:

1. Roy A Plostock, Zhigang Xiang., Schaum's outline of Computer Graphics, Tata McGraw Hill, New Delhi, 2001.

2. RELATIONAL DATABASE MANAGEMENT SYSTEMS

UNIT I

OVERVIEW OF DATABASE SYSTEMS: Managing Data – A Historical Perspective – File Systems Versus a DBMS – Advantages of a DBMS – Describing and Storing Data in a DBMS – Queries in a DBMS – Transaction Management – Structure of a DBMS – People Who Work with Databases.

INTRODUCTION TO DATABASE DESIGN: Database Design and ER Diagrams – Entities, Attributes, and Entity Sets – Relationships and Relationship Sets – Additional Features of ER Model – Conceptual Design With the ER Model.

UNIT II

THE RELATIONAL MODEL: Introduction to the Relational Model – Integrity Constraints over Relations – Enforcing Integrity Constraints – Querying Relational Data – Logical Database Design: ER to Relational – Introduction to Views – Destroying / Altering Tables and Views.

RELATIONAL ALGEBRA AND CALCULUS: Preliminaries – Relational Algebra: Selection and Projection – Set Operations –Renaming – Joins - Division Relational Calculus: Tuple Relational Calculus – Domain Relational Calculus

UNIT III

SQL:QUERIES, CONSTRAINTS, TRIGGERS: The Form of a Basic SQL Query - UNION, INTERSECT, and EXCEPT – Nested Queries – Aggregate Operators – Null Values – Complex Integrity Constraints in SQL – Triggers and Active Databases – Designing Active Databases

UNIT IV

SCHEMA REFINEMENT AND NORMAL FORMS: Introduction to Schema Refinement – Functional Dependencies – Reasoning about FD's – Normal Forms – Properties of Decompositions – Normalization – Schema Refinement in Database Design – Other Kinds of Dependencies

UNIT V

OVERVIEW OF TRANSACTION MANAGEMENT: The ACID Properties – Transactions and Schedules – Concurrent Execution of transactions – Lock Based Concurrency Control – Performance of Locking – Transaction Support in SQL – Introduction to Crash Recovery.

SECURITY AND AUTHORIZATION: Introduction to Database Security - Access Control – Discretionary Access Control – Mandatory Access Control – Security for Internet Applications – Additional Issues Related to Security.

TEXT BOOK

Database Management Systems – Raghu Ramakrishnan & Johannes Gehrke, McGraw Hill International Edition – Third Edition – 2003

CHAPTERS:

REFERENCE BOOKS:

1. Database Management Systems - Alexis leon & mathews Leon, "Leon Vikas Publishing, Chennai, 2002.
2. Modern Database Management - Frad R. McFadden, Jeffrey A.Hoffer & Mary. B. Prescott, 5th Edition, Pearson Education Asia, 2001.
3. Database System Concepts – Abraham Silberschatz, Henry F.Korth, S.Sudarshan, McGraw Hill, 2006

3.COMPUTER NETWORKS

UNIT-I

Introduction: Uses of Computer Networks- Network Hardware-Network Software-Reference   Models. Example Networks: The Internet-Third-Generation Mobile Phone Networks-Wireless LANs-RFID and Sensor Networks - Network Standardization.

UNIT-II

The Physical Layer: The Theoretical basis for Data Communication-Guided Transmission Media-Wireless Transmission – Communication Satellites-Digital Modulation and Multiplexing-The Public Switched Telephone Network-The Mobile Telephone System.

UNIT -III

Data Link Layer Design Issues: Error Detection and Correction-Elementary of Data Link Protocols- Sliding Window Protocols. The Medium Access Control Sublayer: The Channel Allocation Problem- Multiple Access Protocols-Bluetooth-Data Link Layer Switching.

UNIT-IV

The Network Layer: Network Layer Design Issues-Routing Algorithms: The Optimality Principle Shortest Path Algorithm-Flooding-Distance Vector Routing-Link State Routing-Hierarchical Routing-Broadcast Routing-Multicast Routing-Congestion Control Algorithms-Quality of Service-Internetworking-The Network Layer in the Internet.

UNIT-V

The Transport Layer: The Transport Service-Elements of Transport Protocols- The Internet Transport   Protocols: User Datagram Protocol (UDP)-Transmission Control Protocol (TCP).

The Application Layer: The Domain Name System (DNS)-Electronic mail-The World Wide Web. Network Security: Cryptography-Symmetric Key Algorithms-Public Key Algorithms-Digital Signatures.

TEXT BOOK

Tanenbaum and Wetherall, "Computer Networks", Fifth Edition, Prentice Hall of India, New Delhi, 2010.

REFERENCE BOOKS

1. Stallings, W., "Data and Computer Communications", Ninth Edition, Prentice Hall of India, New Delhi, 2010.
2. Forouzan, A.B., "Data Communication and Networking", Fourth Edition, Tata McGraw Hill Publishing Company Ltd., New Delhi, 2005.
3. Peterson.,L.L. and Davie, S.B., " Computer Networks", Fifth Edition, Morgan Kaufmann Publishers, San Fransisco, 2011.
4. Douglas, E.C., "Computer Networking and Internets", Second Edition, Prentice Hall of India, New Delhi, 1999.

4.WEB TECHNOLOGY

UNIT I :
Introduction – History of the Internet – Services and Accessibility – Uses – Protocols – Internet Standards

UNIT II :
HTML – Introduction – HTML Document – Head Section – Body Section – HTML Forms – Java Script – Introduction – Language Elements – Objects of Java Script – Other Objects – Arrays.

UNIT III :
Cascading Style Sheets – Advantages of CSS – Properties of Tags – Property Values – Embedded Style Sheets – External Style Sheets – Grouping – Inheritance – Class as Selector – Pseudo Classes and Pseudo Elements – Positioning – Backgrounds – Element Dimensions

UNIT IV :
Servlets – Introduction – Advantages of Servlets - Servlet Life Cycle - The Servlet API - A Simple Servlet – Handling HTTP GET Requests – Handling HTTP POST Requests – Cookies – Session Tracking

UNIT V :
Introduction – Advantages of JSP – Developing First JSP – Components of JSP – Reading request information – Retrieving the data posted from a HTML file to a JSP File – JSP Sessions – Cookies – Disabling Sessions
Text Book:
1. Web Technology – A Developers Perspective – N P Gopalan, J Akilandeswari, Prentice Hall of India Pvt. Ltd., New Delhi, 2008.

Reference Books:
      1. Mastering Javascript, J Jaworkski, BPB Publications, 1999
      2. Core SERVLETS AND JAVA SERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson, Pearson Education India

5. PROGRAMMING IN JAVA

UNIT I

Java evolution: java Features- how java differs from C and C++ - java and Internet – Java and World Wide Web –Web Browsers – Hardware and Software Requirements –Java Environment. Overview of Java Language: Simple Java Program- java program structure-java tokens-java statement- implementing java program-java virtual machine-command line arguments. Constants – variables-data types- declaration of variables-giving values to variables- scope of variables-symbolic constants- type casting.

UNIT II

Operators and Expressions: Arithmetic Operators –relational operators-logical operators-Assignment operators-Increment and Decrement Operators –Conditional Operators – Bitwise Operators-Special operators-Arithmetic Expression-Evaluation of Expression-Precedence of Arithmetic Operators-Operator precedence and associatively-Mathematical Functions. Decision Making and Branching: Decision making with if statement- Simple if statement- if else statement –Nesting if else statement-the else if ladder- the switch statement- the? : Operator. Decision Making and Looping: the while statement –the do statement-the for statement – jumps in Loops. Class, Objects and Methods: Defining a class- fields declaration- methods declaration-creating object-accessing class members-constructors –Methods overloading- static members-nesting of methods- Inheritance-Overriding Methods-Final Variable and Methods- Final Classes-Finalizer Methods-Abstract
Methods and classes-Visibility Control.

UNIT III

Arrays, strings and vectors: one dimensional Arrays- creating an Array- Two dimensional Array –Strings –Vectors- Wrapper classes-Enumerated types. Intefaces :Multiple Inheritance: Defining Interfaces-extending Interfaces- Implementing Interfaces-Accessing Interface variables. Packages: Defining Interfaces-Extending Interfaces- Implementing Interfaces-Accessing interface variables. Package: Java API Packages-Using system package-adding a class t a package- hiding classes- static import.

UNIT IV

Multithreaded programming: creating threads- extending the thread class- stopping and blocking a thread- life cycle of a thread – using thread methods- thread exceptions-thread priority-synchronization-implementing the runnable interfaced- Managing errors and exceptions: types of errors- exceptions- syntax of exception handling code-multiple catch statement-using finally statement- throwing our own exceptions-using exception for debugging. Applet Programming: how applets differ from applications-preparing to write Applets-Building Applet Code-Applet Life cycle-creating an executable applet-designing a webpage-applet tag-adding applet to html file-running the applet

UNIT V:

Graphics Programming: the graphics class-Lines and rectangles-circles and ellipses, drawing polygons-line graphs- using control in applets-drawing bar charts. Managing Input/output Files in Java: concept of streams – stream classes- byte stream classes-character stream classes- using streams-other useful I/O Classes-un\sing the file class- I/O exceptions-creation of files-reading/writing character and buffering files-random access files-interactive input and output.

Text book:

1.Programming with Java, A Primer, Third Edition, E.Balagurusamy, TATA McGraw-Hill

Company,2008

UNIT I: Chapters: 1,2,3,4
UNIT II: Chapter 5,6,7,8
UNIT III: Chapters9,10,11
UNIT IV: Chapters:12,13,14
UNIT V: Chapter 15,16

Reference book:

Java and object oriented programming paradigm: Debasish Jana,Prentice-Hall in India Private Limited, New Delhi,2008.

6. OPERATION RESEARCH

UNIT I

Development of OR – Definition of OR – Modeling – Characteristics & Phases – tools. Techniques & Methods – Scope of OR.

UNIT II

Linear Programming Problem – Formulation – Slack & Surplus Variables – Graphical Solution of LPP.

UNIT III

Simplex Method – Computational Procedure – Artificial Variables techniques – Big M method.

UNIT IV

Mathematical formulation of assignment problem – Methods for solving the assignment problems.

UNIT V

Mathematical formulation of transportation problem – Methods for solving the transportation problem.

Text Book:

Operation Research, S. D. Sharma, Kedar Nath Ram Nath & Co, 2004
> Unit I: Chapter 1 (1.1, 1.2, 1.4, 1.5, 1.8, 1.9, 1.10, 1.11)
> Unit II: Chapter 3 (3.1, 3.2, 3.3, 3.3.1, 3.3.2, 3.3.3, 3.3.4, 3.4, 3.5)
> Unit III: Chapter 5 (5.1, 5.2, 5.2.1, 5.3, 5.4, 5.5, 5.5.1, 5.5.2, 5.5.3, 5.5.4)
> Unit IV: Chapter 11 (11.2, 11.3 and 11.4)
> Unit V: Chapter 12 (12.2 to 12.8)

Reference Books:
1. Operation Research, Nita H. Shah, Ravi M. Gor and Hardik Soni, Prentice-Hall of India Pvt.Ltd, New Delhi, 2008.
2. Operation Research, R. Sivarethinamohan, Tata McGraw Hill, 2005.

7.LAB - RELATIONAL DATABASE MANAGEMENT SYSTEM

1. Introduction to SQL, an exercise on data types in SQL & Data Definition Language
2. Commands.
3. Exercise on Data Manipulation Language and transaction control commands.
4. Exercise on Types of Data Constraints.
5. Exercise on Joins (single-table or multi-table) and using normalization
6. Exercise on group-by clause and date arithmetic
7. Exercise on different functions (aggregate, math and string)
8. Exercise on different types of sub queries
9. Introduction to PL/SQL, Control Structures, Procedures and Functions, view
10. Introduction to triggers and cursors
11. Write a program that creates the function and calculating area of circle
12. Write a program that uses the concept of user defined exception

8.LAB : WEB PROGRAMMING

1. Array and flow control
2. Handling Exceptions
3. Multiple inheritance
4. Package Creation
5. Multithreading
6. File Creation
7. Designing applets
8. Static Web page using HTML
9. Designing any application form for a test &display the test result using Servlets
10. Shopping cart using JSP.