2010 Project BCA

MADURAI KAMARAJ UNIVERSITY

(University with Potential for Excellence)

Palkalai Nagar, Madurai – 625 021.

CHOICE BASED CREDIT SYSTEM

[CBCS]

BACHELOR OF COMPUTER APPLICATIONS

(BCA)

SYLLABUS

(With effect from 2008 – 2009)

Department Of Computer Science & IT (SF)

Placed at the Special Meeting
Of the Academic Council
Held on 25.06.2008

APPENDIX – AF

MADURAI KAMARAJ UNIVERSITY

(University with Potential for Excellence)

BACHELOR OF COMPUTER APPLICATIONS

(BCA)

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	CS (6) [4]	CS (6) [4]	CS (6) [4]	CS (6) [4]	AS (4) [5]	SBS (2) [2]	30	23
IV	CS (6) [4]	CS (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

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( )	- Number of Hours	[ ]	- Number of Credits
T	- Tamil	E	- English
CS	- Core Subject	AS	- Allied Subject
SBS	- Skill Based Subject	NME	- Non Major Elective
ES	- Elective Subject	VE	- Value Education
EVS	- Environmental Studies		

Group I - Electives

1. SCA8A51 Multimedia & Its Applications
2. SCA8A52 Introduction to Unix & Shell Programming
3. **SCA8A53 Data Mining** √

Group II - Electives

1. SCA8A61 Web Technology
2. SCA8A62 Digital Image Processing
3. **SCA8A63 Mobile Computing** √

Non Major Electives

1. SCA8N11 Introduction to Information Technology
2. SCA8N21 Web Design

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FIRST SEMESTER

Sl No	Subject Code	Subject	Hours	Credits	Duration of Exam in Hours	Internal Marks	External Marks	Total Marks
1	UTM8L11	Tamil	6	3	3	25	75	100
2	UEN8E11	English	6	3	3	25	75	100
3	SCA8C11	Programming with C	6	4	3	25	75	100
4	SCA8C1P	Lab1: C Programming	6	4	3	25	75	100
5	SMT8A13	Discrete Mathematics	4	5	3	25	75	100
6	SCA8N11	Non Major Elective-I	2	2	3	25	75	100
	Total		30	21				

SECOND SEMESTER

Sl No	Subject Code	Subject	Hours	Credits	Duration of Exam in Hours	Internal Marks	External Marks	Total Marks
1	UTM8L21	Tamil	6	3	3	25	75	100
2	UEN8E21	English	6	3	3	25	75	100
3	SCA8C21	Digital Computer Architecture	6	4	3	25	75	100
4	SCA8C2P	Lab2: Digital Electronics	6	4	3	25	75	100
5	SCA8A21	Resource Management Techniques	4	5	3	25	75	100
6	SCA8N21	Non Major Elective	2	2	3	25	75	100
	Total		30	21				

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THIRD SEMESTER

Sl No	Subject Code	Subject	Hours	Credits	Duration of Exam in Hours	Internal Marks	External Marks	Total Marks
1	SCA8C31	Introduction to Object Oriented Programming & C++	6	4	3	25	75	100
2	SCA8C3P	Lab3: Object Oriented Programming & C++	6	4	3	25	75	100
3	SCA8C32	Database Management System	6	4	3	25	75	100
4	SCA8C3Q	Lab4: Database Management System	6	4	3	25	75	100
5	SCA8A31	Computer Based Financial Accounting	4	5	3	25	75	100
6	SCA8S31	Office Automation	2	2	3	25	75	100
		Total	30	23				

FOURTH SEMESTER

Sl No	Subject Code	Subject	Hours	Credits	Duration of Exam in Hours	Internal Marks	External Marks	Total Marks
1	SCA8C41	Java Programming	6	4	3	25	75	100
2	SCA8C4P	Lab5: Java Programming	6	4	3	25	75	100
3	SCA8C42	Computer Graphics	6	4	3	25	75	100
4	SCA8C4Q	Lab6: Computer Graphics & Multimedia	6	4	3	25	75	100
5	SCA8A41	Principles of Costing	4	5	3	25	75	100
6	SCA8S41	Numerical Aptitude	2	2	3	25	75	100
		Total	30	23				

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FIFTH SEMESTER

Sl No	Subject Code	Subject	Hours	Credits	Duration of Exam in Hours	Internal Marks	External Marks	Total Marks
1	SCA8C51	Visual Programming	6	4	3	25	75	100
2	SCA8C5P	Lab7: Visual Programming	6	4	3	25	75	100
3	SCA8C52	Data Structures and Computer Algorithms	5	4	3	25	75	100
4	SCA8C53	Operating System	5	4	3	25	75	100
5	SCA8A53	Elective I from Group I	4	5	3	25	75	100
6	UES8D51	Environmental Studies	2	2	3	25	75	100
7	SCA8S51	System Software	2	2	3	25	75	100

SIXTH SEMESTER

Sl No	Subject Code	Subject	Hours	Credits	Duration of Exam in Hours	Internal Marks	External Marks	Total Marks
1	SCA8C61	Software Engineering	6	4	3	25	75	100
2	SCA8C62	Computer Networks	6	4	3	25	75	100
3	SCA8A63	Elective II from Group II	5	5	3	25	75	100
4	SCA8C6T	Project Work & Viva Voce	5	5	3	25	75	100
5	UVE8V61	Value Education	2	2	3	25	75	100
6	SCA8S61	Biometrics	2	2	3	25	75	100
7	SCA8S62	Cryptography	2	2	3	25	75	100
8	SCA8S63	Embedded System	2	2	3	25	75	100

SEMESTER - I **CS1 PROGRAMMING WITH C**

Unit-I

Overview of C: History of C – Importance of C – Basic structure of C – Programming style – Constants, Variables and Data types – Declaration of variables, Storage class – Defining a variable as constant, Volatile – overflow and underflow of data. **Operators 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. **Decision making and branching:** if statement, if…else statement – nesting of if…else statement – nesting of if…else statement – Else if Ladder – Switch statement – the?: operator – goto statement.

Unit-II

Control Statements: The While statement – do statement – The For statement – Jumps in loops. **Arrays:** one dimensional array – declaration, initializations – two dimensional array – multi dimensional array – dynamic arrays – initializations. **Strings:** declaration, initialization of string variables – reading and writing string – arithmetic operations on strings – putting strings together – comparison – string handling function – table of strings – features of string.

UNIT III

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

UNIT IV

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

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UNIT V

VDU Basics – Keyboard Basics – Interaction with Hardware Through C – Operations on bits – Graphics Programming

Textbook:

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

2. Let us C – Yashwant Kanetkar – BPB Publications.

Reference:

Programming with C (Schaum's outline series), Gottfried, Tata McGraw Hill, 2006.

CS2 LAB 1: C PROGRAMMING

[Two questions to be answered in the University practical examination – one from 1 to 14 in the list, another one from 15 to 23 in the list]

Write a C program

1. To find Sum of Digits of a number.
2. To reverse a given number and check if it is a palindrome.
3. To evaluate Sine Series.
4. To find the nth Fibonacci Number.
5. To check if a number is Prime Number or not.
6. To Sort an Array.
7. To count the occurrences of a number in a set.
8. To check if a no is Adam Number.
9. To reverse a given string and check if it is a palindrome.
10. To find Factorial value, Fibonacci, GCD value using Recursion.
11. To add and subtract two matrices.
12. To multiply two matrices.

13. To find row wise sum of a matrix of order m x n.
14. To solve Quadratic Equation – Switch.
15. To perform binary search using Function.
16. To find NCR and NPR values using Function.
17. To calculate mean, variance and standard deviation using function.
18. To prepare Pay Bill – Structure.
19. To prepare Mark Sheet – Structure.
20. To perform inventory calculations – Structures.
21. To demonstrate the use of bitwise operators.
22. To prepare Mark Sheet – File.
23. To prepare EB Bill – File.
24. Interaction with keyboard – Turn on the Caps Lock key.
25. Interaction with video memory – Fill the video memory with different colored 'a'.
26. Draw a house using graphical functions.
27. Animate a picture.

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DISCRETE MATHEMATICS

Unit-I

Set Theory & Relations – Introduction – Sets – Venn – Euler diagrams – Operation on Sets – Properties of set operations – Verification of basic laws of algebra – Principle of duality, Relations – Operation on relations – equivalence relation – Closure and Warshall's Algorithm – Partitions and Equivalence classes.

Unit-II

Function & Mathematical Induction – Functions and Operators – One – One, On to functions – special type of functions – invertible functions – Compositions of functions.

Unit-III

Recurrence relations & Generating functions – Recurrence – an introduction – Polynomial and their relations – Solutions of finite order homogeneous (linear) relations – Solutions of non-homogeneous relations – generating functions – Primitive recursive function.

Unit-IV

Matrix algebra- Introduction – operations – inverse, Rank of matrix – Solution of Simultaneous linear equations – Eigen values and Eigen vectors.

Unit-V

Graph Theory – Basic concepts – Matrix representations of graphs – trees, spanning tree – Shortest path problem.

Textbook:

Discrete Mathematics – Dr. M. Venkatraman, Dr. N. Sridharan & N. Chandrasekaran, The National Publishing Company.

Reference:

Applied Discrete Structures for Computer Science, Alan Doerr & Kenneth Levasseur. Asian Student Edition.

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SEMESTER - II **DIGITAL COMPUTER ARCHITECTURE**

Unit-I

Gate Networks and Logic Design – Flip flops – R- S- Flip-flop – D-Flip-flop – K-Flip-flop-J-K Master slave Flip-flop-Registers – Parallel – in – parallel-out-Serial-in-Serial-out – Parallel -in-Serial-out- Serial- in- parallel- out-Counter – Synchronous Counter – Asynchronous Counter – Arithmetic & Logic Unit – Adder Designs.

Unit-II

Processing Unit – Fundamental Concepts – Execution of a Complete Instruction – Multiple Bus Organization – Hardware Control – Micro Programmed control.

Unit-III

I/O Organization – Accessing I/O devices – Interrupts, DMA – Buses - Interface circuits – Standard I/O interfaces.

Unit-IV

Memory – Basic Concepts – RAM - ROM – Cache Memories – Virtual Memories – Memory management requirements.

Unit-V

Basic Concepts of Pipelining – Instruction Queue – Data Hazards – Instruction Hazards – Superscalar operations.

TEXT BOOKS:

1. Computer Organization – V. Carl Hamachar, Zronoko, G. Vranesic, Software O.Zaky – Tata McGrawHill Published 4th edition 1996.

2. Digital Circuits & Design – S. Salivhananan, S. Arivazhagan – Vikas Publishing House Pvt Ltd, 2002.

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AS 2 - RESOURCE MANAGEMENT TECHNIQUES

Unit-I

Development of OR - Definition of OR – Modeling in OR – General Methods for solving OR Models – Main Characteristics and Phases of OR study – Tools Techniques and Methods – Scientific Methods in OR - Scope of OR.

Unit-II

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

Unit-III

Simplex method - Computational procedure – Artificial variables technique two phase method – Duality in linear programming.

Unit-IV

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

Unit-V

Mathematical ormulation of Transportation Problem – Optimal solution for T.P - Methods for obtaining initial feasible solution – Optimal solution – Degeneracy in T.P – Unbalanced T.P.

Textbook:

1. Operational Research - S. D. Sharma, kedar Nath ramnath & Co, 1997.

Reference:

1. Operations Research, Gupta, man Mohan, Gandhi Swarup – Sultan Chand Publications.

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CS 4 Lab2: DIGITAL ELECTRONICS

1. Construction of Logic gates using Transistor and Diodes
2. Realization of Basic gates using NAND IC
3. Realization of basic gates using NOR IC
4. Realization of universal gates using Basic gates
5. Verification of De-Morgans Theorem.
6. RS Flip-Flop using NAND gate Latch
7. RS Flip-Flop using NOR gate latch
8. Design 2 input XOR gate using NAND gates only, from the truth table by SOP method.
9. Design 2 input XOR gate using NOR gates only, from the truth table by POS method.
10. Verification of Logic equations using logic gates
11. Design Half Adder using the Truth Table by SOP method. Also implement Full Adder by cascading two Half Adders.
12. Design Half Subtractor using the Truth Table by SOP method. Also implement Full Subtractor by cascading two Half Subtractors.
13. Design 1 of 4 decoder using Truth Table.
14. Design 4-bit Binary to Gray code converter using Truth Table.
15. Design 4-bit Ring Counter and draw its state table.
16. Design 4-bit Ripple counter and draw its state table.

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SEMESTER – III CS5 - INTRODUCTION TO OBJECT ORIENTED PROGRAMMING IN C++

Unit-I

Software Crisis – Software evolution – Basic Concepts of Object Oriented Programming – Benefits of OOP – Object Oriented Languages – Application of OOP – Application of C++ - More C++ Statements – Structure of C++ Program – Creating the source file – Compiling and Linking – Tokens – Keywords – Identifiers – Basic data types – Symbolic constants – Type compatibility – Declaration of variables – Dynamic initialization of variables – reference variables – Operators in C++ - manipulators – Type cast Operator – Expressions and Implicit – Conversions – Operator Overloading – Control Structures – The main function – Function prototyping – Inline function – Function Overloading – Friends and Virtual functions.

Unit-II

Specifying a Class – Defining a member functions – Marking an outside functions Inline – Nesting of member functions – Private member functions – Arrays within a class – Memory allocation for object static data member function arrays of objects – Objects as function arguments – Friendly arguments – Returning objects consent member function pointer to members – Constructions – Parameterized constructor multiple constructors in a class – Constructors with default arguments – Dynamic initialization of objects – Copy constructor – Constructing two dimensional arrays – Destructors.

Unit-III

Defining operator overloading – Overloading – Unary operators – Overloading binary operators – Overloading binary operators using friends – Multiplication of strings using operators – Rules for overloading operators – Types of conversion – Defining derived classes – Single Inheritance – Making private member inheritable – Multilevel inheritance – Multiple inheritance – Hierarchical inheritance – Hybrid inheritance – Virtual base classes – Constructors in derived classes – Member classes – Nesting of classes.

Unit-IV

Pointer to objects this pointer – Pointers to derived classes – Virtual functions – Pure Virtual functions – C++ stream classes Unformatted I/O Operation – Managing output with manipulators.

Unit-V

Classes of file stream operations – Opening and closing a file – Detecting end of file – More about open() – File modes file pointer and their manipulations – Sequential input and output operations – Command line arguments. Templates: Class templates – Function Templates

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– Member function templates – exception Handling – Catching exception – Throwing exception – Specifying exceptions.

Textbook:

Object Oriented Programming with C++, E. Balagurusamy, Tata Mc. Graw Hill Publishing Company, 1998.

Reference:

C++ the Complete Reference, Herbert Schild, TMH, 1998.

CS6 Lab 3: OBJECT ORIENTED PROGRAMMING WITH C++

1. To Perform Area Calculation using Function Overloading (Min. Three Functions)
2. To Perform String manipulation using function overloading
3. To demonstrate the concept of friend function
4. To swap two values between two class objects using friend function.
5. To find minimum of two numbers between two classes objects using friend function.
6. To overload unary minus operator which changes sign of given vector (3 elements)
7. To overload Binary + Operator which add two complex numbers
8. Implementation of mathematical operations on strings {Overload two operators + and =)
9. To demonstrate single inheritance of a public data member and a private data member.
10. To Process students mark list using multiple inheritance
11. To Process employee details using hierarchical inheritance
12. To Process inventory details using multilevel inheritance.
13. To process family details using hybrid inheritance
14. To illustrate the use of virtual base class
15. To process electricity billing using binary file.
16. To process mark listing using binary file.
17. Searching using C++
18. Sorting using C++
19. To handle exceptions
20. To illustrate use of class templates
21. To illustrate use of function templates.

CS7 DATABASE MANAGEMENT SYSTEM

Unit-I

Introduction to DBMS: Introduction – Why a Database - Characteristics of Data in a Database – Database Management System – Why DBMS – Types of Database Management Systems. **Introduction of RDBMS :** Introduction – RDBMS Terminology – The Relational Data Structure – Relational Data integrity – Relational Data Manipulation – Codd's Rules , **Database Architecture and Data Modeling :** Introduction – Conceptual , Physical and Logical Database Models –Database Design –Design Constraints – Functional Dependencies.

Unit-II

Entity – Relationship (E-R) Modeling: Introduction – E-R model – Components of an E-R model – E-R – Modeling Symbols. **Data Normalization:** Introduction First Normal Form (1NF) – Second Normal Form (BCNF) – Third Normal Form (3NF) Boyce – Coded Normal Form (BCNF) – Fourth Normal Form (4NF) – Fifth Normal Form (5NF) – Domain-Key Normal Form (DKNF) – De-normalization. **Relational Algebra and Relational Calculus:** Relational Algebra – Relational Calculus.

Unit-III

Query –by – Example (QBE): Introduction – Select queries in QBE – Make Table query – DELETE Query – UPDATE Query – APPEND Query – QE and SQL **QUEL:** Introduction – Data definition in QUEL – Data Retrieval in QUEL – Data Update operations in QUEL. **Database Security :** Introduction – Database Retrieval in QUEL – Environment – Data security Risks – Complex User Management Requirements – Dimensions of Database Security – Data security Requirements – Database Users – Protecting the data within the Database - Granting and Revoking Privileges and roles – Data Encryption – Data Integrity – System Availability Factors – Best Security Practices – Network Security – Authenticating users to the Database – Security Auditing.

Unit-IV

Data Integrity: Introduction – Types of Integrity Constraints – Restrictions on Integrity Constraints. **Backup and Recovery :** Introduction – Database Backups – Why plan Backups – Database Recovery – Data Storage – Causes of Failures – Recovery Concepts and Terminology – Recovery Facilities – Recovery Techniques – Detached Transaction Actions – Recovery in Multi-Database Systems – Database Recovery Catastrophic Failures. **Web Databases:** Introduction – Internet and World Wide Web – Accessing Database on the Web – Oracle9i application server portal.

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Unit-V

Knowledge Discovery in Databases (KDD): Introduction –Knowledge Discovery – Knowledge Discovery in Database – Basic features of KDD – Advantages of KDD – Phases of KDD – KDD Techniques. **Data Warehouses and data marts:** Introduction – Data in the Data warehouse – Data Warehouse Design Issues – OLTP Vs Data warehouse – Configuration of Data warehouse Process – Data warehouse Components – Structure of Data warehouse – Data warehouse Lifecycle – The Data warehouse Environment – Data Architecture for Data Warehouse operations – How much Data? – Data integration and Transformation operations – The Data integration and Transformation process – Technology of support the Data warehouse – Database Management – User Interfaces to the Data warehouse –Data marts – Advantages of Data Marts – Types of Data Marts. **Data Mining:** Introduction – What is Data Mining? – Evolution of Data Mining – Data Mining – Verification Vs Discovery – Takes solved by Data Mining – Advantages of Data Mining.

Text book:

Database Management System by Alexis Leon & Mathews Leon. Leon Vikas Publishing, Chennai 2002.

Reference:

1. Raghu Ramakrishnan & Johnnes Gehrke, " Database Management Systems" , 2nd Edition, Mc Graw Hill International Edition. 2000
2. Fred R.McFadden. Jeffrey A.Hoffer & Marry B.Prescott, Modern Database Management, "5th Edition. Pearson Education Asia, 2001

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CS8 LAB 4: DATABASE MANAGEMENT SYSTEM

SQL

1. DDL commands illustration
2. DML commands illustration

PL/SQL

1. Program using conditional control, iterative controls and sequential controls.
2. Programs using exception handling.
3. Programs using explicit cursors and implicit cursors.
4. Programs using PL/SQL tables and record.
5. Programs using database triggers.
6. Programs to design procedures using in, out, inout parameter.
7. Program to design procedures using functions.
8. Program to design procedures using Packages.

FORMS & REPORT WRITER

1. Inventory Control.
2. Banking.
3. Student mark list.
4. Library maintenance.
5. Payroll.
6. Invoice.
7. Railway Reservation.
8. College Admission.

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AS3 COMPUTER BASED FINANCIAL ACCOUNTING

Unit-I

Accounting - Principles, Convention – Journal – Ledger – Subsidiary books – Trial balance – Final Account.

Unit-II

Final Account of Individuals – Preparation of Trading, Profit and Loss Accounts, Balance Sheet.

Unit-III

Financial Statement Analysis and Interpretation: Accounting rations – Solvency ratios, Profitability Ratios.

Unit-IV

Fund flow analysis – Definition, Significance, Limitations, Steps in preparation of fund flow statements.

Unit-V

Financial Accounting Package (Tally 6.3): Accounts masters – Account Vouchers – Accounts reports – Important features of Tally.

Textbook:

1. Advanced Accountancy, R.L. Gupta & Radha Swamy, Sulthan Chand Publishers 2004.

2. Advanced Accountancy, S.P. Jain and L. Narang, Kalyani Publishers 2004.

3. Principles of Management Accounting, Dr. S.N. Maheshwari, Sulthan Chand & Sons 2005.

4. Management Accounting, RSN Pillai S. Bagavathi, S. Chand Co. Ltd

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SEMESTER – IV **CS9 JAVA PROGRAMMING**

Unit-I

The Genesis of Java: Java's Lineage - The creation of Java – Why java is important to the internet - Java's magic – The Java buzzwords – The continuing Revolution . An overview of Java: Object Oriented Programming – Simple program – If statement - For loop – Using block of code – Lexical issues – Java class libraries – Datatypes - Variables - Arrays.

Unit-II

Operator – Selection statements – Iteration statements – Jump statements – Class fundamentals – Declaring objects – Assigning object reference variables – Introducing methods – Constructors – This keyword – Garbage collection – Finalize() methods – Overloading methods – Using object as parameters – Arguments passing - Returning objects – Recursion – access control – Static – Final – Nested and inner classes – String class – Command line arguments.

Unit-III

Inheritance – Using super – Multilevel hierarchy – When constructors are called – Method overriding – Dynamic method dispatch – Using abstract classes – Using final with inheritance – Object class – Packages – Access protection – Importing packages – Interfaces.

Unit-IV

Exception handling fundamentals – Exception types – Uncaught exceptions – Using try and catch – Multiple try clauses – Nested try statements – Throw – Throws Finally – Built in exception – Creating own subclasses – Using exceptions – Multiple thread – isAlive and join – thread priorities – Synchronization – Inter thread communication – Suspending, Resuming, Stopping threads – Multithreading.

Unit-V

String handling: String constructors – String length – Special string operations – Characters extraction – String comparison – Searching strings – Modifying a string – Data conversion using valueof() – Changing the case of characters within a string – String buffer – Input / Output: Java IO classes and interfaces – File – Stream classes – Byte streams - Character streams – Using string I/O – Serialization – Stream benefits – Applet Basics – Skeletons – Display methods – Requesting, Repainting – Using the status window – HTML applet tag – Passing parameters to applets.

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Text Book:

The Complete Reference Java 2, Patrick Naughton, Herbert Sceildt, Tata Mc Graw Hill, Fifth Edition, 2006. 999

Reference Book:

Object Oriented Programming with Java , Balagurusamy, Tata Mc Graw- Hill, New Delhi.

CS10 PROGRAMMING WITH JAVA

1. To Perform arithmetic operator using class and objects.
2. To Perform multiplication of matrices using class and objects.
3. To Perform volume calculation using method overloading.
4. Using command line arguments, test if the given string is palindrome or not.
5. Using multilevel inheritance process student marks.
6. Implement multiple inheritances for payroll processing.
7. Package Illustration.
8. To Illustrate Built in Exceptions (Any four).
9. To Illustrate User Defined Exceptions (At least four)
10. To create multiple threads
    A) Using thread class
    B) Using Runnable interface
11. String manipulation using string methods.
12. File – Byte stream.
13. File – Character stream.
14. Applet – Graphical methods.
15. Applet – Threads.
16. Implementing JDBC.

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CS11 COMPUTER GRAPHICS

Unit-I

Introduction to Computer Graphics and Applications – Display devices – Raster Scan and Random scan systems – Input devices – Graphics Software and Functions.

Unit-II

Output Primitives: Line - Drawing, Circle - Generating – Ellipse - Generating Algorithms – Filled – Area primitives – Character generation.

Unit-III

Attributes of Output Primitives: Line, Curve, Area Fill, Character, Text, Marker, and Bundled Attributes – Inquiry function – Antialiasing Tchniques.

Unit-IV

Geometric Transformation and Viewing: Basic Transformations – Homogenous coordinates – Composite Transformations – Reflection and Shear – Window-to-view – Port - Transformation – Viewing functions – Point, line, Polygon, Curve, Text, Exterior clipping operation.

Unit-V

GUI and Input Methods: The User Dialogue – Graphical Input Devices – Input Functions – Interactive Picture – Construction Techniques – Virtual - Reality Environments.

Text book:

Donald Hearn and M. Pauline baker, "Computer Graphics C Version", Second Indian Repaint 2003, Pearson education.

Reference:

Schaum's Outline of Computer Graphics, Roy A Plastock, Zhigang Xiang, Tata Mc Graw Hill, 2001.

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CS12 COMPUTER GRAPHICS AND MULTIMEDIA LAB

Computer Graphics:

1. DDA line drawing algorithm.
2. Bresenham line drawing algorithm.
3. Bresenham circle drawing algorithm.
4. Bresenham ellipse drawing algorithm.
5. Flood fill algorithm.
6. Boundary fill algorithm.
7. Animation using delay.

MULTIMEDIA (Flash / Photoshop / Premier / 3DStudio Max)

1. Creating a simple image.
2. Editing existing image's brightness, mode, color and add and edit layer style.
3. Stitch and edit two images into single image. Use selection tools lasso tool, clone tool, clone stamp.
4. Study about timeline concepts. Insert text, image. Use scaling rotation alignment.
5. Study masking concepts. Use audio in movie.
6. Add buttons, menus and actions to the movie.
7. Export movie. Use multiple scenes.
8. Insert text, image and sprite to the movie.
9. Add effects to the text (Predefined and user defined).

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AS4 PRINCIPLES OF COSTING

Unit-I

Definition of Costing – Importance use of costing – Objects and advantages of Costing – Difference between cost and financial accounts – Installation of Costing system – Analysis and classification of costs – Preparation of Cost sheet.

Unit-II

Materials: Maintenance of stores and records, Minimum level, Recorder level, Economic ordering quantity – Perpetual Inventory.

Unit-III

a. Methods of remunerating Labor: Incentive schemes.

b. Accounting of overheads: Fixed and variable overheads – Allocation – Apportionment and absorption of overheads.

Unit-IV

Budget and Budgetary Control: Objectives and advantages, Limitations, Financial budgets – Flexible budget and cash budget – Preparation thereof.

Unit-V

Marginal Costing: Meaning, Objects and advantages and Limitations – Break Even Point.

Textbook:

1. Cost Accounting – S.P.Jain & K.L.Narang, kalyani Publishers 2005.
2. Cost Accounting – R.S.N. Pillai & S. Bhagavathy, S. Chand Company Ltd 2004.
3. Cost Accounting, Khanna Pandey & Anujha 1991.

SEMESTER-V **CS13 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 tool box - Creating controls – The name (control name) – Properties of command buttons – Simple event procedures for command buttons – Access keys – Image Controls – Text boxes – Labels – Navigating between controls – Msgbox – The grid – The ASCII representation of forms.

Unit-II

Statements in visual basic – Variables – Setting properties with code – Datatypes – Working with variables – More on strings – More on numbers – Constants – Input boxes – Displaying information on a form – The format function – Picture boxes – Richtext boxes – The printer object – Determination loops – Indetermination loops – Making decisions – Select Case – Nested If – Then's – The goto - 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 subprograms – List: One dimensional arrays – Arrays with more than on dimension using lists and array with functions and procedures – The New array – Based string – Records (User defined types)

Unit-IV

The with statements – enums – Control arrays – List and combo boxes – The flex grid control – Code modules: Global procedures – The do events – functions and sub main – Accessing windows function – Error trapping – Creating and object in visual basic – Building your own classes.

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 clipboard – Running another window program from within.

Textbook:

"Visual Basic 6.0 from the Ground Up", Garry Cornell, Tata Mc. Graw Hill, Edition, 1999.

Reference:

1. Guide to Visual Basic 6.0, Tech Media, Peter Nortons, Micheal Groh, 1998.
2. Visual Basic Paul Shareef, PHI, 1999
3. Mastering Visual Basic 6.0, Evangelus Petroutsos, TMH, 1999.

CS14 VISUAL PROGRAMMING LAB

Program to Design a Digital Clock

1. Objective type questionnaire
2. Program to vary color palette
3. Program to show picture animation
4. Program to create a file open dialog to load a picture
5. Program to design a arithmetic calculator
6. Program to create a mouse down event program
7. Menu creation with simple file and edit operation
8. Sequential file reading and writing
9. Process students mark list using data control
10. Process library maintenance using data control
11. Process telephone billing using data control
12. Process stock inventory using data control
13. Program using DAO to create a simple address book

14. Program using DAO to create a simple hotel reservation form software with example transactions such as reservation, check-in and log out.
15. Program using DAO to generate a patient information system that is suitable for private clinics to keep patient data
16. Program using ADO to create motor bank loaning system that keeps the daily record of payment and loan.
17. Develop a system for library management using ADO.
18. Develop a simple student information system using ADO connections.
19. Develop a inventory control system using ADO.
20. Program for super market billing using sequential file
21. Program for stock maintenance system using random access file
22. Design a data report for student marks details.
23. Design a data report for employee pay bill.
24. Design a data report for customer information details.
25. Program using ADO for managing telephone directory.

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CS15 DATA STRUCTURES AND COMPUTER ALGORITHMS

Unit-I

Divide and Conquer: The general method – Binary search –Finding the maximum and minimum – Mergesort – Quicksort-selectio –strassen'smatrix –multiplication .greedy method :the general method-optimal storage of on tapes-knapsack problem –job sequencing with deadlines-optimal merge patterns =minimum spanning tree-single source shortest paths.

Unit II

Dynamic programming :the general method –multi stage graphs –all pairs shortest paths –optimal binary Search trees- 0/1 Knapsack Reliability design the traveling salesman problem-Fiow shop secheduling.

Unit III

Introduction:Running time calaculation-a simple Example-General Rule-Solutions for the maximum SubSequence Sum Problem-logarithms in the running time-checking your analysis –a grain of salt.

Unit IV

LISTS,STACKS,and QUEUES: The Lists ADT:simple Arrray implemention of Lists Programming details – Common errors – Doubly Linked List – Circular Linked List – Examples – Cursor Implementation of Linked List – The stack ADT: Stack model – Implementation of stack – Applications. The queue ADT: The queue model – Array Implementation of Queues – Appplication of queues.

Unit-V

Trees: Basic terminology – Binary trees – Representations binary tree traversal – Mode on binary trees – Threaded binary trees – Binary tree representation of tree - Application of tree – Counting binary trees.

Textbook:

1. Fundamentals of Data Structure, Ellis horowitz, Sortage Sahni, Galgottia Publications, 1998
2. Fundamentals of Computer Algorithms, Ellis horowitz, Sortage Sahni, Galgottia Publications Pvt Ltd, New Delhi
3. Data Structure and Algorithm Analysis in C, Mark Allen Weiss, Second Edition, Addison Wesley Publishing Company, 1997

CS 16 OPERATING SYSTEM

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

"Operating System Concepts", Silberschartz A, Galvin P .B., Gagne G, 6th Edition, 2002, John Wiley and sons.

Reference:

Operating System Concepts and Design, Milan MilanKovic, Tata MC. Graw Hill, 1997.

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ES 1.1 MULTIMEDIA AND ITS APPLICATIONS

Unit-I

Introduction – Branch overlapping aspects of Multimedia content – Global Structure – Multimedia literature. Multimedia – Media and data streams – Medium.

Unit-II

Sound / Audio: Basic sound concepts – Music – Speech, Images and Graphics: Basic concepts – Computer Image Processing – Video and Animation: Basic Concepts – Television – Computer based animation.

Unit-III

Data compression – Storage space – Coding requirements – JPEG – MPEG – DVI Optical storage media – Computer Technology – Multimedia operating system

Unit-IV

Networking System: Layers, Protocols and services, Networks, Metropolitan Area Networks, WAN, Multimedia communication system.

Unit-V

User Interfaces, Synchronization, Abstraction of programming: Abstraction levels - Libraries - System software – Toolkit – Higher Programming languages. Multimedia Application: Introduction – Media population – Media composition – Media communication – Trends.

Textbook:

Ralf Steinmetz and Klara nahrstedt – "Multimedia Computing, Communication & Applications", Pearson Education.

Reference:

Fred T, Hofstetter – "Multimedia Literacy" – 3rd Edition, TMH

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ES 1.2 UNIX & SHELL PROGRAMMING

Unit-I

Introduction - UNIX for Beginners - The File System

Unit-II

Using the Shell - Filters

Unit-III

Shell programming - Programming with standard I/O

Unit-IV

UNIX System Calls

Unit-V

Program Development - Document Preparation

Textbook:

The Unix Programming Environment - Brian Kernighan, Rob Pike - Pearson Education, 2003

Reference:

Introducing UNIX System V - Rachel Morgan, henry Mc Gilton, Mc. Graw Hill International Editions.

ES 1.3 DATA MINING

Unit-I

Data Warehousing: Introduction - Definition - Multidimensional Data Model - OLAP Operations - Warehouse Schema - Architecture - Metadata - OLAP Engine - Backend process.

Unit-II

Data Mining - Definition - Comparision with other fields - Techniques - Issues - Application Areas - Association Rules - Methods - A Priori algorithm - Partition Algorithm - Pincher Search Algorithm - Border Algorithm - Generalized Association Rule - Item Constraints.

Unit-III

Clustering Techniques - Paradigms - Algorithms - CLARA - CLARANS - Hierarchical Clustering - DBSCAN - categorical Clustering Algorithms - STIRR Decision Trees - Tree Construction Principle - Best Split - Splitting Indices - Criteria - Algorithms - CART - ID3.

Unit-IV

Other Techniques - Neural Network - Genetic Algorithm - Rough Sets - Support Vector Machines.

Unit-V

Web Mining - Introduction - Web Content Mining - Web Structure Mining - Web Usage Mining - Text Mining - Hierarchy of Categories - Text Clustering.

Textbook:

Data Mining Techniques - Arun K. Pujari - Universities Press - 2001.

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SEMESTER-VI **SOFTWARE ENGINEERING**

Unit-I

Introduction to Software Engineering Some Edition - 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 - Level estimation - Estimating software maintenance costs.

Unit-III

Software Requirements Definition: The software requirements specification - Formal 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 arrurance - State analysis - Symbolic exception - Unit testing and Debugging - System testing - Formal Verification.

Software Maintenance: Enhancing Maintainability during development - Manage aspects of software maintenance - Configuration Management - Source code metrics - Other maintenance tools and techniques.

Textbook:

Software Engineering Concepts, Richard E. Fairly, Tata Mc. Graw Hill Book Company, 2005.

Reference:

Software Engineering, Jawadekar, Tata Mc. Graw Hill, Book Company, 2004.

CS 18 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 Satellite - Mobile Telephone System.

Unit-III

The Data Link Layer: Data Link Layer Design Issue - 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 - The World Wide Web - Multimedia.

Textbook:

Computer Networks by Andrew S. Tenenbaum, 4th Edition, Prentice Hall of India, 2006.

Reference:

1. Data Communication & Networking, Forouzan, Tata Mc. Graw Hill, 2003.

2. Data and Computer Communication, William Stallings, Pearson Education, 7th Edition, 2003.

ES 2.1 WEB TECHNOLOGY

Unit-I

Internet Basic - Introduction to HTML - List - Creating Table - Linking Document - Frames - Graphics to HTML Doc - Style Sheet - Style Sheet Basic - Add style to Document - Creating Style sheet rules - Style sheet properties - Font - List Color and background color - Box - Display properties.

Unit-II

Introduction to Javascript - Advantage of Javascript - Javascript syntax - Datatype - Variable - Array - Operator and Expression - Looping Constructor - Function - Dialog box.

Unit-III

Javascript document object model - Introduction - Object in HTML Event Handling - Window Object - Document Object - Browser Object - Form Object - Navigator Object - Screen Object - Build in Object - User Defined Object - Cookies.

Unit-IV

ASP.NET Language Structure - Page Structure - Page Event, Properties & Compiler Directives. HTML Server Controls - Anchor, Tables, Forms, Files. Basic Web Server Controls - Label, Textbox, Button, Image, Links, Check & radio button, Hyperlink, data List Web Server Controls - Check box list, Radio button list - Drop down list, List box, Data grid, Repeater.

Unit-V

Request and Response Objects, Cookies, Working with Data - OLEDB Connection class, Command Class, Transaction Class, Data Adopter Class, data set class. Advanced Issues - Email, Application Issues, Working with IIS - ASP Page Directives. Error handling, Security - Authentication, IP Address, Secure by SSL & Client Certificates.

Textbook:

Web Enabled Commercial Application Development Using HTML, DHTML, Javascript, Perl, CGI - I.Bayross, BPB Publications, 2000.

Reference:

1. Mastering Javascript, J. Jaworski, BPB Publications, 1999

2. Complete Reference HTML (third Edition), T.A Powell, TMH, 2002

3. G. Buczek, ASP.NET Developers Guide, TMH 2002

ES 2.2 DIGITAL IMAGE PROCESSING

Unit-I **Introduction**

Digital Image Processing - Origins - Examples of Fields that use Digital Image Processing - Fundamental Steps in Digital Image Processing - Components of an Image Processing.

Unit-II **Digital Image Fundamentals**

Elements of Visual Perception - Light and electromagnetic Spectrum - Image Sensing and Acquisition - Image sampling and Quantization.

Unit-III **image Enhancement in Spatial Domain**

Introduction - Basic Grey Level Transformations - Hisrogram Processing - Basics of Spatial Filtering

Unit-IV **Image Restoration**

A Model of the Image Degradation / Restoration Process - Noise Models.

Unit-V **Colour Image Processing**

Colour Fundamentals - Colour Models - Pseudo Colour Image Processing.

Textbook:

1. Rafel C. Gonzalez and Richard E. Woods, Digital Image Processing, Pearson Education, Second Edition, 2002.

Reference:

1. Robert J. Schalkoff, Digital image Processing and Computer Vision, John Wiley and Sons Inc.

2. A. K. Jain, Digital Image Processing, PHI, 1994.

3. W. Pratt, Digital Image Processing.

ES 2.3 MOBILE COMPUTING

Unit-I

Information Access Devices – handheld Computers – Palm OS – based Devices – Windows CE – Based handheld Computers – EPOC Based Handheld Computers – Sub Notebooks – Phones – Cellular Phones – Data transmission Capabilities – Smart Phones – Screen Phones.

Unit-II

Smart Identification – smart cards – Smart Labels – Smart Tokens – Embedded Controls – Smart Sensors and Actuators – Smart Appliances – appliances and Home Networking – Automotive Computing.

Unit-III

Internet Protocols and Formats – HTTP – HTML – XML – XForms – Mobile Internet – WAP 1.1 Architecture – Wireless Application Environment 1.1 – WAP 2.0 Architecture – i-node.

Unit-IV

Voice – Voice Technology Trends – Voice on the Web – Standardization.

Unit-V

Connectivity – Wireless Wide Area Network – Short range Wireless Communication.

Textbook:

Principles of Mobile Computing, Uwe Hansmann, Lother Merk, Martin S. Nicklous, Thomas Stober, Springer, Second Edition, 2003.

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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 – Rows 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, 2nd Edition.

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SCA8S31 **SKILL BASED SBS1 OFFICE AUTOMATION**

(2 Hours 2 Credits)

Unit-I

Fundamentals of Computers – Introducing windows XP – Starting Windows XP – Windows Explorer – Windows Accessories.

Unit-II

Microsoft Word – Introduction – Familiarizing – Typing, editing and Designing the Document.

Unit-III

Mail Merge – Introduction to Excel – Chart – Manipulating Data – Changing the Layout.

Unit-IV

Microsoft Access – Introduction to Database – Creating tables – Updating Tables.

Unit-V

Microsoft Power Point – Starting Power Point – Adding Animation to Slides.

Textbook:

Comdex Computer Course Kit, Vikas Gupta, Dream Tech Publishers, 2005.

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SCA8S41 **SKILL BASED SBS2 NUMERICAL APTITUDE**
(2 Hours 2 Credits)

Unit-I

Numbers – HCF & LCM of Numbers – Decimal Fractions

Unit-II

Square roots & Cube roots – Average – Problems on Numbers – Problems on Ages.

Unit-III

Percentage – Profit & Loss – Ratio & Propagation

Unit-IV

Time & Work – Time & Distance

Unit-V

Simple Interest – Compound Interest – Area – Volume & Surface Areas.

Textbook:

Quantitative Aptitude, R.S Agarwal, S. Chand Publishers, 2007.

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SKILL BASED SBS3 SYSTEM SOFTWARE
(2 Hours 2 Credits)

Unit-I

Introduction to System Software – machine Architecture – Simplified Instructional – Computer – Traditional Machines – RISC Machines – Assemblers – Basic Assembler Functions, Machine Dependent and machine Independent Assemblers Features.

Unit-II

Compilers: Basic Compiler Functions – machine Independent Compiler Features – Other System Software: Text Editors – Interactive Debugging Systems

Textbook:

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

Reference:

System Programming and Operating System, Dhamdhere, Tata Mc. Graw Hill

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SKILL BASED SBS4 BIOMETRICS
(2 Hours 2 Credits)

Unit-I

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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SST8S62 **SKILL BASED SBS5 NUMERICAL ABILITY**
(2 Hours 2 Credits)

Unit-I

Numbers – HCF & LCM of Numbers – Decimal Fractions

Unit-II

Square roots & Cube roots – Average – Problems on Numbers – Problems on Ages.

Unit-III

Percentage – Profit & Loss – Ratio & Propagation.

Unit-IV

Time & Work – Time & Distance.

Unit-V

Simple Interest – Compound Interest – Area – Volume & Surface Areas.

Textbook:

Quantitative Aptitude, R.S Agarwal, S. Chand Publishers, 2007.

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SCA8S62 **SKILL BASED SBS5 CRYPTOGRAPHY**

(2 Hours 2 Credits)

Unit-I

Introduction to the concepts of Security – Introduction – The Need for Security – Security Approaches – Principles of Security – Types of Attacks – Cryptography Techniques – Introduction – Plain Text and Cipher Text – Substitution Techniques – Transposition techniques – Encryption and decryption – Symmetric and Asymmetric Key Cryptography – Stagnography – Key Range and Key Size – Possible types of Attacks.

Unit-II

Computer based Symmetric Key Cryptography Algorithms: Introduction – Algorithm Types and Modes – An Overview of Symmetric Key Cryptography – data Encryption Standard (DES) – International data Encryption Standard (IDEA) – RC5 – Blowfish – Advanced encryption Standard (AES) – Differential and Linear Cryptanalysis – Computer based Asymmetric Key Cryptography Algorithm: Introduction – Brief History of Asymmetric Key Cryptography – An Overview of Symmetric Key Cryptography – The RSA Algorithm – Symmetric and Asymmetric Key Cryptography together – Digital Signatures – Knapsack Algorithm – Some other Algorithms.

Textbook:

Cryptography and Network Security, Atul Kahate, TMH, 2006

Reference

Cryptography and Network Security, Behrouz A. Forouzan, the Mc. Graw Hill, 2008.

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SST8S63 **SKILL BASED SBS6 DATA MINING**
(2 Hours 2 Credits)

Unit-I

Data Warehousing – Introduction – Definition – Multidimensional Data Model – OLAP Operations – Warehouse Schema – Architecture – Metadata – OLAP Engine – Backend Process.

Unit-II

Data Mining – Definition – Comparison with other Fields – techniques – Issues – Application Areas Association rules – Methods – A Priori Algorithm – Partition Algorithm – Pincer Search Algorithm – Border Algorithm – generalized Association Rule – Item Constraints.

Clustering Techniques – Paradigms – Algorithms – CLARA – CLARANS – Hierarchical Clustering – DBSCAN – Categorical Clustering algorithms – STIRR

Textbook:

Data Mining Techniques, Arun K. Pujari, Universities Press, 2001.

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SCA8S63 **SKILL BASED SBS6 EMBEDDED SYSTEM**

(2 Hours 2 Credits)

Unit-I

Introduction to Embedded System – Processor and Memory Organization.

Unit-II

Devices and Buses for Devices Network – Device Drivers and Interupts – Picing Mechanism

Unit-III

Programming Concepts and Embedded Programming in C and C++ - Program Modelling Concepts in Single and Multiprocessor Systems software.

Unit-IV

Development Process – Software Engineering Practices in Embedded Software – Development Process – Inter process Communication and Synchronization of Processes.

Unit-V

Task and Threads – Real Time Operating Systems.

Textbook:

Embedded System: Architecture and Programming, Raj kamal, TMH 2005.

Reference:

Microcontrollers Theory and Applications, Ajay V Deshmukh, TMH 2006

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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 Mega diversity nation – Bio geographical 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 Avalches – 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
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.

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