

208 Project IT

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Department of Computer Science & IT (SF)

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**MADURAI KAMARAJ UNIVERSITY**

*(University with Potential for Excellence)*

*Palkalai Nagar, Madurai – 625 021.*



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## **CHOICE BASED CREDIT SYSTEM**

### **[CBCS]**

### **B.Sc (Information Technology)**

#### **SYLLABUS**

**(With effect from 2008 – 2009)**

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**Department Of Computer Science & IT (SF)**

*L. J. J. J.*

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APPENDIX – A1

**MADURAI KAMARAJ UNIVERSITY**

*(University with Potential for Excellence)*

**B.Sc Information Technology (Semester)**

**SYLLABUS**

**Choice Based Credit System**

**(With effect from 2008-2009)**

Semester	Subjects						Total Hours	Total Credits
I	T (6) [3]	E (6) [3]	CS (6) [4]	CS (6) [4]	AS (4) [5]	NME (2) [2]	30	21
II	T (6) [3]	E (6) [3]	CS (6) [4]	CS (6) [4]	AS (4) [5]	NME (2) [2]	30	21
III	T (6) [4]	E (6) [4]	CS (6) [4]	CS (6) [4]	AS (4) [5]	SBS (2) [2]	30	23
IV	T (6) [4]	E (6) [4]	CS (6) [4]	CS (6) [4]	AS (4) [5]	SBS (2) [2]	30	23
V	CS (6) [4]	CS (6) [4]	CS (5) [4]	CS (5) [4]	ES (4) [5]	EVS (2) [2] SBS (2) [2]	30	25
VI	CS (6) [4]	CS (6) [4]	ES (5) [5]	Project (5) [5]	VE(2) [2]	SBS (2) [2] SBS (2) [2] SBS (2) [2]	30	26
Extension Activity								1
								140

**FIRST SEMESTER**

Sl No	Subject Code	Subject	Hours	Credits	Internal Marks	External Marks
1	UTM8L11	Tamil	6	3	25	75
2	UEN8E11	English	6	3	25	75
3	SNT8C11	Programming in C & C++	6	4	25	75
4	SNT8C1P	Programming in C Lab	6	4	25	75
5	SMT8A12	Mathematical Foundations	4	5	25	75
6	SNT8N11	Introduction to IT - NME	2	2	25	75
		Total	30	21		

**SECOND SEMESTER**

Sl No	Subject Code	Subject	Hours	Credits	Internal Marks	External Marks
1	UTM8L21	Tamil	6	3	25	75
2	UEN8E21	English	6	3	25	75
3	SNT8C21	Data Structures	6	4	25	75
4	SNT8C2P	Data Structures Using C ++ Lab	6	4	25	75
5	SNT8A21	Digital Principles & Applications	4	5	25	75
6	SNT8N21	Web Programming - NME	2	2	25	75
		Total	30	21		

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**THIRD SEMESTER**

Sl No	Subject Code	Subject	Hours	Credits	Internal Marks	External Marks
1	UTM8L31	Tamil	6	4	25	75
2	UEN8E31	English	6	4	25	75
3	SNT8C31	Visual Programming	6	4	25	75
4	SNT8C3P	Visual Programming Lab	6	4	25	75
5	SNT8A31	Resource management Techniques	4	5	25	75
6	SNT8S31	Biometrics	2	2	25	75
		Total	30	23		

**FOURTH SEMESTER**

Sl No	Subject Code	Subject	Hours	Credits	Internal Marks	External Marks
1	UTM8L41	Tamil	6	4	25	75
2	UEN8E41	English	6	4	25	75
3	SNT8C41	Database Management System	6	4	25	75
4	SNT8C4P	RDBMS Lab	6	4	25	75
5	SNT8A41	Numerical Methods	4	5	25	75
6	SNT8S41	PC Software	2	2	25	75
		Total	30	23		

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**FIFTH SEMESTER**

SI No	Subject Code	Subject	Hours	Credits	Internal Marks	External Marks
1	SNT8C51	Java Programming	6	4	25	75
2	SNT8C52	Operating System	6	4	25	75
3	SNT8C5P	Java Programming Lab	5	4	25	75
4	SNT8C5Q	Unix & Shell Programming Lab	5	4	25	75
5	ES1	Elective1	4	5	25	75
6	UES8D51	Environmental Studies	2	2	25	75
7	SNT8S51	Cryptography	2	2		
Total			30	25		

**SIXTH SEMESTER**

SI No	Subject Code	Subject	Hours	Credits	Internal Marks	External Marks
1	SNT8C61	Software Engineering	6	4	25	75
2	SNT8C6P	Web Programming Lab	6	4	25	75
3	ES2	Elective 2	5	5	25	75
4	SNT8C6T	Project Work	5	5	25	75
5	UVE8V61	Value Education	2	2	25	75
6	SNT8S61	Numerical Aptitude	2	2	25	75
7	SNT8S62	Data Mining	2	2		
8	SNT8S63	Embedded Systems	2	2		
Total			30	26		

**ES1 Elective 1:**

1. SNT8A51 Client Server Computing
2. SNT8A52 PC Maintenance & Trouble Shooting
3. SNT8A53 Microprocessors & Assembly Language Programming

**ES2 Elective 2:**

1. SNT8A61 Computer Networks
2. SNT8A62 System Software
3. SNT8A63 Web Design

  
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**SEMESTER – I**

**PROGRAMMING IN C AND C++**

**Unit-I**

**Fundamentals of C:** Identifiers - Data types – Constants & variables - Operators – Library functions – I/O statements.

**Unit-II**

**Controls Statements and Arrays:** IF-else – Switch case – While...do - While – For - Nested control structures - Break – Continue – Go to Statements. Defining an array – Processing An array – Array and functions – Multi dimensional arrays – Array and strings.

**Unit-III**

**Functions, Structures and Unions:** Declarations – Definition – Calling – Passing values to functions – Storage classes. Defining a structure – Processing a structure – Structure and pointers – Passing structure to functions – Unions – Files.

**Unit-IV**

**Fundamentals of C++:** Principles of OOP's – Applications of OOP's - Variables, Operators, Manipulators, Expressions and Control Structures in C++.

Classes and Objects: Constructors and Destructors, Function Overloading, Operator Overloading

**Unit-V**

**Inheritance and Polymorphism:** Types of inheritance – Virtual functions and Polymorphism.

**Textbook:**

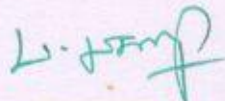
1. Balagurusamy E, "Programming in ANSI C", Tata McGraw- Hill, New Delhi, 2002.
2. Byron s. Gottfried, "Programming with C", Tata McGraw-Hill, New Delhi 2002.
3. Balagurusamy E, "Object Oriented Programming with C++ ", Tata McGraw-Hill, New Delhi, 2002.

**Reference:**

1. Brain W. Kernighan, Dennis M Ritchie, "C Programming Language ". Prentice Hall of India, New Delhi, 2000.
2. Herbert Schildt, "C The Complete Reference" .Tata McGraw hill, New Delhi, 2002.

**LAB 1: PROGRAMMING IN C**

1. Write a program to reverse a given number & largest number and smaller number among n numbers by using if statement.
2. Write a program to convert the decimal to binary conversion & binary to decimal conversion & to check the perfect number by using while statement.
3. Write a program to find the sum, average, standard deviation for the given n numbers.
4. Write a program to find the factorial of a given number & to count the positive, negative & zero numbers.
5. Write a program to find the occurrences of each character in the string & to concatenate two strings without using string library function.
6. Write a program to read the text and count the number of vowels, consonants, and digits in it.
7. Write a program to evaluate the sine series and cosine series.
8. Write a program to design the calculator functions as (i) Addition (ii) Subtraction (iii) Multiplication (iv) Trigonometric function.
9. Write a program to find the factorial of a number using recursion and compute & to reverse the text using recursion.
10. Write a program to sort the list of names & sort the list of integers in ascending order.
11. Write a program to check whether the given matrix is symmetry or not.
12. Write a program to count the number of lines, words, characters in a file.
13. Write a program to separate ODD and EVEN numbers using file.
14. Write a file-handling program to create and process student mark sheet system.
15. Write a file-handling program to create and process employee pay bill system.



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## MATHEMATICAL FOUNDATIONS

### Unit I

Set theory – Relations, equivalence relations - Partial order - Function - Binary operations  
– Groups: Definitions and examples – Elementary properties.

### Unit II

Logic - Introduction- Connectives - Truth table - Tautology implication and Equivalence  
for Formulae.

### Unit III

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

### Unit IV

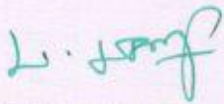
Graph theory: Introduction - Definition and examples - Degrees and Subgraphs -  
Matrices connectedness: Walks, trails and paths - Connectedness and components.

### Unit V

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

### Textbook:

1. Modern Algebra, S. Arumugham & A. Thangapandi, Issuac, Scitech Publications, 2005  
(for units I,III)
2. Discrete Mathematics, Dr. M. K. Venkatraman, Dr. N. Sridharan, Dr. Chandrasekaran,  
National Publishing Company, 2000. (for unit II )
3. Invitation to Graph Theory, S. Arumugam and S. Ramachandran, Scitech Publications,  
2005, Chennai. (for units IV, V)

  
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**SEMESTER – II**

**DATA STRUCTURES**

**Unit-I**

Need for data structures- data structures- data types – abstract data types (ADT) - definition of data structures - types of data structures – algorithm analysis – need- benefits - problem solving – categories of problem solving - problem solving strategies - Big O,  $\Omega$  and notation – examples Linked Lists – dynamic allocation – advantages and limitations – types of linked lists – single , double, circular - primitive operations - creation, insertion, deletion and traversal.

**Unit-II**

Stacks – Definition - primitive operations – push – pop - representation using arrays and linked lists - applications – well formedness of parenthesis - evaluation of postfix expressions – conversions - of infix to postfix forms – recursive functions - tower of Hanoi .

Queues – definition - primitive operations - insert – delete - representation using arrays and linked lists - circular queues - dequeues.

**Unit-III**

Trees - Hierarchical relations - definition – binary trees – types of binary trees - complete, almost complete and strictly binary trees - skew trees - representation using arrays and linked lists - binary tree traversals - inorder, preorder and post order traversals - breadth first traversal – expression trees.

Binary search trees - Binary search- binary search tree (BST) – primitive operations on BST - creation - insertion- searching - deletion.

**Unit-IV**

Sorting – definition - types bubble sort - insertion – shell – selection – merge - quick sort – heap sort - radix sort - complexity of sorting algorithms – comparison.

**Unit-V**

Graphs - definition – directed graphs – undirected graphs- weighted graphs - basic definitions – representations - representation of graphs - adjacency matrix - adjacency lists - breadth first search – depth first search - shortest path – spanning trees - minimum spanning trees.

  
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**Textbook:**

1. Chitra, Rajan, Data structures - Vijay Nicole Publishers – First Edition, 2005.

**Reference:**

1. Sartraj Sahni, "Data structures and applications in C++ " Tata Mc. Graw Hill, 2000.
2. Weiss, Data structures and algorithm analysis in C++, 3<sup>rd</sup> edition, Pearson Edition.

**LAB 2: DATA STRUCTURES USING C++**

1. Program for linear search
2. Program to perform binary search
3. Implementation of stack operations using arrays
4. Implementation of stack operations using linked lists.
5. Implementation of queue operations using arrays.
6. Implementation of queue operations using linked lists.
7. Program for implementing the following:
  - a) Bubble sort
  - b) Insertion sort
  - c) Shell sort
  - d) Selection sort
  - e) Merge sort
8. Singly linked list implementation
9. Sparse matrix implementation (addition, subtraction).
10. Binary tree traversal (pre order, post order, in order).
11. Graph traversal(BFS,DFS)

  
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**DIGITAL PRINCIPLES AND APPLICATIONS**

**Unit-I**

**Numbers Systems and Discrete Logic:**

Binary numbers – Binary to decimal – Decimal to binary – Octal - Hexa decimal – ASCII Code – Excess-3 gray code - Transistor inverter – OR gates - AND gates - Boolean algebra – gates – NOR - 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 Decodes - 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 .

**Textbook:**

1. Albert Paul Malvino & Donald P. Leach, "Digital Principles and Applications", Fourth Edition, Tata Mc. Graw – Hill Edition, 2002, New Delhi.

**Reference:**

1. Tocci R. J. Widmer. N.S, "Digital systems: Principles and applications", Eighth Edition, Pearson Education (Singapore) Pvt Ltd, Reprint 2004.
2. Floyd. Digital Fundamentals, 8/e, Pearson Education (Singapore) Pvt Ltd, Reprint 2004.

**SEMESTER – III**

**VISUAL PROGRAMMING**

**Unit-I**

Starting a new project- the properties of window- common form properties – scale properties – color properties – making a form responsive – printing a visual representation of a form – typos- creating stand – alone windows programs- the toolbox – creating controls – the name (control name) property – properties of command buttons - simple event procedures for command buttons - access keys- image controls – text boxes - Labels- navigating between controls –message boxes- the grid – the ASCII representation of forms.

**Unit-II**

Statements in visual basic – variables- setting properties with code – data types- working with variables – more on strings – more on numbers – constants – input boxes- displaying information on a form- the format function- picture boxes- rich text boxes- the printer object – determination loops – indeterminate loops- making decisions- select case – nested if – then – the Go to – string functions- numeric functions- date and time functions – financial functions.

**Unit-III**

Function procedures- sub procedures- advanced uses of procedures and functions- using the object browser to navigate among your sub programs – List: One- dimensional arrays – arrays with more than one dimension – using lists and array with functions and procedures – the new array – based string- records (user – defined types)

**Unit-IV**

The with statement- enums – control arrays- list and combo boxes- the flex grid control – code modules: Global procedures- the Do Events function and sub main – assessing windows function – error trapping – creating an object in visual basic.

**Unit-V**

Fundamentals of graphics – screen scales- the line and shape controls- graphics via code – lines and boxes – circles, ellipses and pie charts, the mouse event procedures- dragging and dropping operations- file commands- sequential files- random access files- binary files- sharing files – file system controls – the file system objects- the clip board – running another windows program from within.

**Textbook:**

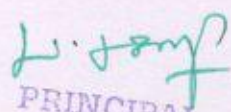
1.Gray Cornell, “visual basic 6 from the ground up”, Tata McGraw Hill edition, 1999.

**Reference books:**

1. Peter Norton's & Michael Groh, 1998-"Guide to visual basic 6 Tech media "
2. Paul Sheriff,"visual basic", PHI - 1999.
3. C. A vanija , visual programming , SCITEC publications
4. Evangelus petroustos , " Mastering visual basic 6", BPB Puhlntata
5. Deitel,, "visual basic 2005 How to program " Pearson Education 3<sup>rd</sup> edition.

**LAB 3: VISUAL PROGRAMMING**

1. Program to check whether the given number is
  - a) Armstrong number or NOT
  - b) Prime number or NOT
2. Program to perform the following string operations
  - a. Reverse the string
  - b. Find out the length of the string
  - c. Concatenating any two strings
  - d. To copy and to compare a string
  - e. To find a sub-string
3. Program to find
  - a) Current Date and Time
  - b) Day of given date
4. Program to use the flex grid control.
5. Program to draw geometric shapes.
6. Program to design a digital clock.
7. Develop a objective type online test.
8. Program to vary color palette.
9. Program show picture animation
10. Program to create a file open dialogue to load a picture
12. Program to design on ordinary calculator
13. Design a notepad
14. Sequential file reading and writing

  
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15. Student mark sheet processing system
16. Library information system.
17. EB bill preparation system.
18. Bank information system.
19. Hospital information system.

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**RESOURCE MANAGEMENT TECHNIQUES**

**Unit-I**

Development of OR - Definition of OR – Modeling – Characteristic & phases – Tools techniques & methods - Scope of OR.

**Unit-II**

Linear Programming Problem – Formulation - Slack & Surplus Variables – Graphics solution of LPP.

**Unit-III**

Simplex method - Computational procedure – Artificial variables techniques – Big method.

**Unit-IV**

Mathematical formulation of assignment problem - Method for solving the assignment problems.

**Unit-V**

Mathematical formulation of transportation problem - Method for solving the assignment problem.

**Textbook:**

1. S. D. Sharma, "Operation Research".
2. Kanthi Swarup at al, "Operations Research", Sultan Chand & Sons, Delhi, 1996.

**Reference:**

1. Hamdy S. Taha, Operations Research, TMH.

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**SEMESTER – IV      DATA BASE MANAGEMENT SYSTEM**

**Unit-I**

Data - Information and information processing - Secondary storage devices.

**Unit-II**

Files - File organization and File structure - Introduction to database management systems.

**Unit-III**

Software Development Life Cycle (SDLC) and Data Base Development Cycle (DDLC) - Introduction to relational database management systems (RDBMS)

**Unit-IV**

Database architecture and data modeling – Entity – Relationship (E-R) Modeling.

**Unit-V**

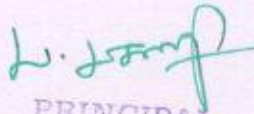
Data Normalization - Relational algebra and relational calculus.

**Textbook**

1. Alexis Leon & Mathews Leon, "Data base Management", Leon Vikas Publishing Chennai ,2002.

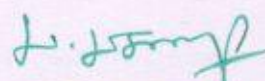
**Reference:**

1. Raghu Ramakrishnan & Johannes Gehrke, "Database management systems", 2<sup>nd</sup> edition, McGraw Hill international edition,2000.
2. Fred R. McFadden, Jeffery A. Hoffer & Marry, B. Prescott," Modern Database, Management " 5<sup>th</sup> edition , Pearson education Asia , 2001.
3. C.J. Date, An introduction to database systems, Pearson Education 8<sup>th</sup> edition .4. Kiffer , database systems: an application- oriented approach, introductory version, 2<sup>nd</sup> edition, Pearson education, 2<sup>nd</sup> edition.

  
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**Lab 4: RDBMS**

1. Building a database- creating a database entering the data retrieving the records. Deleting and modifying the records.
2. Sorting and indexing the database.
3. Various searching Techniques.
4. Managing multiple data file, connecting to the database using ODBC.
5. Learning built in commands and functions.
6. Creating command files using loops, case and if statements.
7. Command files using functions and procedures.
8. Creating formatted reports and labels.
9. Creating define window, define menu and define popup.
10. Learning object oriented examples.
11. Application development programs like payroll, inventory control and library management.



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**NUMERICAL METHODS**

**Unit-I**

Algebraic & Transcendental Equations: Errors in numerical computation – Iteration method - Bisection method – Regula Falsi method – Newton Raphson method.

**Unit-II**

Simultaneous Equations: Gauss elimination method – Calculation of inverse of a matrix - Gauss seidel iteration method - Curve fitting - Method of least squares.

**Unit-III**

Interpolation: Newton's interpolation formulae – Central difference interpolation formulae – Lagrange's interpolation formula – Inverse interpolation.

**Unit-IV**

Numerical differentiation: Newton's forward and backward difference formulae - numerical integration: Trapezoidal rule – Simpson's rule. Eigen values and Eigen vectors of a matrix.

**Unit-V**

Numerical solution of differential equations: Euler's method – Taylor's series method - Range – Kutta methods.

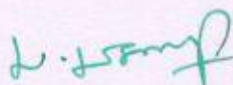
**Textbook:**

S. Arumugam & A. Thangapandi Issac, A. Somasundaram, "Numerical methods", Sci Tech publication, Chennai, 2002.

Unit I	: Chapters 3.0-3.5
Unit II	: Chapters 4.3, 4.5, 4.8, 2.4
Unit III	: Chapters 7.1-7.3, 7.6
Unit IV	: Chapters 8.1, 8.2, 8.5, 5.1
Unit V	: Chapters 10.1, 10.3, 10.4, 10.6.

**Reference:**

Mathews J.H," Numerical methods for Maths, Science and Engineering", PHI, New Delhi, 2001.



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**SEMESTER – V**

**JAVA PROGRAMMING**

**Unit I**

Internet-fundamentals and Tools: Structure of Internet, Setting up an Internet Connection, Internet Tools and Applications, Internet Protocols. Java Programming - Development Kit and Basics: Java-History and Feature, Java Development Kit (JDK), Java statements, arrays and vectors, strings and string buffers.

**Unit II**

Classes, Interfaces and Packages and inheritance: Classes – Objects - Wrapper classes – packages and interfaces. Inheritance Extending classes - Abstract and Final classes - Interfaces and Inheritance.

**Unit III**

Exception Handling and Applets and Graphics: Error Handling and Exception Handling - Exception Types and Hierarchy, Try - Catch blocks - Use of throw, throws and finally - Programmer defined exceptions. Fundamentals of applets - Graphics.

**Unit IV**

AWT Controls and Event Handlers: AWT Components and event Handling - AWT Controls and Event Handling Types and Examples – Swing - Introduction.

**Unit V**

Input and Output: Files- streams. Multithreading and Networking: Multiple Threads- Networking basics.

**Textbook:**

1. Chitra A. "Internet and Java Programming ", Indian Society for Technical Education – Learning Materials Centre, New Delhi, 2002

**Reference:**

1. Patrick Naughton, Herbert Schildt, "JAVA 2 - The complete Reference", Tata Mc Graw Hill, Fifth Edition, New Delhi, 2002.
2. Deitel H M and Deitel P J, " JAVA - How to Program", Pearson Education. New Delhi, 2003.
3. Hubbard John .R, "Schaum's outline of Theory and problems of Programming with Java", Tata Mc Graw Hill, Second Edition, New Delhi, 2004.
4. Bloch, Effective Java Programming Language. Pearson education.

## OPERATING SYSTEMS

### Unit-I

Introduction – Definition - Mainframe, Multiprocessor, Distributed, Clustered, Real-time, Hand held system – I/O and storage structure - Hardware protection - Network structure - System components - System services, Calls, Programs, Structure - System design, Implementation and generation.

### Unit-II

Process management: Process concepts, Scheduling, Operations - Cooperating Processes – Inter process communication in Client Server Systems - Multithreading models and issues - Windows 2000 and Java threads - CPU Scheduling Criteria and Algorithms - Multi processor and Real time scheduling – Algorithm evaluation - Process scheduling in windows 2000.

### Unit-III

Process Synchronization - Critical section Problem - Synchronization hardware – Semaphores - Classic problems - Critical regions – Monitor - Synchronization in windows 2000- Deadlock characterization, Prevention, Avoidance and Detection - Recovery from deadlock.

### Unit-IV

Storage management: Swapping – Contiguous memory allocation - Paging segmentation - Segmentation with paging - Demand paging - Process creation – Process replacement - Allocation of frames - Thrashing – Implementation of virtual memory windows NT - File concepts and access methods - Directory structure and implementation – Allocation methods - Free space management.

### Unit-V

I/O Systems and Case study: Disk structure, Scheduling and management – Swap management – Case study: Windows 2000.

### Text book

1. Silberschartz A, Galvin P.B., Gagne G, "Operating System Concepts", Edition, 2002, John Wiley and sons.

### Reference

1. Maurice J. Bach, "Design of Unix operating systems", Prentice hall of 1 new delhi-2002.
2. Davis, Operating Systems, Pearson education, 6<sup>th</sup> edition.

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**LAB : JAVA PROGRAMMING**

1. Implementation of object- oriented concepts, interfaces and packages.
2. Implementing string- handling functions.
3. Implementing multithreading and exception handling concepts.
4. Applet programming.
5. Programs in AWT/ swing and event handling
6. Network programming.
7. Programs using java beans.
8. Front end development using swing.
9. Implementing Servlets.
10. Implementing JDBC.

**LAB : UNIX AND SHELL PROGRAMMING**

1. Studying of UNIX commands.
2. Studying the commands in c shell, bourn shell, bash shell etc.
3. Write a shell program to count number of user login and print first login user information.
4. Write shell program to all files whose size is greater than specific size.
5. Write shell script to read user name and find whether the user is currently working in the system or not.
6. Study of UNIX filters like grep, awk, tr, sed, etc.
7. UNIX shell programming.
8. Writing C program to implement UNIX commands like cat, cp, etc.
9. Writing C program to implement grep, sed, etc.
10. Developing simple exercises in UNIX graphics.



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## CLIENT / SERVER COMPUTING

### Unit-I

Introduction to Client/Server computing mainframe centre - Client/Server computing - Downsizing and client server computing Client/Server development tools - Advantages of Client/Server Computing – Connectivity - User productivity - Reduction in networks traffic - Faster delivers if systems.

### Unit-II

Components of Client/Server Applications - The Client – The role of the Client - Client services – Request for service - Dynamic Data Exchange (DDE) - Components of Client/Server applications.

### Unit-III

Role of the Sever - Server functions - Network operating systems - Novell Netware - LAN manager - IBM LAN server - Banyan vines - PC network file service - Server operating systems - Netware, OS-2, Windows NT, UNIX, - System Application Architecture (SAA).

### Unit-IV

Components of Client/Server Architecture – Connectivity – Open Systems Interconnection (OSI) - Inter Process Communication - Communication Interface Technology – Wide Area Network Technology.

Client/Server Systems Development Software - Platform migration and reengineering existing of systems - Client/Server Development methodology – Client/Server system development hardware - PC level processing units - UNIX workstation - Server hardware - mirrored disk – RAID - Disk array – CDROM – WORM - Network Interface Cards (NIC).

### Unit-I

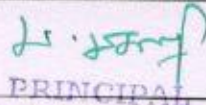
Client/server system development- Service and Support system administration availability – Reliability- Serviceability – Performance - Network management - Remember systems management – Security - LAN and Networking Management - Client Server systems development – Training advantages of GUI applications - Systems Administrator Training – LAN- administrator training – LAN Administration – WAN issue – Operating system issue Applications issues – Database Administration training – End user training.

### Text book:

Patrick smith and Steve Guengerich, Client/server computing, prentice hall of India , second edition ,1997.

### Reference:

Dewier and Dawana Travis, "Client server computing ",McGraw Hill, 1993.

  
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## PC MAINTENANCE AND TROUBLE SHOOTING

### Unit-I

The Basic microcomputer system - Processor Subsystem - 8086 Processor – Clock generator 8284 - Bus subsystem Bus controller 8288 - Latch 74LS373 - Transceiver subsystem – 74LS245 – Memory subsystems - Decoder 74LS138 - DMA Controller 8237 - I/O subsystem - PPI 8255 - PIT 8253 – Tips and Trouble shootings.

### Unit-II

Inside the IBM PC system unit - \* Power supply – Cabling and Connectors -\* System board function – System configuration.

### Unit-III

Peripherals - Memory peripherals -\*Floppy disk drive – Working principle – Removal and installation - Cleaning and Preventive Maintenance - Floppy Disk Format Winchester disk - \*CRT Working Principle – IBM PC Display Adapter – Printers - Interface Standards - Modems and Acoustic couplers - Trouble Shooting Keyboards.

### Unit-IV

Servicing – Switch settings - Cables and Connectors – Operation - Post preventive maintenance.

### Unit-V

Diagnostics and Trouble Shooting - Test Equipments - Login Problem - Oscilloscope.

### Textbook:

1. Stuart M. Asser, Vincent J. Stigliano, Richard F. Baherenburg, "Microcomputer Servicing Practical System and Trouble Shooting", A Bell & Howell Information Company Columbus, 1990.

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## MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING

### Unit-I

Fundamentals of microprocessors: Internal architecture -Address bus – Databus - Control lines - Inside EU - Inside BIU - Memory - Timing – Wait states – Fetch & Execute cycle.

### Unit-II

Introduction to programming: Assembly Language Programming – Assembler Directives - 8086/8088 Instruction Set- Program structure – Subroutines - Creating programs.

### Unit-III

The basic microcomputer system: Microprocessor subsystem - 8088/8086 PIN configuration - MAX mode - MPU timing – The Bus system – 8288 (Bus controller), 74LS373(Latch), 74LS45(Transceiver) - Memory subsystem – ROM - Address Decoding – BIOS and system ROMs - RAM Organization – DMA Controller - I/O Subsystem - 8255 (PPI) - 8259(PIC) - 8253(PIT).

### Unit-IV

Microcomputer system peripherals: Memory Peripherals Introduction – Digital Magnetic Recording – Floppy Disk Subsystem – Winchester Disk Subsystem - I/O Peripherals Introduction – Keyboards - Video Displays - The CRT - IBM PC Display Adapters - Printers Interface Standards - MODEMs and Acoustic Couplers.

### Unit-V

Advanced Microprocessors and Test Equipments: PS/2 System Processors 8086 – 80286 – 80386 - Test Equipments - Logic Probes and Pulsers - Meters – Oscilloscopes - Logic Analysers - PROM burners - Power Line Monitors.

### Textbook:

1. Stuart M. Asser, Vincent J. Stigliano , Richard F. Bahrenburg, "microcomputer servicing practical systems and troubleshooting", Merrill publishing company -1994.

### Reference:

1. Douglas V. Hall, "Microprocessor and Interfacing: Programming and Hardware", Mc-Graw Hill,2002.
2. Uffenbeck, Microcomputers system and microprocessors, 3<sup>rd</sup> edition, pearson education.
3. Liu, Microcomputers system,2<sup>nd</sup> edition ,pearson education.

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VI SEMESTER

SOFTWARE ENGINEERING

**Unit-I**

Introduction to Software Engineering Some Definition – 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 Requirement Definition:** The software requirements specification – Format languages and processors for requirements specification.

**Unit-IV**

**Software Design:** Fundamentals Design Concepts – Modules and Modularizing Criteria Design Notation – Design techniques – Detailed Design Consideration – Real time and distributed system design – Test plan – Mile stones walk through and inspection – Design guidelines.

**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 – Maintenance tools and techniques.

**Textbook:**

1. Richard E. fairly, "Software Engineering Concepts", 1985, Mc. Graw Hill Book Company.

**Reference:**

1. Roger S. Pressman, "Software Engineering: A Practitioner's Approach" Mc Graw Hill International Book Company, V edition, 2001.

H. J. Jay  
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2. Shooman, Software Engineering and its Principles, Mc. Graw Hill International Book Company, V edition, 2001.
3. Ghezzi, Fundamentals of Software Engineering, 2<sup>nd</sup> Edition, Pearson Education.

### **WEB PROGRAMMING LAB JSP / ASP / JAVASCRIPT / VBSCRIPT**

1. Create a generic servlet Class and Print "Hello" to the Browser using service() method?
2. Create a http servlet class and print "Hi world" to the browser using doGet() method?
3. Create a Http Servlet Class and print "Hello World" to the browser using doPost() Method?
4. Create a Http Servlet class and create a session inside the doGet()method?
5. Create a Generic Servlet Class and Create a Session inside the service() Method?
6. Create a JSP file and print "Hello Welcome" in BOLD text?
7. Create two JSP files called a.jsp and b.jsp then forward b.jsp file from a.jsp?
8. Create two JSP files called a. jsp and b.jsp then include b.jsp file at a.jsp using directives (@include)
9. Create two JSP files called a.jsp and b.jsp then include b.jsp file at a.jsp using action include (jsp:include)
10. Achieve server side forward and client side forward in your JSPs
11. Create a servlet file call JSP file from that created servlet
12. Create the HTML form with first-name and last-name as control elements and get those parameters at your JSP file and print the value.
13. Print the current date using DATE class at your JSP.
14. Add the String Object like (String strVar="hi") to Session and get the object from Session and print it at your JSP.
15. Get an Object in your JSP that object has been added in your previous JSP.

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## COMPUTER NETWORKS

### Unit-I

Introduction – Uses of Computer Networks – Network Hardware – Network Software – Reference Models - Example Networks.

### Unit-II

**The Physical Layer:** guided Transmission Media – Wireless Transmission – Communication Satellites – Mobile telephone System.

### Unit-III

**The Data Link Layer:** Data Link Layer Design Issues – Error Detection and Correction – Elementary Data Link Protocols – Sliding Window Protocols – The Channel Allocation Problem – Multiple Access Protocols – ALOHA – CSMA – Collision free protocols.

### Unit-IV

**The Network Layer:** Network Layer Design Issues – Routing Algorithms – Shortest path – Flooding – Hierarchical and Broadcast.

**The Transport Layer:** The transport Service – Elements of Transport Protocols.

### Unit-V

**The Application Layer:** DNS – The Domain Name System – Electronic Mail (EMAIL) – The World Wide Web – Multimedia.

### Textbook:

1. Andrew S. Tanenbaum. "Computer Networks", 4<sup>th</sup> Edition, Pearson Education, 2003
2. William Stallings, "Data and Computer Communications", Prentice Hall of India, New Delhi, 2002.

  
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## SYSTEM SOFTWARE

### Unit-I

Introduction to System Software and Machine Architecture – Simplified instruction Computer – Traditional machines – RISC Machines.

**Assemblers:** Basic Assembler Functions, Machine Dependent and Machine Independent Assemblers Features – Assemblers Design Options.

### Unit-II

**Loaders 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

**Compilers:** Basic Compiler Functions – Machine Independent Compiler Features – Compiler Design Options.

### Unit-V

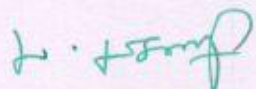
**Other System Software:** Database Management Systems – Text Editors – Interactive Debugging Systems.

### Textbook:

1. Leland L.Beck, "System Software An Introduction to System Programming", Addison – Wesley Publication – 2003.

### Reference:

1. Jihn J. Donovan, "System Programming". Tata Mc. Graw Hill – 2001.

  
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## WEB DESIGN

### Unit-I

Web Design Issues – Designing Application – Security – International Considerations. HTML: Body and Text commands – Basic paragraph text tags – text styles – Color Values – Hyperlinks – Images – HTML Interactions and enhancements – Tables – Multimedia: Audio, Video applications, Frames.

### Unit-II

Javascript and the Internet – The limitations of Javascript – Javascript Language – Embedding javascript in HTML – variables and Literals – Expressions and Operators – Control statements and functions.

### Unit-III

Fundamentals of Objects – Built in Objects and Functions – Netscape objects – The form Object – Windows and frames. Javascript in internet applications: A Form example – Windows example – Frames example – Reading the cookie file.

### Unit-IV

VB Script – Security and VB Script – VB Script VS Visual basic – Host Environment – Placing VB Script code within an HTML Document – variables – using Operators – Intrinsic Operators – Intrinsic Functions.

### Unit-V

The MsgBox Functions – Input boxes – Controlling the flow of code passing arguments into procedures – Intrinsic HTML form controls – The button controls. VB Script application pages: Metric conversion application – Interactive tutorial application – Pace pal application – Information submittal application – Browser objects.

### Textbook:

1. Bob Breedlove, "Web Programming Unleashed"

### Reference:

1. Glee Harsah cady and Pat McGregor, "Mastering the Internet", BPB, 1998.
2. Snell, Sams Teach Yourself Internet and Web Basics All in One (SAMS), Pearson Education.

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## SKILL BASED SBS3 CRYPTOGRAPHY

### Unit-I

Introduction to the concepts of security: Introduction – The Need for Security Approaches – Principles of Security – Types of Attacks – Cryptography – Introduction – Plain text and Cipher Text – Substitution Technique – Transposition techniques – Encryption and Decryption – Symmetric and Asymmetric Key – Cryptography Steganography – Key range and Key size – Possible Types of Attacks.

### Unit-II

Computer based Symmetric Key Cryptography Algorithms and AES – Algorithm types and Modes – An Overview of Symmetric Key Cryptography – Data Encryption Standard (DES) – International Data Encryption Algorithm (IDEA) – Blowfish – Advanced Encryption Standard (AES) – Differential and Li – Computer based Asymmetric Key Cryptography Algorithm: Introduction – History of asymmetric Key Cryptography – An Overview of Asymmetric Key Cryptography – The RSA algorithm – Symmetric and Asymmetric Key Cryptography – Together – Digital Signatures – Knapsack Algorithm – Some Other Algorithm.

### Textbook:

Cryptography and Network Security, Atul Kahate, TMH, 2006

### Reference:

Cryptography and Network Security, Behrouz A. Forouzan, the Mc. Graw hill

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**NME – 1 : INTRODUCTION TO INFORMATION TECHNOLOGY**

**Unit-I**

**Introduction** – Information systems – Software and Data – IT in Business and at Home. And at Play – IT in Education and Training – IT in Entertainment and the Arts – IT in Science, Engineering and mathematics – Computers in hiding.

**Unit-II**

**The Computer system and Central Processing Unit:** Types of Computers – Corporate and Departmental Computers, Desktop and Personal Computers – The Anatomy of Computer – The Foundation of Modern Information Technology: Binary numbers – Digital signals – Bits and Bytes – Central Processing Unit – Memory.

**Unit-III**

**Input and Output:** I/O Devices – Keyboards – Inputting Text, Graphics – Pointing Devices. The foundation of Modern Outputs: Pixels and Resolutions – Fonts, Color – Display Screens – Printers Secondary Storage: The Foundation of Modern Storage: How data stored - Storage Characteristics – Storage Media: Floppy Disk – Hard Disk – Drives, Optical Disk – backing Up data.

**Unit-IV**

**Software:** Introduction – User Interface – Application programs – Operating System: Introduction – Types – File Management and Utilities – Major Software Issues.

**Unit-V**

**Internet and World Wide Web:** Introduction – The web – getting Connected with web – Browsing the Web – Locating Information on the Web – Web Multimedia.

**Textbook:**

Information technology The Breaking Wave By Dennis P. Curtin, Kim Foley, Kunal Sen, Cathleen Mortin, Tata Mc. Graw Hill Publishing.

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**NME – 2 : WEB PROGRAMMING**

**Unit-I**

**OVERVIEW OF HTML:** Structure of HTML Program – HEAD tag – BODY tag – Paragraph tag – Formatting tags (Bold, Underline, Italic, Strike thru, subscript, Superscript)

**Unit-II**

**LISTS:** Ordered List and Unordered List – Marquee Tag – Break Tag – Ruler tag – Font Tag – Data Definition Tag.

**Unit-III**

**TABLES:** TABLE building tags and attributes of table – table tag – Table Heading tag – Table Row tag – Table data Tag – Row span – Column span

**Unit-IV**

**LINKS:** Linking pages using anchor tag – Attributes of anchor tag – Image tag and its attributes – Fame tag.

**Unit-V**

**FORMS:** Form tag – Input tag – Types – text, Radio, Button, Check, Password – Sample Web Page Creation.

**Textbook:**

HTML Complete – BPB Publications, 2<sup>nd</sup> Edition.

**BIOMETRICS**

**Unit-I**

Authentication and Biometric Overview – How Authentication technologies Work – How Biometrics work.

**Unit-II**

Finger print & Hand Geometry – Facial & Voice Recognition.

**Unit-III**

Eye Biometrics: Iris & Retina Scanning – Signature Recognition & Keystroke Dynamics

**Unit-IV**

Esoteric Biometrics.

**Unit-V**

Biometrics in large Scale Systems – Biometric testing & Evaluation.

**Textbook:**

Biometrics – John. D. Woodwars, Jr. Nicholas Orlans, Petr T. Higgins.

  
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## **NME 2 - INTRODUCTION TO OFFICE AUTOMATION**

### **Unit-I**

Windows Operating System: Overview of Different Version of Opening, Closing and resizing windows- Enlarging, reverting, reducing the basic windows elements – Saving, Printing file quitting a program, Files and Working in explorer, Opening and Closing a Folder in Explorer – Entertainment working in print – Working in Wordpad and Notepad – System tools.

### **Unit-II**

**Word Processing Package:** Basic Concepts – Selecting the text – Finding and replacing text – Printing documents – Character formatting – Paragraph formatting – Design and layout.

### **Unit-III**

Editing and Proofing tools – using autocorrect, auto complete and auto text rows and columns – handling graphics – Creating tables and charts – Creating and pre merged documents – Styles and automatic formatting – Document templates and wizard creating web pages.

### **Unit-IV**

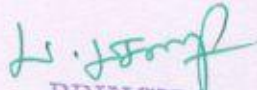
**Spreadsheet Package:** Basic Concepts – Editing a Workbook – enter data in a cell – Advanced worksheet editing – More about formulae – Functions – Formatting a worksheet – Printing worksheet.

### **Unit-V**

Charts and Graphs, Database Management - Creating and Using Macros – Connecting and Using Multiple Worksheets and Linking Worksheets – Integrating Excel, Word and the Internet.

### **Textbook:**

IT Tools and Applications, Vikas Gupta, Dreamtech Press, First Edition, 2003.

  
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## ENVIRONMENTAL STUDIES

### Unit-I Earth and Its Environment

- a) Earth Formation and Evolution of earth over time – Structure of Earth and its Components: Atmosphere, Lithosphere, Hydrosphere and Biosphere.
- b) Resources – Renewable and Non Renewable Resources.

### Unit-II Ecology and ecosystem Concepts

- a) Ecology: Definition – Ecosystem: Definition – Structure and Function – Energy Flow – Food Chain and Food Web – One Example for an Ecosystem.
- b) Biogeochemical cycles – Nitrogen – carbon – Phosphorous, Water.

### Unit-III Biodiversity and India

- a) Introduction – Definition – Values of Biodiversity – Threats to Biodiversity – Conservation of Biodiversity.
- b) Biodiversity of India – As a Megadiversity nation – Biogeographical Distribution – Hot spots of Biodiversity – National Biodiversity Conservation Board and its Function.

### Unit-IV Pollution and Global Issues

- a) Definition, causes, effects and Control Measures of Air, Water, Soil, Marine, Noise, Thermal and Nuclear Pollution
- b) Global Issues: Global Warming and Ozone Layer Depletion.

### Unit-V Development and Disaster Management

- a) Sustainable Development – Sustainable Agriculture – Organic farming, Irrigation – Water harvesting and Waste Recycling – Cyber Waste and Management.
- b) Disaster Management – Flood and Drought – Earthquake and Tsunami – Landslides and Avalanches – Cyclones and Hurricanes – Precautions, Warnings – Rescue and Rehabilitation.

### References:

1. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd, Bikaner.
2. Bharucha rach, The Bio diversity of India Publishing Pvt Ltd, Ahmedabad – 380 013, India e.mail: [mapin@icenet.net](mailto:mapin@icenet.net)
3. Brunner R.C, 1989, hazardous, Westel Incineration, Mc. Graw Hill Inc. 480
4. Clark R.S Marine Pollution, Clanderson, Mc. Graw Hill Inc. 480p
5. Cunnigham, W.P Cooper, T.H Gorhani, E & Hepworth, M.T 2001.
6. De A.K environmental Chemistry, Wiley Eastern Ltd
7. Down to Earth, Centre for Science & Environmental (R)

8. Cleick, H.P 1993, Water in Crisis, Facitif Institutr for studies in Dev., Environmental & security, Stockholm Env. Institute Oxford Iniv Press 473p
9. Hawkins R.E, Encyclopedia of Indian Natural History, Bombay Natural History Society, Mumbai (R)
10. Heywood V.H & Watson R.T, 1995, Globi Biodiversity Assessment, Cambridge Univ. Press 1140p
11. Jadhav, H & Bhosle, V.M 1995 Environmental Protection and laws, Himalayas Pub. House, new Delhi 284p
12. Mc Kenney, M.L & School, r.M 1996 Environmental Studies System & Solution, Web Enabled Edition 639p
13. Mhaskar A.K matter Hazardous, Techno-Science Publications (TB)
14. Miller T.G Jr. Environmental Sciences, Wadsworth Publlishing Co (TB)
15. Odum, e.P 1971 Fundamentals of ecology W.B Saunders Co. USA, 574p
16. Rao MN & Datta A.K 1987 Waste Water Treatment Oxford & IBH Pub. Co. Pvt Ltd. 345p.
17. Sharma B.K, 2001 Environmental Chemistry, Goel Publ House, Meerut.
18. Survey of the Environmental, the Hindu (M)
19. Townsend C., harper J and Micheal Begon, essentials of econology, Blackwell Science (TB)
20. Trivedi R.K, handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol-I and II, Enviro - Media (R)
21. Wagner K.D., 1998 Environmental Management W.B Sauders Co. Philadelphia USA 499p.

(M) Magazine

(R) Reference

(TB) Text Book

  
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