

M.C.A.
SYLLABUS : 2013

**CHOICE BASED CREDIT SYSTEM
(CBCS)**



St. JOSEPH'S COLLEGE (Autonomous)

Accredited at 'A' Grade (3rd Cycle) by NAAC

College with Potential for Excellence by UGC

TIRUCHIRAPPALLI - 620 002, INDIA.

FEATURES OF CHOICE BASED CREDIT SYSTEM

PG COURSES

The Autonomous (1978) St. Joseph's College, accredited with Five Star status in 2001, Re-accredited with A+ Grade from NAAC (2006), Accredited with A Grade from NAAC (3rd cycle-2012), had introduced the Choice Based Credit System (CBCS) for PG courses from the academic year 2001-2002. As per the guidelines of Tamil Nadu State Council of Higher Education (TANSCHÉ) and the Bharathidasan University, the College has reformulated the CBCS in 2008-2009 by incorporating the uniqueness and integrity of the college.

OBJECTIVES OF THE CREDIT SYSTEM

- * To provide mobility and flexibility for students within and outside the parent department as well as to migrate between institutions
- * To provide broad-based education
- * To help students learn at their own pace
- * To provide students scope for acquiring extra credits
- * To impart more job oriented skills to students
- * To make any course multi-disciplinary in approach

What is credit system?

Weightage to a course is given in relation to the hours assigned for the course. Generally one hour per week has one credit. For viability and conformity to the guidelines credits are awarded irrespective of the teaching hours. The following Table shows the relation between credits and hours.

Sem.	Specification	No. of Papers	Hour	Credit	Total Credits
I - IV	Core Courses (Theory & Practical)	14	6	14 x 5	70
	Project	1	--	1 x 5	05
I - IV	3 - Core Electives	3	4	3 x 4	12
	1 - Soft Skill Course (Common) (IDC-1)				
	1 - Inter Dept. Courses (IDC-2)	2	4	2 x 4	08
I - IV	SHEPHERD - Extension Activity	~	70	5	05

Total Minimum Credits 100

Other Additional Credits (Dept. Specific)

However, there could be some flexibility because of practicals, field visits, tutorials and nature of project work.

For PG courses a student must earn a minimum of 100 credits. The total number of courses offered by a department is 20. However within their working hours a few departments can offer extra credit courses.

Course Pattern

The Post Graduate degree course consists of three major components. They are Core Course, Elective Course and Inter Departmental Course (IDC). Also 2 compulsory components namely Project / Project related items and SHEPHERD, the extension components are mandatory.

Core Course

A core course is the course offered by the parent department, totally related to the major subject, components like Practical, Projects, Group Discussions, Viva, Field Visits, Library Record form part of the core course.

Elective Course

The course is also offered by the parent department. The objective is to provide choice and flexibility within the department. The student can choose his/her elective paper. Elective is related to the major subject. The difference between core course and elective course is that there is choice for the student. The department is at liberty to offer three elective courses any semester. It must be offered at least in two different semesters. The staff too may experiment with diverse courses.

Inter Departmental Course (IDC)

IDC is an inter departmental course offered by a department for the students belonging to other departments. The objective is to provide mobility and flexibility outside the parent department. This is introduced to make every course multi-disciplinary in nature. It is to be chosen from a list of courses offered by various departments. The list is given at the end of the syllabus copies. Two IDCs must be taken by students which are offered in Semester II & III. In

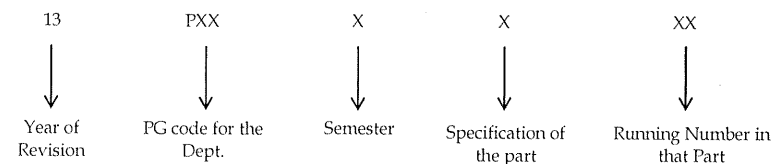
semester II, a common IDC, Soft Skills is to be offered by JASS (Joseph Academy of Soft Skills).

Day College (Shift-I) student may also take an IDC-2 from SFS (Shift-II) course and vice versa

The IDC are of application oriented and inter-disciplinary in nature.

Subject Code Fixation

The following code system (9 characters) is adopted for Post Graduate courses:



- 01 - Core Courses: Theory & Practical
- 02 - Core electives
- 03 - Additional Core Papers (if any)
- 04 - Inter Departmental Courses
- 05 - Project
- 06 - SHEPHERD

CIA Components

The CIA Components would comprise of two parts: (1) Test Components conducted by Controller of Examination (COE) and (2) Teacher specific component. The two centralized tests will be conducted by the COE (Mid-Semester Test & End-Semester Test) for 30% each administered for 2 hours duration. The remaining 40% would comprise of any three components as listed below and will be carried out by the faculty concerned for that paper.

- * Assignment, Quiz (Written / Objective), Snap Test, Viva-Voce, Seminar, Listening Comprehension, Reading Comprehension, Problem Solving, Map Reading, Group Discussion, Panel Discussion, Field Visit, Creative Writing, Open Book Test, Library Record, Case Study, etc.

- * As a special consideration, students who publish papers in referred journals would be exempted from one of the teacher specific internal components in one of the papers. At the beginning of each semester, the four internal components would be informed to the students and the staff will administer those components on the date specified and the marks acquired for the same will be forwarded to the Office of COE.

Evaluation

For each course there are formative continuous internal assessment (CIA) and semester examinations (SE) in the weightage ratio 50:50.

Once the marks of CIA and SE for each course are available, the Overall Percentage Mark (OPM) for a student in the programme will be calculated as shown below:

$$OPM = \frac{\sum C_i M_i}{\sum C_i} \text{ where } C_i \text{ is the credit earned for that course in any}$$

semester and M_i is the marks obtained in that course.

The Scheme of Over-all Results is as follows:

Class	PG	
	Arts (OPM)	Science (OPM)
SECOND	50 to 59.99	50 to 59.99
FIRST	60 to 74.99	60 to 79.99
DISTINCTION	75 & Above	80 & Above

Declaration of Result

Mr./Ms. _____ has successfully completed M.Sc./M.A. degree course in _____. The student's overall average percentage of marks is _____ and has completed the minimum 100 credits. The student has also acquired _____ (if any) additional credits from courses offered by the parent department.

Master of Computer Applications (MCA) - Course Pattern

Sem	Course Code	Course Title	Hrs/Week	Credits
I	13PCA1101	Programming in C and UNIX	4	3
	13PCA1102	Mathematical Foundations	4	3
	13PCA1103	Organizational Behavior	4	3
	13PCA1104	Web User Interface Design	4	3
	13PCA1105	Digital Computer Fundamentals	4	3
	13PCA1106	Software Lab -I(C and LINUX)	3	3
	13PCA1107	Software Lab - II (Web User Interface Design)	3	3
		Web learning /e-Learning	2	
		ICT *	2	
TOTAL FOR SEMESTER I			30	21
II	13PCA2108	Object Oriented Concepts and C++	4	3
	13PCA2109	Software Engineering	4	3
	13PCA2110	Operating Systems	4	3
	13PCA2111	Data Structures and Algorithms	4	3
	13PCA2112	Software Lab - III (C++)	3	3
	13PCA2113	Software Lab - IV (Multimedia)	3	3
	13PCA2114	ICT*	2	3
		IDC - I: Soft Skills	4	4
		Web learning /e-Learning	2	
TOTAL FOR SEMESTER II			30	25
III	13PCA3115	Programming in JAVA	4	3
	13PCA3116	Probability and Statistics	4	3
	13PCA3117	Data Base Systems	4	3
	13PCA3118	Computer Organization and Architecture	4	3
	13PCA3119	Software Lab - V(JAVA)	3	3
	13PCA3120	Software Lab - VI(RDBMS)	3	3
		Skill Based Course-II: Quantitative Aptitude*	2	-
	#13PCA3401/ 13PCA3402	IDC -II: Foundations of Computer Science / Internet Concepts	4	4
		Domain Study **	2	
TOTAL FOR SEMESTER III			30	22

	13PCA4121	Programming Smart Devices	4	3
	13PCA4122	Accounting and Financial Management	4	3
	13PCA4123	Graph and Automata Theory	4	3
	13PCA4124	Computer Networks and Security	4	3
IV	13PCA4201A	Optional: a) Linux Administration	4	4
	13PCA4201B	b) Data mining		
	13PCA4201C	c) Software Testing		
	13PCA4201D	d) Pervasive computing		
	13PCA4201E	e) Database Administration		
	13PCA4125	Software Lab – VII (XML & Android programming)	3	3
	13PCA4126	Software Lab – VIII (PHP & MYSQL)	3	3
	13PCA4127	Skill Based Course-II: Quantitative Aptitude *	2	3
	13PCA4128	Domain Study **	2	3
		TOTAL FOR SEMESTER IV		30
V	13PCA5129	Distributed Technologies	4	3
	13PCA5130	Programming with Win32 API and MFC	4	3
	13PCA5202A	Optional: a) Cloud Computing	4	4
	13PCA5202B	b) Principles of Compiler Design		
	13PCA5202C	c) Computer Graphics		
	13PCA5202D	d) Principles of SOA and BPM		
	13PCA5131	UML and MIS	4	3
	13PCA5132	Operations Research	4	3
	13PCA5133	Mini Project	-	4
	13PCA5134	Software Lab – IX (Distributed Programming)	3	3
	13PCA5135	Software Lab – X (VC++)	3	3
	13PCA5136	Comprehensive Study *	3	3
		Library	1	
	TOTAL FOR SEMESTER V		30	29
VI	13PCA6137	Major Project	30	20
	TOTAL FOR SEMESTER VI		30	20
I-III		Extension Service - SHEPHERD		5
	TOTAL FOR ALL SEMESTERS		180	150

Code numbers according to the subjects chosen.

* Fully Internal (Students continuously evaluated)

** Report to be submitted and VIVA to be conducted by the Internal examiners at the end of the year.

Sem-I

Hours/week :4

13PCA1101

Credit : 3

PROGRAMMING IN C AND UNIX

Objectives:

To develop programming skills using C language, to learn to use the specialties of 'C' language for programming and to develop good understanding of the structure of UNIX operating system.

Unit – I

Structure of Unix - UNIX file system - Types of users, files and permission - Structure of Password file - Directories and Path name - basic directory Commands – standard I/O files – redirecting standard I/O files - Pipelines and filters - Process status -Protecting, Terminating, Setting priority and Killing a process. (12)

Unit – II

Data Types - Variables - Operators - Control structures – Looping structures -Arrays - Strings. (12)

Unit – III

Functions – Built-in-functions - Types of functions - Scope of Variables – Call by value and call by reference. (12)

Unit – IV

Pointers-Pointer and Arrays-Array of Pointers-Pointer as Function arguments-Functions returning pointers-Pointer to Functions-Pointer and structures. (12)

Unit - V

Structure - Union- Files - Sequential Files - Random Access Files - Command Line Arguments. (12)

BOOK(S) FOR STUDY:

1. Rebecca Thomas, Jean Yates, "A User Guide to the UNIX System", Osborne McGraw-Hill, USA, Second Edition, 1985. (Unit-I)
2. E.Balagurusamy, "Programming in ANSI C", Tata McGraw Hill, New Delhi, Fourth Edition, 2007 (Unit II, III, IV, V).

BOOK(S) FOR REFERENCE:

1. Byron S.Gottfried, "Programming with C", Schaum's Outline Series, Tata McGraw Hill Edition, New Delhi, 1991.
2. Brian W. Kernighan, Dennis M. Ritchie, "The C Programming Language", Prentice Hall of India Pvt. Ltd., New Delhi, 1989.
3. T. Jeyapooan, "A First Course in Programming with C", Vikas Publishing House Pvt. Ltd., First Edition, 2002.

Sem. I
13PCA1102

Hours/week : 4
Credit : 3

MATHEMATICAL FOUNDATIONS

Objectives

To impart basic features of Logic, Set Theory and ideas of Lattices and Boolean algebra, and to introduce Numerical Mathematics.

Unit – I

Mathematical Logic: Statements and Notation - Connectivities - Statement Formulas and Truth Tables - Tautologies – Equivalence of Formulas - Duality Law . Tautological implications - The theory of inference - validity using truth tables-Rules of Inference. (12)

Unit –II

Basic concepts of Set Theory : Inclusion and Equality of sets - Power set - Operations on Sets - Venn Diagrams - Cartesian Products. Relations and Ordering - Binary & Equivalence relations - Partial Ordering. Functions - Composition of functions, inverse functions, Binary & n-ary operations. (12)

Unit – III

Lattices as Partially ordered sets - Hasse diagrams - Properties of Lattices - Distributive & Modular inequalities - Special lattices - Complete, Bounded, Complemented, & Distributive lattices. Properties of Boolean Algebra. (12)

Unit – IV

Solution of polynomial equations: Birge-Vieta and Root squaring methods. System of linear algebraic equations: Gauss - elimination, Gauss - Jordan, Triangularization, Jacobi , Gauss-Seidal iterative methods. (12)

Unit – V

Interpolation : Lagrange's and Newton's interpolation - interpolating polynomials using finite difference. Numerical integration: Trapezoidal, Simpson's rules and Romberg integration. (12)

Note: Stress in on Numerical Problems in Units IV and V

TEXT BOOKS

Units I, II, III

1. J.P.Tremblay & R.Manohar, "Discrete Mathematical Structures with Applications to Computer Science", McGraw-Hill International Edition,2001.

Units IV, V

2. M.K.Jain, S.R.K.Iyengar & R.K.Jain, "Numerical Methods for Scientific and Engineering Computation", Wiley Eastern Limited, New Delhi, 2003.

BOOK(S) FOR REFERENCE

1. Bernard Kolman & Robert C.Busyby, "Discrete Mathematical Structures for Computer Science", Prentice Hall of India, New Delhi 1987.
2. S.S.Sastry,"Introductory Methods of Numerical Analysis",Prentice-Hall of India, New Delhi 2005.

Sem. I
13PCA1103

Hours/week: 4
Credit: 3

ORGANIZATIONAL BEHAVIOR

Objectives

To enable the students to understand the basic concepts of organizational Structure and its behavior.

Unit I

NATURE OF ORGANIZATION – features – types – goals.
NATURE OF ORGANIZATIONAL BEHAVIOR – Nature of OB
– Role of OB - Foundations of OB. (12)

Unit II

NATURE OF HUMAN BEHAVIOR: Nature and causes of individual differences – models of man. PERCEPTION: Concept – process – perceptual selectivity and distortion – Developing perceptual skills LEARNING AND BEHAVIOR MODIFICATION: Concept – components – reinforcement principles – OB Mod PERSONALITY: Theories – Determinants – Personality and behavior (12)

Unit III

Attitudes: Concept – Theories – Formation factors – measurements – Attitude change – MOTIVATION: Definition – Motivation & Behavior – Theories – approaches – incentives – STRESS: Concept & features – Causes & effects – Coping strategies. (12)

Unit IV

INTERPERSONAL BEHAVIOR – Transactional analysis – Ego states – life scripts – life positions – transactions – stroking – Psychological games – Benefits of TA – GROUP DYNAMICS: Concepts & features of group – types of groups – group behavior – group decision making – committee – task group – inter group behavior – LEADERSHIP: Definitions – types – importance – theories – styles (12)

Unit V

ORGANIZATION THEORY – Classical organizational theory – neoclassical organizational theory – DESIGNING OF ORGANIZATIONAL STRUCTURE: need – planning and process – Departmentation – span of management – delegation of authorities – centralization & decentralization – FORMS OF ORGANIZATIONAL STRUCTURES: line and staff – functional – divisional – project – matrix – free form – ORGANIZATIONAL CHANGE & DEVELOPMENT: reasons – resistance to change – organizational development – OD interventions (12)

BOOK(S) FOR STUDY:

1. Organisational Behavior, Prasad LM, Sultan chand and Sons, 2007

BOOK(S) FOR REFERENCE

1. Organisational Behavior , SS Khanka , Chand and Company
2. Organisational Behavior , K. Aswathappa 5th edition

Sem. I
13PCA1104

Hours/week : 4
Credit : 3

WEB USER INTERFACE DESIGN

Objective:

To know the UI Design principles, the features of HTML and Scripting Language JavaScript and to design web pages.

Unit - I:

Web Medium: Core web technologies – web browsers – Markup Languages – Style sheet technologies – images – sound – video – programming technologies – client side, server side – network and related protocols – Introduction to static, dynamic and active web pages. (12)

Unit - II:

HTML : Introduction to HTML – Lists – Adding graphics to HTML documents (12)

Unit - III:

HTML: Tables – Linking documents – Frames (12)

Unit - IV:

JavaScript: Introduction to JavaScript – JavaScript in web pages – writing JavaScript into HTML – Basic programming techniques – operators and expressions – conditional checking – loops – functions – user defined functions – dialog boxes (12)

Unit - V:

JavaScript: JavaScript DOM: JSSS DOM – understanding objects in HTML – browser objects – web page object hierarchy – handling events – The form object – built-in objects – user defined objects – cookies – setting a cookie (12)

BOOK(S) FOR STUDY:

UNIT – I

1. Thomas A Powell, "Web Design – The Complete Reference", Tata McGraw-Hill, Second Edition, 2003

UNIT – II,III,IV-V

2. Ivan N. Bayross, "Web enabled Commercial Application Development using HTML, JavaScript, DHTML and PHP", 4th Revised Edition, BPB Publications, New Delhi, 2010.

BOOK(S) FOR REFERENCE

1. Thomas A Powell, "The Complete Reference - HTML", Osborne-McGraw-Hill, Third Edition, 2000.
2. Gary B. Shelly, H. Albert Napier, Ollie N. Rivers, "Web Design: Introductory Concepts and Techniques", Cengage Learning, 2008

Sem-I
13PCA1105

Hours/week : 4
Credit : 3

DIGITAL COMPUTER FUNDAMENTALS

Objectives

To give fundamental principles of digital electronics, semiconductor memories, A/D and D/A converters.

Unit – I

Number Systems and Logic Circuits: Number systems - Decimal, Binary, Octal, Hexadecimal - conversion from one to another - Characters and codes - ASCII code, Excess-3 code, gray code - binary addition, subtraction, multiplication and division - unsigned binary numbers - signed magnitude numbers - complements in number systems - Truth tables, AND, OR, NOT, NOR & NAND gates, EX-OR gates - parity generators and checkers. (12)

Unit – II

Boolean Algebra and Digital Circuits : Boolean laws and theorems - De Morgan's theorems - Duality theorem - simplification of sum of product and product of sum expressions - Karnaugh map and simplifications - Simple arithmetic circuits - Half and Full adders - Binary adder/subtractor - BCD adder - Data processing circuits - Multiplexers - Demultiplexers - Encoders and Decoders. (12)

Unit –III

Sequential Logic Design : Flip-flops - RS, JK, D & T Flip flops - Master/Slave Flip flop - Shift Registers - Counters - Asynchronous and Synchronous Counters. (12)

Unit – IV

D/A And A/D Conversion : D/A converter - D/A accuracy and resolution - A/D Converter - simultaneous conversion - counter method - continuous conversion - A/D techniques - Dual Slope conversion - A/D accuracy and Resolution. (12)

Unit – V

Memory Elements : RAM - Linear Select memory organization - decoders - Dimensions of memory access - connecting memory chips to a computer bus - static RAM - Dynamic RAM - ROM - Magnetic Disk memories - Magnetic tape - Magnetic Bubble memories - Computer word structures - Storage Hierarchy - Virtual memory - Cache memory. (12)

BOOK(S) FOR STUDY:

Units I, II, III, IV

1. Donald P. Leach and Albert Paul Malvino, "Digital Principles and Application", Fifth Edition, Tata McGraw-Hill Publishing Company Ltd., New Delhi, 2003.

Unit V

2. Thomas C. Bartee, "Computer Architecture and Logic Design", McGraw Hill International Edition, New Delhi, 1991.

BOOK FOR REFERENCE

1. Thomas C. Bartee, "Digital Computer Fundamentals", McGraw-Hill International Edition, New Delhi, 1985.

Sem. I
13PCA1106

Hours/week : 3
Credit : 3

**SOFTWARE LAB – I
(C AND LINUX)**

1. Usage of Unix Commands
2. Simple problems using Operators
3. Control structures (if-else, switch-case)
4. Looping structures (for, while, do-while)
5. Sorting and Searching using one dimensional array
6. Matrix operations.
7. Recursion – Factorial, GCD, Adding two numbers
8. Structure, nested structure, structure array
9. File Handling (Text file, Sequential and Random)
10. String Manipulation Using pointers
11. Pointers and Structures

Sem. I
13PCA1107

Hours/week: 3
Credit : 3

**SOFTWARE LAB –II
USER INTERFACE DESIGN**

HTML and DHTML

1. Designing a form using simple tags
2. Developing a form using Frame tag
3. Hidden forms
4. Tables

JavaScript

5. Script writing basics
6. Conditional and Branching constructs
7. Adding interactivity to a web page (Events)
8. Dialog boxes
9. Scripting Forms
10. Designing a calculator.

Sem. II
13PCA2108

Hours/week : 4
Credit : 3

OBJECT ORIENTED CONCEPTS AND C++

Objectives

To provide a sound understanding of the fundamental concepts of the object technology and to learn the realistic applications of object oriented software systems using C++

Unit – I

Principles of Object Oriented Programming: Software Crisis - software evolution - procedure oriented programming - object oriented programming paradigm - basic concepts and benefits of OOP - object oriented language - application of OOP - structure of C++ - applications of C++ - tokens, expressions and control structures - operators in C++ - manipulators- type cast operator.

(12)

Unit – II

Functions in C++ : Function prototyping - call by reference - return by reference - inline functions - default, const arguments - function overloading - classes and objects: member functions - nesting of member functions - private member functions - memory allocations of objects - static data members - static member functions - arrays of objects - objects as functions arguments - friendly functions - pointers to members.

(12)

Unit – III

Constructors: Parameterized constructors - multiple constructors - constructor with default parameters - copy and dynamic constructors - destructors - operator overloading - overloading unary and binary operators - overloading binary operators using friend functions.

(12)

Unit – IV

Inheritance: Defining derived classes - single inheritance - making a private member inheritable - multilevel inheritance - multiple

inheritance - hybrid inheritance - virtual base classes - abstract classes - constructors in derived classes - member classes: nesting of classes - virtual functions.

(12)

Unit – V

Streams formatted and unformatted I/O: Defined manipulators - File I/O - reading and writing - various functions - Exception handling: try - throw - catch statements - re-throwing - Templates: generic classes and functions.

(12)

BOOK(S) FOR STUDY

1. E. Balagurusamy, "Object Oriented Programming with C++", Tata McGraw Hill, New Delhi, 4th edition, 2008

BOOK(S) FOR REFERENCE

1. Robert Lafore, "Object Oriented programming in Microsoft C++", Galgotia Publications, New Delhi, 2000
2. Bjarne Stroustrup, "The C++ Programming Language", Addison-Wesley, 1999.
3. Herbert Schildt, "C++: The complete reference", Tata McGraw Hill, New Delhi, Second edition, 1998.

Sem. II
13PCA2109

Hours/week : 4
Credit : 3

SOFTWARE ENGINEERING

Objectives:

To introduce the basic concepts of Software Engineering and the various phases in Software Development.

Unit – I

Introduction to Software Engineering: The Evolving Role of Software – Software – The changing nature of software – Software Myths. A Generic View of Process: A Layered Technology – Process Models: The Waterfall Model – Evolutionary Process Models. System Engineering: Computer-Based Systems – The System Engineering Hierarchy. (12)

Unit – II

Requirements Engineering: Requirements Engineering Tasks – Initiating the Requirement Engineering Process – Eliciting Requirements – Building the Analysis Model – Requirements Analysis – Data Modeling Concepts – Flow Oriented Modeling – Class based Modeling – Creating a Behavioral Model. (12)

Unit – III

Design Engineering: Design Process and Design Quality – Design Concepts – The Design Model. Creating an Architectural Design: Software Architecture – Data Design – Architectural Design – Mapping Data Flow into Software Architecture. Performing User Interface Design: The Golden Rules – User Interface Analysis and Design – Interface Analysis – Interface Design Steps – Design Evaluation (12)

Unit – IV

Testing Strategies: A Strategic Approach to Software Testing – Test Strategies for Conventional Software and Object Oriented

Software – Validation Testing – System Testing – The art of Debugging. Testing Tactics: Software Testing Fundamentals – White Box Testing – Basis Path Testing – Control Structure Testing – Black Box Testing – Object Oriented Testing Methods.

(12)

Unit – V

Project Management: The Management Spectrum – The People – The Product – The Process – The Project. Estimation: The Project Planning Process – Resources – Software Project Estimation – Decomposition Techniques – Empirical Estimation Models. Project Scheduling: Project scheduling – Scheduling. Quality Management: Quality Concepts – Software Quality Assurance – Formal Technical Reviews. (12)

BOOK(S) FOR STUDY

1. Roger S Pressman, "Software Engineering", McGraw Hill, International 6th Edn, New York, 2006.

BOOK FOR REFERENCE

1. Richard Fairley, "Software Engineering Concepts", McGraw Hill International Edn., 1996.

Sem. II
13PCA2110

Hours/week : 4
Credit : 3

OPERATING SYSTEMS

Objectives: To present fundamental aspects of various managements in an operating system.

Unit – I Introduction: Simple batch system - multiprogrammed batch systems - time sharing - personal computer, parallel, distributed and real time systems. Computer-system Structures: Computer-system operation - I/O structure - storage structure - storage hierarchy - hardware protection - general system architecture. Operating system structures: system components - operating system services - system calls - system programs - system structures - virtual machines - system design and implementation - system generation. (12)

Unit – II Process Management: Processes: process concept - process scheduling - operation on processes - cooperating processes - threads - interprocess communication. CPU scheduling: basic concepts - scheduling algorithms - multiple-processor scheduling - real time scheduling - algorithm evaluation. Process Synchronization: background - critical-selection problem - synchronization hardware - semaphores - classical problems of synchronization - critical regions - monitors - synchronization in Solaris - atomic transactions. Deadlocks: system model - deadlock characterization - methods for handling deadlocks - deadlock prevention - deadlock avoidance - deadlock detection - recovery from deadlock - combined approach to deadlock handling. (12)

Unit – III Storage Management: Memory Management: background - logical versus physical address space - swapping - contiguous allocation - paging - segmentation - segmentation with paging. Virtual memory: Background - demand paging - performance of demand paging - page replacement - page-

replacement algorithms - allocation of frames - thrashing - demand segmentation. (12)

Unit –IV File-system interface: file concept - access methods - directory structure - protection - consistency semantics. File-system implementation: file-system structure - allocation methods - free-space management - directory implementation - efficiency and performance - recovery. I/O systems: i/o hardware - application i/o interface - kernel i/o subsystem - transforming I/O requests to hardware operations - performance. Secondary storage structure: disk structure - disk scheduling - disk management - swap-space management - disk reliability - stable-storage implementation. (12)

Unit – V Protection: goals of protection - domain of protection - access matrix - implementation of access matrix - capability-based systems - language-based protection. Security: problem - authentication - one-time passwords - program threats - system threats - encryption - computer-security classifications. (12)

BOOK(S) FOR STUDY

1. Abraham Silberschatz and Peter Baer Galvin, "Operating System Concepts", 4th edition, Addison Wesley Longman Inc., California, 1998.

BOOK(S) FOR REFERENCE

1. Harvey M. Deitel, "An introduction to Operating System", Addison Wesley Publishing Company, California, 1984.
2. Andrew S. Tanenbaum, "Modern Operating Systems", Prentice Hall of India Private Ltd, New Delhi, 1997.

Sem-II
13PCA2111

Hours/week : 4
Credit : 3

DATA STRUCTURES AND ALGORITHMS

Objectives

To give a detailed knowledge on Data structures and to give an exposure in the development of algorithms related to data structures.

Unit – I

Primitive data structures: Introduction - operations of data structures - Number systems - integer, real numbers, character, logical and pointer information and their representation. Linear data structures: Concepts of non - primitive data structures - storage structures for arrays - stacks - operations on stacks - applications of stacks - queues and its applications -priority queues. (12)

Unit – II

Linked linear lists - operations on linked linear lists - circularly linked linear lists - doubly linked linear lists - applications of linked linear lists. Non-linear data structures: trees - binary trees - operations on binary trees - storage representation and manipulations of binary trees - conversion of general trees into binary trees. (12)

Unit – III

Dynamic storage management - fixed block and first-fit storage allocation - Best fit storage allocation - storage release - buddy system - garbage collection – compaction. (12)

Unit – IV

Sorting: Array sorting - sorting by straight insertion, selection, exchange-sort by diminishing increments - tree sort - partition exchange sort - sorting sequential files - straight merging - natural merging - polyphase sort. (12)

Unit – V

- (a) Searching methods: searching - sequential and binary searching - search trees – hash table method.
(b) Recursive algorithms - Hilbert's curve, Sierpinski curve, backtracking algorithms – the Eight queens problem, Knight's tour problem. (12)

BOOK(S) FOR STUDY

Units I, II, III, V(a)

1. Jean-Paul Tremblay and Paul G.Sorenson, "An introduction to data structures with applications", Second Edition, Tata McGraw Hill Publishing Company Limited, New Delhi, 1995.

Units IV, V(b)

2. Niklaus Wirth, "Algorithms + Data structures = Programs", Prentice Hall of India Ltd, New Delhi,

BOOK(S) FOR REFERENCE

1. Tanenbaum A.M. and Augustein M.J., "Data structures with Pascal", Prentice Hall of India Ltd, New Delhi, 1985.
2. Ellis Horowitz and Sartaj Sahni, "Fundamentals of computer algorithms", Galgotia Publications, New Delhi, 1985.

Sem. II
13PCA2112

Hours/week : 3
Credit : 3

SOFTWARE LAB – III (C++)

Classes and Objects

1. Problems Using classes
2. Constructors
3. Static Polymorphism: Operator overloading & function overloading
4. Inheritance.
5. Function Overriding
6. Dynamic Polymorphism: Virtual functions.
7. Pure virtual functions and abstract classes
8. Formatted I/O and File operation with Command Line Arguments
9. Templates
10. Exception Handling
11. Stack and Queue
12. Singly Linked list
13. Binary Tree Creation and Traversals

Sem. II
13PCA2113

Hours/week : 3
Credit : 3

SOFTWARE LAB – IV MULTIMEDIA

PhotoShop :

1. Develop an image using selection and allied operations
2. Develop an image using Effects and apply Filters
3. Develop an image with the help of patterns, images.
4. Develop an image and do the following image slicing, rollover, animations

Flash

5. Develop an image with the help of basic shapes.
6. Animate an image using motion, shape tweening, and actions

Flash MX

7. Animate an image using interface elements and mix with video.

Dreamweaver

8. Create a simple web page contain five images with animation.
9. Develop a class timetable using tables in dreamweaver.
10. Develop a College student application form using dream weaver.

Sem. II
13PCA2114

Hours/week : 2
Credit : 3

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

OBJECTIVE

To enable the students to have a basic knowledge of information communication technology and its applications.

UNIT - I

Fundamentals: fundamentals of information and communication technology (ICT) – Importance of ICT – Applications of ICT – History of Internet – Web Browsers – EMAIL – Current trends – different search engines and tools. (6)

UNIT - II

Internet groups: creations and access of news groups – community networks – social forum – blogs. (6)

UNIT - III

Internet Applications and Services: Online payments (EB, Phone) – online reservation (Train, Bus, Air-Tickets) – Online bank transaction (Net Banking) – online Applications – online tests etc. (6)

UNIT - IV

Categories of web sites: Government websites – public sector websites – education institution websites – scientific & research websites etc. (6)

UNIT - V

Web design: web templates – web designing tools – Web Hosting: Downloading – uploading – basic concepts of FTP. (6)

BOOK(S) FOR STUDY

1. K. L. James, "The Internet: a User's Guide", PHI Learning Pvt. Ltd., 2010.

WEB REFERENCES

1. www.india.gov.in
2. <https://www.irctc.co.in/>
3. www.onlinesbi.com/corporate/corp_rtgs_neft_faq.html
4. <https://tin.tin.nsdl.com/pan/index.html>

Sem. III
13PCA3115

Hours/week : 4
Credit : 3

PROGRAMMING IN JAVA

Objectives:

To understand the power of Java language in Internet programming.

Unit - I

Java Features - Overview of Java language - Classes - Objects - Constructors - Method Overloading - Static members - Inheritance - Overriding methods - final variables - final methods - final classes - finalizer methods - Abstract Methods and Classes - Visibility Control. (12)

Unit - II

Arrays - Strings - Vectors - Wrapper Classes - Interfaces - Packages - Overview of standard packages. (12)

Unit - III

Multithreaded Programming: Thread Life Cycle - Thread Exceptions - Thread Priority - Synchronization - Implementing the 'Runnable' interface - Inter-thread communication - Managing Errors and Exceptions. (12)

Unit - IV

Applet Programming - Managing I/O streams in Java: Stream Classes - Byte Stream - Character Stream - I/O Exceptions - Sequential Files. (12)

Unit V

AWT: AWT Controls, Layouts, menus, dialogs, Frames and events - Java Beans - JDBC. (12)

BOOK(S) FOR STUDY:

1. E. Balagurusamy, "Programming with Java", Tata McGraw Hill Publishing Company Ltd., New Delhi, Fourth Edition, 2010. (Unit I, II, III, IV)

2. C. Muthu, "Programming with Java", Vijay Nicole Imprints Pvt. Ltd., Chennai, 2004, ISBN: 981-254-265-5. (Unit V)

BOOK(S) FOR REFERENCE:

1. Patrick Naughton and Herbert Schildt, "JAVA 2 - The Complete Reference", Fifth Edition, Tata-McGraw-Hill, New Delhi, 2002.
2. Peter Norton and William Stack, "Guide to Java Programming", Techmedia Publications, New Delhi, First Edition, 1997.

Sem. III
13PCA3116

Hours/week : 4
Credit : 3

PROBABILITY AND STATISTICS

Objectives

To give a detailed knowledge on Probability and Distribution theory and to give a brief introduction to the Theory of Hypothesis Testing and Applied Statistics.

Unit – I

Sample Space: Events - Probability - Probability axioms – addition and multiplication law of probabilities - conditional probability - independent events - Baye's theorem. (12)

Unit – II

Random variables: distribution functions (discrete and continuous) - Joint probability distribution - Marginal and conditional distribution. Mathematical expectations - moment generating functions - Cumulants. Chebyshev's inequality. (12)

Unit – III

Discrete distributions: Binomial and Poisson - Continuous distributions: Uniform, Exponential and Normal. Correlation and Regression. (12)

Unit – IV

Testing of hypothesis: Tests based on normal population. Applications of chi-square, Student's-t, F-distributions - Chi-square Test - goodness of fit - Test based on mean, means, variance, correlation and regression coefficients. (12)

Unit – V

Analysis of variance (one way and two way classifications). Design of experiments – Principles of Design of Experiments – Completely randomized design - Randomized Block Design and Latin Square Design. (12)

Note: Stress is given on the working of problems.

BOOK(S) FOR STUDY

Units I, II, III, IV

1. S.C.Gupta and V.K.Kapoor, "Fundamentals of Mathematical Statistics", Sultan Chand & Sons, New Delhi, 11th edition, 2002.

Unit V

2. S.C.Gupta and V.K.Kapoor, "Fundamentals of Applied Statistics", Sultan Chand & Sons, New Delhi, Second Edition, 1978.

BOOK(S) FOR REFERENCE

1. Erwin Kryszig, "Introductory Mathematical Statistics", John Wiley & sons, New York, 1990.
2. J.S.Milton, and J.C.Arnold, "Probability and Statistics in Engineering and Computer Science", McGraw Hill, New York, 1986.

Sem. III
13PCA3117

Hours/week : 4
Credit : 3

DATABASE SYSTEMS

Objectives:

To give the detailed knowledge about the Different Approaches to the Database System giving emphasis to Relational Approach and Concurrency Management

Unit – I

Introduction to DBS: Basic Concepts and Definitions – Data Dictionary – Database System – DBA – Database Languages – Database System Architecture: Schemas, Sub-schemas and Instances – Three-level Architecture – Data Independence – Mappings – Data Models – Types – ER Model – Specialization and Generalization – Relational Algebra and Calculus: Structure – Relational Algebra – Relational Calculus. (12)

Unit – II

Relational Query Languages: Introduction – Codd's Rules – Information System Based Language – Structured Query Language (SQL) – Embedded SQL. (12)

Unit – III

Normalization: Introduction to Database Design – Functional Dependency and Decomposition – Normalization – Normal Forms – BCNF – Multi-valued and Join Dependencies. (12)

Unit – IV

PL/SQL: A Programming Language: History – Fundamentals – Data types - operators. Control Structures: Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions - Named Blocks: Procedures – Functions – Packages – Triggers (12)

Unit – V

Transaction Processing and Concurrency Control – Database Recovery System – Database Security – Parallel Database Systems: Introduction to Parallel databases – Architecture – Key Elements of Parallel Database Processing – Distributed Databases – Architecture – Distributed Database design (12)

BOOK(S) FOR STUDY

Unit I, II, III and V

1. S K Singh, "Database Systems Concepts, Design and Applications", Pearson Education, 2006.

Unit IV

1. Nilesh Shah, "Database Systems using ORACLE", Prentice Hall of India, 2005

BOOK(S) FOR REFERENCE

1. Abraham Silberschatz, " Database Systems", McGraw Hill International, 1997
2. CJ Date, "An Introduction to Database Systems", 6th Edn, Addison Wesley Publishing Company, New York, 1995.

Sem. III
13PCA2118

Hours/week : 4
Credit : 3

COMPUTER ORGANIZATION AND ARCHITECTURE

Objectives

To give basic knowledge on various building blocks of a typical digital computer and programming concepts for Intel 8051 micro controller.

Unit – I

Basic Computer Organisation and Design: Instruction codes - Computer registers - Computer Instructions - Timing and Control - Instruction cycle - Memory reference instructions - Input/output & Interrupt - Design of Basic Computer - Design of Accumulator Logic. Microprogrammed control: Control memory - Address sequencing - Micro program example - Design of control unit.

(12)

Unit – II

CPU: General register organisation - Stack organisation - Instruction formats - Addressing modes - data transfer and manipulation - Program Control - RISC. Pipeline & Vector Processing: Parallel processing - Pipelining - Arithmetic pipeline - Instruction pipeline - RISC pipeline - Vector processing - Array processors.

(12)

Unit – III

Computer Arithmetic: Addition, Subtraction, Multiplication and Division algorithms - Floating point arithmetic operations - Decimal arithmetic unit - Decimal arithmetic operations.

(12)

Unit - IV

Microprocessors : Evolution – Intel’s 8 bit processors – Intel’s 16 bit processors – architecture - features – comparison

(12)

Unit V

The 8051 Micro Controller : 8051 Hardware– The 8051 oscillator and clock – program counter and data pointer – A and B CPU registers – PSW – internal memory – internal RAM – The stack and stack pointer – special function registers – internal ROM

(12)

BOOK(S) FOR STUDY

Units I, II, III

1. M.Morris Mano, “Computer System Architecture”, Third Edition, Prentice Hall of India, New Delhi, 2003.

Units IV

2. Barry B Brey, “The Intel Microprocessors 8086/8088, 80186, 80286, 80386, 80486, Pentium and Pentium Pro processors Architecture, Programming and Interfacing”, Prentice Hall of India, New Delhi, 2002.

Units V

3. Kenneth J. Ayala, “The 8051 Microcontroller Architecture, Programming & Application”, Second edition, Penram International (India) Pvt Ltd, Mumbai, 1996.

BOOK(S) FOR REFERENCE

1. Muhammad Ali Mazidi and Janice Gillispie Mazidi, “ The 8051 Microcontroller and Embedded Systems”, Pearson Education Inc, New Delhi, 2000.

Sem. III
13PCA3119

Hours/week : 3
Credit : 3

SOFTWARE LAB – V (JAVA)

1. Using Classes
2. Inheritance
3. Polymorphism
4. Packages and Interfaces
5. Exception Handling
6. Multithreading
7. 'Util' Package
8. I/O Streams and File processing
9. Networking
10. Applet, AWT and Event handling
11. JDBC
12. Java Beans

Sem. III
13PCA3120

Hours/week : 3
Credit : 3

SOFTWARE LAB –VI (RDBMS)

SQL

1. Simple queries using DDL, DML, and DCL
2. SQL functions
3. SET operations
4. View and Snapshots
5. Nested queries

PL/SQL

6. PL/SQL Block
7. Cursors
8. Database triggers
9. Subprograms and packages.

FORMS AND REPORTS

10. Designing oracle forms with menus, buttons and LOVs
11. Master-Detail form design.
12. Developing oracle reports
(Tabular, Master/detail, Matrix and Mailing label)

Sem. IV
13PCA+121

Hours/week : 4
Credit : 3

PROGRAMMING SMART DEVICES

Objective:

To provide concepts to enable the students for creating applications for smart devices using Android

Unit - I:

Introduction to Android : - Comparisons of different Smart Phones such as BlackBerry, iPhone, and Windows Mobile - A History of Android

Overview of Android and Android SDK : Android Features - Android Architecture - Applications - Application Framework - Libraries - Android Runtime - Linux Kernel

Application Structure : AndroidManifest.xml- uses-permission & uses-sdk- Activity/services/receiver declarations-Resources & R.java-Assets- Values – strings.xml-Layouts & Drawable Resources-Activities and Activity lifecycle (12)

Unit II:

User Interface: Building a User Interface - Overview of Android 's view structure - Android built –in layout - Android built in Views - Event Handling - Using basic Widget - Labels - Button - Images - Radio and Check buttons - Working and Using Containers - Concepts and Properties - Using Menus - Using Pop –up messages (12)

Unit III:

Intents: Creating Intent Filters – Parts - Intent Routing - Narrow Receivers

Threads :Threads running on UI thread(runOnUiThread)-Worker thread-Handlers & Runnable-AsynTask (12)

Unit IV:

Content Providers: Using a Content Providers - Making queries - Handling a Content Providers - Building a Content Providers - Database Content Provider - Content Observer

Multimedia Programming: Multimedia audio formats - Creating and Playing -Multimedia audio formats - Kill / Releasing (Memory Management)- associating audio in any application- associating video playback with an event (12)

Unit V:

Preferences, Files and Datastores: SQLite Databases usage and running SQL query from Application - Data Stores - Overview of storing, retrieving, and exposing data - Preferences - Files - Managing and Accessing Local Databases - Data access over the network - Single Sign on and Sync. - Account Management - Sync Adaptors - Parts - Properties - Updating the Manifest (12)

BOOK (S) FOR STUDY

1. Mark L. Murphy, "The Busy Coder's Guide to Android Development" CommonsWare Pub., 2011, ISBN: 978-0-9816780-0-9 (available at: <http://commonsware.com/Android/index.html>).

BOOK (S) FOR REFERENCE

1. Android Developer's Guides – available at: <http://developer.android.com/>

Sem. IV
13PCA4122

Hours/week : 4
Credit : 3

ACCOUNTING AND FINANCIAL MANAGEMENT

Objective: To present the Whole range of bookkeeping and accountancy and to give comprehensive coverage to management accounts.

Unit - I

Accounting: Principles-Concepts-Conventions-Journals-ledger-trial balance. (12)

Unit - II

Trading account-profit and loss account- balance sheet-adjustments-error correction. (12)

Unit-III

Depreciation; Meaning-need-methods of charging depreciation (straight line method, diminishing balance method). Tally: general frame work-accounting applications. (12)

Unit IV

Marginal costing-break even analysis. - Standard costing-Analysis of variance. (12)

Unit V

Budgeting: characteristics- advantages-classification-preparation of budgets.

Capital budgeting: meaning-methods of capital investment decision-making. (12)

BOOK (S) FOR STUDY

1. T.S Grewal, "Double entry book keeping", sultan chand sons, New Delhi, 1986.
2. S.N. Mahewari, 'Management accounting', Sultanchand sons, New Delhi, 1986.

BOOK (S) FOR REFERENCE

1. M.C.Shukla, T.S. Grewal, "Advanced accounting", S.Chand and Company(pvt) Ltd.,Ram Nagar, New Delhi,1988.
2. Mam Mohan and G.N. Goyal, "Principles of management accounting", Sahitya bhawan, Agra, 1986.

Sem. IV
13PCA4123

Hours/week : 4
Credit : 3

GRAPH AND AUTOMATA THEORY

Objectives

To introduce the important features of Graph theory and the computer representation of graph, principles of formal languages and their relation to automata.

Unit – I

Graph Introduction: Paths and Circuits - isomorphism, Connected & Disconnected Graphs, Euler graphs - Operations on Graphs - Hamiltonian Paths & Circuits. (12)

Unit – II

Trees and Fundamental Circuits: Properties of Trees, Rooted Binary Trees, Spanning trees. Matrix representation of Graphs - Incidence Matrix, Adjacency Matrix, Circuit Matrix - Fundamental Circuit Matrix. (12)

Unit – III

Directed Graphs: Some types of digraphs, trees with directed edges. Graph Theoretic Algorithms - Computer representation of a Graph. Algorithms for connectedness & components, spanning tree, shortest path. (12)

Unit – IV

Finite State Systems: Basic definitions - Non-Deterministic Finite Automata - Finite Automata with epsilon moves - Regular Expressions Applications of Finite Automata. (12)

Unit – V

Motivation and Introduction: Context-Free Grammars – Derivation Trees - Chomsky Normal Form - Greibach Normal Form - The Pumping Lemma for CFL's. (12)

Stress can be given to problem solving instead of proof of theorems.

BOOK(S) FOR STUDY

Units I, II, III

1. Narsing Deo, "Graph Theory with applications to Engineering and Computer Science", Prentice-Hall of India Limited, New Delhi, 1995.
2. John E. Hopcroft & Jeffery D. Ullman, "Introduction To Automata Theory, Languages and Computation", Narosa Publishing House, New Delhi, 1997.

BOOK(S) FOR REFERENCE

1. John E. Hopcroft & Jeffery D. Ullman, "Formal Languages and Their Relation to Automata", Addison - Wesley publishing company, London, 1969.
2. Bernard Kolman & Robert C. Busby, "Discrete Mathematical Structure for Computer Science" Prentice Hall of India, New Delhi, 1987.

Sem. IV
13PCA4124

Hours/week : 4
Credit : 3

COMPUTER NETWORKS AND SECURITY

Objectives

To provide a overall knowledge in computer communication networks and security concepts.

Unit - I

Introduction: Definition for the networks-Uses of Networks - Network Architecture-protocol hierarchies - Service Primitives - OSI Reference Model - ARPANET - Internet - Physical Layer Transmission Media - Telephone Systems. (12)

Unit - II

Datalink layer: Datalink layer - Design Issues - Error Detection and Correction - Data Link Protocols - Sliding Window Protocols - Finite state Machine Model - Petri Networks-PPP-Polling - FDM. (12)

UNIT - III

Network Layer: Design Issues - Routing Algorithms - Congestion Control Algorithms - Inter network Routing - Fragmentation. (12)

Unit - IV

Transport Layer-Design Issues-Elements of Transport Protocols-The Internet-Transport Protocol (TCP &UDP) - Application Layer: Design Issues (12)

Unit - V

Information Security: Basics – Types of Attacks - Security Technologies - Firewall – Virtual Private Networks – Encryption – Intruder Detection. (10)

TEXT BOOK(S)

1. Andrew S Tanenbaum, "Computer Networks", Prentice Hall of India, New Delhi, 1999.
2. Eric Maiwald, " Network security – A Beginner's Guide", Tata McGraw Hill, second Edition, 2003.

BOOK FOR REFERENCE

1. Vijay Ahuja , "Design and Analysis of Computer Communication Networks", McGraw Hill, New York, 1985.

Sem. IV
13PCA4201A

Hours/week : 4
Credit :3

LINUX ADMINISTRATION

Objectives:

To understand the principles of Linux Operating System for effective System administration.

Unit - I

Linux Introduction and Installation: Linux-Advantages-Red Hat Linux- New Features-Installation procedures and Methods. Using Desktop-GNOME-KDE-Linux Commands Accessing and Running Applications-Installing Red Hat Linux Applications, Running Window Application, Running Windows, DOS and Macintosh Applications – Tools for using Internet and Web. (12)

Unit - II

Administration: Understanding System Administration: Root login super user-GUI tools, commands and Log files-Configuring Hardware-File System and Disk Management-Monitoring performances. Setting Up and Supporting users: Creating user accounts – Setting user defaults – Creating Desktops-Modifying and Deleting Accounts. (12)

Unit - III

Security Issues: Hacker versus Cracker-Password Protection-Protection from break-in-Filtering Network Access-Firewalls-Detecting Instructions – Encryption techniques (12)

Unit - IV

Networking: Setting up a LAN- LAN- Wireless-LAN- Understanding IP Addresses
Connecting to Internet: Dial up connection- Red Hat Linux as a router-VPN connection-Red Hat Linux as a proxy server-proxy clients (12)

Unit - V

Setting Up File Server: Setting up- NFS- Netware File Server
Setting up a Web Server: Web Server- Starting Apache Web Server
–Configuring Apache Server –Starting and Stopping the Server –
Monitoring Activities. (12)

BOOK(S) FOR STUDY

1. Christopher Negus "Red Hat Linux 3 Bible", John Wiley & Sons, 2005

BOOK FOR REFERENCE

1. Thomas Schenk, "Red Hat Linux System Administration", Techmedia, New Delhi, 2003.
2. Christopher Negus "Red Hat Linux 9 Bible", WILEY Dreamtech, India Pvt.Ltd, New Delhi, First Edition, 2003

Sem. IV
13PCA4201B

Hours/week : 4
Credit : 3

DATA MINING

Objective:

To understand the basic concepts, tasks, methods and techniques in data mining.

Unit – I

Introduction: Data Mining – Data Mining Functionalities – Classification of Data Mining Systems – Data Mining Task Primitives – Integration of a Data Mining System with a Database or Data Warehouse System – Major Issues in Data Mining. (12)

Unit – II

Data Preprocessing: Descriptive Data Summarization – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation. (12)

Unit – III

Mining Frequent Patterns, Associations, and Correlations: Basic Concepts and a Road Map – Efficient and Scalable Frequent Itemset Mining Methods – Mining Various Kinds of Association Rules – From Association Mining to Correlation Analysis – Constraint-Based Association Mining. (12)

Unit – IV

Classification and Prediction: Issues Regarding Classification and Prediction – Classification by Decision Tree Induction – Bayesian Classification – Rule-Based Classification – Classification by Backpropagation – Support Vector Machines – Other Classification Methods (12)

Unit – V

Cluster Analysis: Cluster Analysis – Types of Data in Cluster Analysis – A Categorization of Major Clustering Methods –

Partitioning Methods – Hierarchical Methods – Density-Based Methods – Grid-Based Methods – Model-Based Clustering Methods – Clustering High-Dimensional Data – Constraint-Based Cluster Analysis – Outlier Analysis. (12)

BOOK(S) FOR STUDY

1. Han, J, Kamber, M, "Data Mining: Concepts and Techniques", Morgan Kaufmann Publishers, 2nd Edition, 2006.

BOOK(S) FOR REFERENCE:

1. Michael J.A. Berry, Gordon S. Linoff, "Data Mining Techniques", John Wiley & Sons, 1997.
2. David J. Hand, Heikki Mannila, Padhraic Smyth, "Principles of Data Mining", Massachusetts Institute of Technology, 2001.

Sem. IV
13PCA4201C

Hours/week : 4
Credit : 3

SOFTWARE TESTING

Objectives:

To give a comprehensive Knowledge of Testing principles, Techniques and Tools.

Unit - I:

Principles of testing – software development life cycle models – white box testing – black box testing. (12)

Unit - II:

Integration testing – system and acceptance testing – performance testing – regression testing. (12)

Unit - III:

Testing of Object Oriented Systems – Usability and Accessibility testing – Common People Issues – Organization Structures for Testing Teams. (12)

Unit - IV:

Test Planning, Management, Execution, and Reporting – Test Metrics and Measurements. (12)

Unit - V:

Software Test Automation – Winrunner – LoadRunner – Metrics Tools. (12)

BOOK(S) FOR STUDY :

Srinivasan Desikan, Gopaldaswamy Ramesh, "Software Testing – Principles and Practices", Pearson Education Publishers, First Impression, 2006.

BOOK(S) FOR REFERENCE :

Boris Beizer, "Software Testing Techniques", Dream tech Press, Second Edition, 2000.

Sem. IV
13PCA4201D

Hours/week : 4
Credit : 3

PERVASIVE COMPUTING

Objective:

To understand the basic concepts of pervasive computing and its applications

UNIT I : Pervasive Computing devices and Interfaces – Device technology trends, Connecting issues and protocols, pervasive computing principles (12)

UNIT II : XML and its role in Pervasive Computing - Wireless Application Protocol (WAP) Architecture and Security – Wireless Mark-Up language (WML) – Introduction (12)

UNIT III : Programming consumer devices, Smart card programming, messaging components, Database components (12)

UNIT IV : Introduction - PDA software Components, Standards, emerging trends – PDA Device characteristics - PDA Based Access Architecture (12)

UNIT V : Architecture - Smart Card- based Authentication Mechanisms – Wearable computing Architecture (12)

BOOK(S) FOR STUDY:

1. Jochen Burkhardt, Horst Henn, Stefan Hepper, Thomas Schaeck, Klaus Rindtorff, "Pervasive Computing Technology and Architecture of Mobile Internet Applications", Pearson Education, New Delhi, 2007.
2. Uwe Hansman, Lothar Merk, Martin S Nicklous, Thomas Stober, "Pervasive Computing - Handbook", Springer- Verlag, New Delhi, 2003

BOOK(S) FOR REFERENCE :

1. Jochen Burkhardt, Horst Henn, Stefan Hepper, Thomas Schaeck, Klaus Rindtorff, "Pervasive Computing Technology and Architecture of Mobile Internet Applications", Addison Wesley, New Delhi, 2003.

Sem. IV
13PCA4201E

Hours/week : 4
Credit : 3

DATABASE ADMINISTRATION

Objective:

To give the principles and practices of Database Administration

Unit I

Database Architecture – An overview of Databases and Instances – logical storage structure – logical database structure – physical storage structure – memory structures backup and recovery overview – security capabilities - tablespace architecture – installation tablespace – ASM (12)

Unit II

Tuning by design – best practices – supporting iterative development – managing package development (12)

Unit III

Common space management problems – segments, extents and blocks – Data dictionary views and dynamic performance views – space management methodologies - managing transactions with undo table spaces (12)

Unit IV

Database Tuning – Tuning application design – Tuning SQL – Tuning memory usage – tuning data access – tuning data manipulation (12)

Unit V

Database security and Auditing – Database authentication methods – authorization methods – auditing – data encryption techniques – Backup and recovery options: logical and physical backups – Data

pump export and import – Data pump import – integrating backup process – RMAN components and commands – backup operations - recovery operations (12)

Prerequisites

Relational Data models – Relational algebra – Relational calculus – Normalizations – Relational DBMS – Network fundamentals

BOOK (S) FOR STUDY

1. Kevin Loney and Bob Bryla "Oracle Database 10g DBA Handbook", Oracle Press & Tata McGraw Hill Edition, 2008

BOOK FOR REFERENCE

2. Freeman, Robert, "Portable DBA: Oracle" , Tata Mcgraw Hill, 2005

Sem. IV
13PCA4125

Hours/week : 3
Credit : 3

SOFTWARE LAB – VII (XML / ANDROID PROGRAMMING)

XML

1. XML document creation
2. Style sheets: CSS
3. Style sheets: XSL
4. XSL templates
5. Validation using DTD
6. SAX and DOM

Android

- 1) Different Layout design including nested layout for a single biodata.
- 2) Arithmetic Operation for two numbers
- 3) Business Calculator
- 4) Animation: Bouncing of a ball
- 5) Intent
- 6) Database SQLite: Student Biodata
- 7) Fragments – Tablet Programming
- 8) Media Player

Sem. IV
13PCA4126

Hours/week : 3
Credit : 3

SOFTWARE LAB – VIII (PHP /MYSQL)

PHP

1. Develop a PHP program using controls and functions
2. Develop a PHP program and check message passing mechanism between pages.
3. Develop a PHP program using String function and Arrays.

PHP / MYSQL

4. Develop a PHP program to display student information using MYSQL table.
5. Develop a college application form using MYSQL table.

PHP ADVANCE CONCEPTS

6. Develop a PHP program using parsing functions (use Tokenizing)
7. Develop a PHP program and check Regular Expression, HTML functions, Hashing functions.
8. Develop a PHP program and check File System functions, Network functions, Date and time functions.
9. Develop a PHP program using session
10. Develop a PHP program using cookie and session

Sem. III
13PCA4127

Hours/week : 2
Credits : 3

SKILL BASED COURSE: QUANTITATIVE APTITUDE

OBJECTIVE

To revise and master the basic techniques of arithmetic operations so that these skills will augment to their professional capacity.

UNIT I

Numbers, HCF, LCM, Decimal Fractions, Simplification, Square Roots, cube roots, averages, Problems in numbers and ages.

(6)

UNIT II

Surds, Indices, Percentages, Profit and Loss, Ratio and Proportion, Partnership, Chain Rule, Time and Work, Pipes and Distances.

(6)

UNIT III

Time and distance, Problems on Trains, Boats and Streams, Alligation, Simple Interest, Compound Interest, Logarithms, Area.

(6)

UNIT IV

Volume and Surface Area, Races and Games of Skill, Calendar, Clocks, Stocks and Shares, Permutation and Combination, Probability.

(6)

UNIT V

True discount, Banker's Discount, Height and Distances, Odd man out and Series, Tabulation, Bar graphs, Pie charts, Line Graphs.

(6)

BOOK(S) FOR STDUY

1. R. S. Aggarwal, "Quantitative Aptitude for Competitive Examinations", Seventh Revised Edition, S. Chand and Co. Ltd, New Delhi, 2005.

BOOK(S) FOR REFERENCE

1. Barron's Guide for GMAT, Galgotia Publications, New Delhi, 2006.

Sem. V
13PCA5129

Hours/week : 4
Credit : 3

DISTRIBUTED TECHNOLOGIES

Objective:

To know the architectures of Distributed systems, to understand and compare the technologies associated with J2EE and DOTNET.

Unit - I:

Client server architecture: 2-tier model – 3-tier model – n-tier model
– J2EE architecture – DOTNET architecture – MVC architecture
– struts framework (12)

Unit II: Presentation services: Servlet – JSP – Javamail – Interaction services: RMI – CORBA – XML – JMS (12)

Unit III: Component model: EJB : Session Beans : Stateless and Stateful – Entity Beans – CMP and BMP – Message Driven Beans (12)

Unit IV: ASP.NET : Introduction – architecture – ASP.NET Runtime – Internet Information Services – Visual Web Developer Web Server – ASP.NET Parser – Assembly – Page class. Web Server Controls – HTML Controls – AdRotator and Calendar controls – Validation Controls – Security Management. (12)

Unit V: ASP.NET and ADO.NET: System.Data, SqlClient and Xml namespaces – Provider objects and Consumer objects – Disconnected data access – GridView FormView. (12)

BOOK(S) FOR STUDY

1. Justin Couch, Daniel H.Steinberg, "J2EE Bible", Wiley India(P) Ltd, New Delhi, 2002
2. Paul Tremblett, "Instant Enterprise Java y - Beans", Tata McGraw Hill Publishing Company, New Delhi, 2001
3. Platt S David, "Introducing Micorsoft .Net", Prentice Hall of India, New Delhi, 2003.

BOOK(S) for Reference:

1. Stephanie Bodoff, Dale Green, Eric Jendrock, "The J2EE tutorial", Addison-Wesley, 2002
2. Hitesh Seth, "Microsoft .NET: kick start", Sams Publishing, 2004

Sem. V
13PCA5130

Hours/week : 4
Credit : 3

PROGRAMMING with Win32 API and MFC

Objectives:

To understand and explore the windows programming using Win32 API and MFC.

Unit I

Windows and Messages: Architectural Overview – Registering the window- Create and display Window – Message Loop – Windows Procedure – Processing the messages – Playing a sound file – WM_PAINT Message, WM_DESTROY Message. GDI: Introduction -Structure – Device context –Painting and repainting – GDI mapping modes – Basic drawing tools. Keyboard Basics: Messages –Character Message -The Caret – Mouse Basics: Client – Non Client Area mouse messages – Capturing the mouse. (12)

Unit II

Child Window Controls: -Button class – Controls and Colors – Static Class – Scroll bar, Edit, List box -Classes. Menus: Menus and other resources – Icons -Cursor – String and custom resources – Keyboard Accelerators. Dialog boxes: Modal And Modeless – Common dialog boxes. Timer: -Basics - Methods. (12)

Unit III

Fundamentals of Windows and MFC: Windows programming model - Introduction to MFC – MFC Application – Drawing in a window :Windows GDI – Drawing with GDI - Mouse and Keyboard : Mouse messages – keyboard messages – Menus : Basics – Shapes – Menu Magic - MFC Collection Classes – Arrays – Lists, Maps, Pointer, Classic Controls, Dialog box : Modal, modeless dialog box – Property sheets (12)

Unit IV

File : File I/O and Serialization – CFILE Class- CARCHIVE Class –Document –View Architecture : Fundamentals - Single Document Interface - Scroll View – HTML View – List View – Multiple Document Interface – Splitter windows. (12)

Unit V

Threads: Threads and Thread Synchronization – MFC Component Object Model – MFC and COM – ClipBoard and OLE: Legacy, OLE Clipboard – OLE Drag –Drop- ActiveX Controls:Basics– Building ActiveX Control–MFC application using Active X. (12)

BOOK(S) FOR STUDY

1. Charles Petzold, "Programming Windows", Microsoft Press, 5th Edition, 2002.
2. Jeff Proise, "Programming Windows with MFC", Microsoft Press, Second Edition, 2003.

BOOK(S) FOR REFERENCE

1. Jim Conger, "Windows Programming Primer Plus", Galgotia Publications, New Delhi, 1996.
2. Shirly Wodtke, "Learn MFC C++ Classes", BPB Publications, New Delhi, 1997.
3. Peter Norton and Rob McGregor, "Peter Norton's Guide to Windows 95/NT programming with MFC", Prentice- Hall of India, New Delhi, 1997.

Sem. V
13PCA5202A

Hours/week : 4
Credit : 3

OPTIONAL: CLOUD COMPUTING

Objective:

To impart and expertise students in cloud computing and its applications

Unit - I

Introduction to Cloud Computing: Roots of Cloud Computing - Layers and Types of Cloud - Features of a cloud-Infrastructure Management-Cloud Services-Challenges and Risks. Migrating into a Cloud: Introduction - Broad Approaches - Seven Step Model. Integration as a Service-Integration Methodologies - SaaS. (12)

Unit - II

Infrastructure as a Service: Virtual Machines-Layered Architecture-Life Cycle-VM Provisioning Process- Provisioning and Migration Services. Management of Virtual Machines Infrastructure - Scheduling Techniques. Cluster as a service-RVWS Design-Logical Design. Cloud Storage - Data Security in cloud Storage-Technologies. (12)

Unit - III

Platform and Software as a Service: Integration of Public and Private Cloud- Techniques and tools-framework architecture- resource provisioning services - Hybrid Cloud. Cloud based solutions for business Applications-Dynamic ICT services-Importance of quality and Security in clouds-Dynamic Data center-case studies. Workflow Engine in the cloud - Architecture - Utilization. Scientific Applications for cloud - Issues - Classification - SAGA - Map Reduce Implementation. (12)

Unit - IV

Monitoring and Management: An Architecture for federated Cloud Computing - Usecase - Principles - Model - Security Considerations. SLA Management - Traditional Approaches to SLO - Types of SLA - Lifecycle of SLA - Automated Policy. Performance Prediction of HPC-Grid and Cloud - HPC Performance related issues. (12)

Unit - V

Applications: Best Practices in Architecting cloud applications in the AWS cloud - Massively multiplayer online Game hosting on cloud Resources - Building content delivery Networks using clouds-Resource cloud Mashups. (12)

BOOK(S) FOR STUDY:

1. Rajkumar Buyya, James Broberg, and Andrzej Goscinski, "CLOUD COMPUTING Principles and Paradigms", Wiley Publications, 2011

BOOK(S) FOR REFERENCE:

1. George Reese, "Cloud Application Architectures", Shroff/O'Reilly, ISBN: 8184047142, 2009.
2. Michael Miller, "Cloud Computing Web based Applications that change the way you work and collaborate online", Pearson Ed., 2009

Sem. V
13PCA5202B

Hours/week : 4
Credit :3

OPTIONAL: PRINCIPLES OF COMPILER DESIGN

OBJECTIVES

To introduce the various phases of a compiler and also to develop skills in designing a compiler.

UNIT I

Different phases of a compiler - finite state automation and lexical analysis - a simple approach to the design of lexical analyzers - regular expressions NFA-DFA-reduced DFA- implementation of lexical analyzer- a language for specifying lexical analyzers. **(12)**

UNIT II

Context free grammars - Parsers - derivation and parse trees - shift - reduce parsing - operator-precedence parsing - top-down parsing - predictive parsers. **(12)**

UNIT III

Intermediate code generation - translation -implementation of syntax -directed translators - intermediate code - postfix notation - parse trees and syntax trees - three-address codes, quadruples and triples - Translation of assignment statements. **(12)**

UNIT IV

Symbol tables - data structures for symbol tables - implementation of a simple stack allocation scheme - implementation of block structured languages -errors - lexical phase error. **(12)**

UNIT V

Code optimization and code generation: Elementary code optimization technique - loop optimization - DAG representation of basic blocks - value numbers and algebraic laws - object programs- problems in code generation - A Machine model - A simple code Generator. **(12)**

BOOK(S) FOR STUDY

1. Alfred V. Aho, Jeffery D.Ullman, "Principles of Compiler Design", Narosa Publishing House, New Delhi, 1985.

BOOK(S) FOR REFERENCE

1. William A.Barrett, Rodney M.Bates, David A.Gustafson and John D.Couch-"Compiler Construction Theory and Practice", Galgotia Publishing Co., 1990.
2. Jean-Paul Trembley and Paul G. Sorenson,- "The Theory and Practice of Compiler Writing", McGraw Hill, 1985.

Sem. V
13PCA5202C

Hours/week : 4
Credit : 3

OPTIONAL: COMPUTER GRAPHICS

Objective:

To offer concepts on basic graphical techniques, raster graphics, two-dimensional graphics and basic concepts of multimedia.

Unit I

Introduction – Point plotting techniques – Line drawing displays – Two-dimensional displays – Clipping and Windowing. (12)

Unit II

Graphics package – segmented display files – display file compilation – geometric models – Picture structure. (12)

Unit III

Graphical input units – graphical input techniques – event handling – input functions. (12)

Unit IV

Raster graphics fundamentals – solid area scan conversion – interactive raster graphics – Raster graphics systems – raster display hardware. (12)

Unit V

Realism in three-dimensional graphics – display processors – device independent graphics systems – user interface design. (12)

BOOK(S) FOR STUDY

1. William M. Newman, Robert F. Sproull, " Principles of Interactive Graphics Systems", McGraw Hill Book Company, 2nd edition, 1986.

BOOK(S) FOR REFERENCE

1. S. Harrington, " Computer Graphics", McGraw Hill , 1988.
2. Dennis Harris, " Computer Graphics and Applications", Chapman and Hall, London, 1984.

Sem. V
13PCA5202D

Hours/week : 4
Credit : 3

OPTIONAL: PRINCIPLES OF SOA AND BPM

Objective:

To impart and expertise students with the principles of web services through Service Oriented Architecture and Business Process Modeling

UNIT – I

Components – component benefits – requirements – COM – Interface – implementing a COM interface – interface theory – Behind the interface – ActiveX (12)

Unit II:

EJB: Components of EJB – Enterprise bean on server side – Session beans: statefull and stateless – Interfaces: Home and Remote- Entity Beans – persistence – Bean managed and container managed – JNDI – message driven beans – deployment – security issues (12)

UNIT-III

Web services –WSDL- SOAP –UDDI-Synchronous and Asynchronous- C# and Java samples (12)

UNIT-IV

SOA – Security – Authorization – Authentication –WS-* standards (12)

UNIT-V

BPM – Orchestration-Choreography-WSBPEL-BPMN (12)

BOOK(S) FOR STUDY :

1. Justin Couch and Daniel H. Steinberg, "J2EE Bible", Wiley India Pvt Ltd, New Delhi, 2002
2. Paul Tremblett, "Instant Enterprise Java Beans", Tata McGraw Hill Publishing Company, New Delhi, 2001
3. Chodavarapu, SOA Security, Wiley Dream Tech, 2008
4. Micheal Havey, Essential Business Process Modelling, OREILLY, 2005
5. Jennings, Cloud computing with the windows azure platform, John Wiley India, 2009

BOOKS FOR REFERENCE:

1. Elliotte Rusty Harold, "XML 1.1 bible", Wiley, 2004
2. Thomas Erl, "Service-oriented architecture: concepts, technology, and design", Prentice Hall Professional Technical Reference, 2005

Sem. V
13PCA5131

Hours/week : 4
Credit : 3

UML AND MIS

Objectives:

To specify, visualize, construct and document the artifacts of a software systems and to give an understanding of the importance of Information Systems, how it relates to managerial end-users and the vital role of Information Technology in business

Unit – I

UML: Introduction to UML – Basic Structural Modeling: Classes – Relationships–Common Mechanism – Diagrams – Class diagrams. (12)

Unit – II

Advanced Structural Modeling: Advance classes – Advance relationships – Interfaces - Types and Roles – Packages – Instances – Object diagrams. (12)

Unit – III

Basic Behavioral Modeling – Interactions – Use Cases –Use Case diagrams- Interaction Diagrams – Activity diagram (12)

Unit – IV

Introduction to Information Systems (IS) - study of IS – need Information Technology (IT) in business - Fundamentals of IS concepts - overview of IS - solving business problems with IS - developing IS solutions. (12)

Unit – V

Information Systems for Business operations - Business IS - Marketing, manufacturing, human resource, accounting and financial information systems - transaction processing system - management information and decision support systems. (12)

BOOK(S) FOR STUDY:

Units I, II and III

1. Grady Booch, James Rumbaugh and Ivar Jacobson, "The Unified Modeling Language User Guide", Addison – Wesley Longman Pvt.Ltd., Singapore, 2001.

Units IV and V

2. James A O'Brien, "Management Information Systems for managing IT in the Internetworked Enterprise", 4th edition, Tata McGraw Hill Publishing Company Limited, New Delhi, 1999.

BOOK FOR REFERENCE

1. Grady Booch, James Rumbaugh and Ivar Jacobson, "The Unified Modeling Language Reference Manual", Addison Wesley Longman Pvt. Ltd, Singapore, 2000
2. W.S. Jaswadekar, " Management Information Systems", Tata McGraw Hill Publishing Co. Ltd., New Delhi, 1998.

Sem. V
13PCA5132

Hours/week : 4
Credit : 3

OPERATIONS RESEARCH

Objectives

To give detailed knowledge about Linear programming. Also to give the basics of Inventory models, Queueing Theory and project scheduling.

Unit – I

Linear Programming : Formulations and Graphical solution to L.P. Problem - Simplex method - Degeneracy, unbounded and infeasible solution -Method of penalty - Two Phase Method. (12)

Unit – II

Linear Programming(contd);Duality-Primal and Dual Computations -Dual Simplex Method - Transportation problem and its solution - Assignment problem and its solution by Hungarian method (12)

Unit – III

Project scheduling by PERT - CPM : Phases of project scheduling -Arrow Diagram - Critical Path Method - Probability and Cost Considerations in Project Scheduling - Crashing Of Networks. (12)

Unit – IV

Queueing Theory : Queueing System - Characteristics of Queueing system - classification of queues - Poisson Queues - M/M/1 and M/M/C Queueing Models. (12)

Unit – V

Inventory Management : Inventory Control - ABC analysis - Economic Lot size Problems - EOQ with uniform Demand and shortages - Limitations of inventories - Buffer stock - Determination of Buffer stocks (12)

Note: Stress to be on solving Numerical Problems only

BOOK(S) FOR STUDY:

1. Kanti Swarup, P K Guptha and Man Mohan, "Operations Research" , Sultan Chand & Sons , New Delhi ,1994.

BOOKS FOR REFERENCE

1. Hamdy A. Taha, "Operations Research-An Introduction", Macmillan Publishing Co, 5th Edition., 1987.
2. P.K.Gupta, Man Mohan, "Operations Research and Quantitative Analysis", Sultan Chand & Sons,New Delhi First Edition, 1987.

Sem. V
13PCA5134

Hours/week : 3
Credit : 3

SOFTWARE LAB – IX (DISTRIBUTED PROGRAMMING)

1. RMI
2. Servlets(Returning Information)
3. Servlets and JDBC
4. JSP
5. JSP and java Class
6. EJB: Session Bean
7. EJB: Entity Bean
8. ASP.NET: Server & Client side controls
9. ASP.NET and ADO.NET
10. DOM usage on the server side
11. AJAX:Client request & Server response

Sem. V
13PCA5135

Hours/week : 3
Credit : 3

SOFTWARE LAB – X (VC++)

1. Creating a Overlapped Window using Windows API.
2. Display Text, Draw Lines, Ellipse, Circles on capturing the mouse messages using Windows API.
3. Maximize, Minimize the Window, Change the cursor shapes using Menus, find and change the status of the menu items using Windows API.
4. Create a Overlapped window by deriving the classes from the MFC base classes without using the tools. Register your own window; create your own cursors and icons.
5. Display Text and bitmaps, Draw lines, ellipse, circles for different mouse messages by mapping the messages - do not use the class-wizard.
6. Creation of user dialogs and usage of standard dialogs.
7. Create a student file and display the student information using SDI and Serialization.
8. Database operations using DAO/ODBC.
9. Programming in OLE and ActiveX.
10. A Simple COM Program.

Sem. V
13PCA5136

Hours/week : 3
Credit : 3

COMPREHENSIVE STUDY

Objective:

To consolidate the understanding of the basics through frequent tests and interaction. Emphasis is on the concepts and fundamentals and the orientation is towards placement.

- Unit I: C Debugging – Object Oriented Programming (9)
- Unit II: Operating Systems (9)
- Unit III: Data Structures – Algorithms (9)
- Unit IV: Database Concepts - Software Engineering (9)
- Unit V: Web Technologies – Networking – Android programming (9)

BOOK (S) for reference:

1. Robert Lafore, "Object Oriented programming in Microsoft C++", Galgotia Publications, New Delhi, 2000
2. Andrew S. Tanenbaum, " Modern Operating Systems", Prentice Hall of India Private Ltd, New Delhi, 1997
3. Ellis Horowitz and Sartaj Sahni, "Fundamentals of computer algorithms", Galgotia Publications, New Delhi, 1985.
4. Roger S Pressman, "Software Engineering", McGraw Hill, International 6th Edn, New York
5. Andrew S Tanenbaum, "Computer Networks", Prentice Hall of India, New Delhi, 1999.
6. Mark L. Murphy, "The Busy Coder's Guide to Android Development" CommonsWare Pub., 2011, ISBN: 978-0-9816780-0-9 (available at: <http://commonsware.com/Android/index.html>)

Sem. VI
13PCA6137

Hours/week : 30
Credit : 20

MAJOR PROJECT

Sem-III
13PCA3401

Hours/week : 4
Credit : 4

IDC-FOUNDATIONS OF COMPUTER SCIENCE

OBJECTIVE

To give sound basics of organization of digital computer, system software, networking, algorithm development and system analysis and design.

UNIT I

Organization of computers: CPU – Types of Computers – memory – Input and output devices: Input devices – output devices – storage devices: Magnetic disk – Magnetic tape – optical technology – CD ROM technology. (12)

UNIT II

Systems Software – Prewritten Software: application packages – system software packages – computer processing techniques – Functions of OS : compiler – assembler and Interpreter – Loader and Linker – Introduction to MSDOS, Unix and Windows. (12)

UNIT III

Network: Data communication: Forms of Communication – Types of Channels – Methods of transmission – protocol and Buffers – Network topology – LAN, MAN, WAN – Basic elements of Networking – Network connecting devices – Internet. (12)

UNIT IV

Flow charts: conventions – Advantages and Limitations – Types of Logic – Illustrations – examples – Algorithms – Examples. (12)

UNIT V

SDLC – Analysis – Design – Development – Implementation – Review and Maintenance. (12)

BOOK(S) FOR STDUY

1. S Jaiswal, "IT Today", Galgotia publication private Limited, New Delhi, 2004.

BOOK(S) FOR REFERENCE

1. Suresh K Basendra, "Computers Today", Galgotia publication private Limited, New Delhi, 2003.

SEM: III
13PCA3402

Hours/week: 4
Credits: 4

IDC: INTERNET CONCEPTS

OBJECTIVES

To enable the students to have a basic knowledge about the Internet and its principles.

UNIT I

Networking Concepts: what is INTERNET? - History - applications - users - protocols - host machines and host names - internet architecture and packet switching - who is in charge? - Client server model - Band width and asynchronous communication. Connection : dial-up access - direct and dedicated connections - shell or TCT/ IP accounts - domains and addresses - domain name system - IP addresses. (12)

UNIT II

Facilities: E-Mail - WWW - FTP - TELNET - HTTP - USENET - Search Engines. (12)

UNIT III

HTML: Tags - Document Layout - comments - headings - paragraphs - breaks - texts - lists - special characters - links - images - form - tables - frames. (12)

UNIT IV

VB Script: Language structure - control structure - procedures and functions - Error handling. (12)

UNIT V

VB Script: Input & Output - Data Validation - Integration with Forms - ActiveX Control & Scripting. (12)

BOOK(S) FOR STUDY

1. Wendy G. Lehnert, "Internet 101 - a beginners guide to the internet and the world wide web", Addison Wesley, 1999.
2. CIS terms school of computing - Jaipur, "INTERNET - An Introduction", Tata McGraw Hill publishing company limited, New Delhi - 1999.
3. Christopher J. Goddard, Mark White, "Mastering VBScript", Galgotia publications, New Delhi, 1998.

BOOK(S) FOR REFERENCE

1. Chuck Musciano & Bill Kennedy, "HTML - The Definitive Guide", Shroff Publishers & Distributors Pvt. Ltd., Calcutta - 1999.