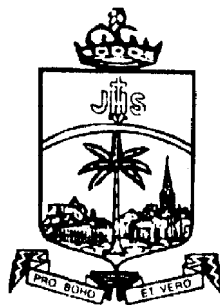


MASTER OF COMPUTER APPLICATIONS (MCA)
SYLLABUS: 2010-2012

CHOICE BASED CREDIT SYSTEM
(CBCS)



St. JOSEPH'S COLLEGE (Autonomous)

Re-accredited with A+ Grade by NAAC

College with Potential for Excellence by UGC

TIRUCHIRAPPALLI - 620002, INDIA

FEATURES OF CHOICE BASED CREDIT SYSTEM PG COURSES

The Autonomous (1978) St. Joseph's College, Reaccredited with A+ Grade from NAAC (2006), 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 (TANSCHE) 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	Additional
I – IV	3 – Core Electives	3	4	3 x 4	12
	2 – Inter Dept. Courses (IDC)	2	4	2 x 4	08
I – IV	SHEPHERD – Extension Activity	~	70	5	Additional

Total Minimum Credits	90
Total Additional Credits (Compulsory)	10
Other Additional Credits (Dept. Specific)

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

For PG courses a student must earn a minimum of 90 credits and 10 compulsory credits as mentioned in the above table. 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 Department 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 Discussion, Viva, Field Visit, 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 Department 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 IDC s must be taken by students which are offered in Semester II & III.

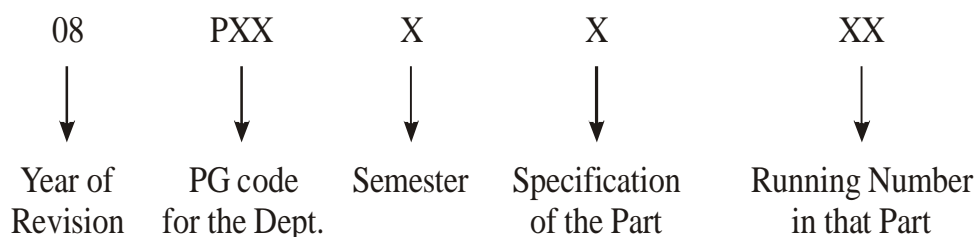
Day College (Shift-I) student may also take an IDC from SFS (Shift-II) course and vice versa

This provision enables students to earn extra credits. For the Shift - I students it is offered in their last hour and for the Shift-II

(Course) students in their first hour. 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 (compulsory)

06 – Shepherd (compulsory)

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 1 hour and 30 minutes duration. The remaining 40% would comprise of any four 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.
- ✓ 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.

Question Pattern

Pattern	Mid & End Semester Test	Semester Exam
Part A : Objective	10 x 0.5 = 05	20 x 1 = 20
Part B : Either/or type	3 x 3 = 09	5 x 7 = 35
Part C : Comprehensive	(2/3)2 x 8 = 16	(3/5)3 x 15 = 45
	Total = <u>30</u>	Total = <u>100</u>

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:

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

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

The performance in Compulsory credits in Project and Project related items and in Shepherd programme is indicated by a pass and is not taken into account for computing OPM.

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 90 credits. The student has acquired 10 more compulsory credits from Project and Shepherd courses. The student has also acquired _____ (if any) extra credits from courses offered by the parent department.

COURSE DETAIL

Sem	Course Code	Course Title	Hrs/ Week	Credits
I	10PCA1101	Programming in C and UNIX	4	3
	10PCA1102	Mathematical Foundations	4	3
	10PCA1103	Organizational Behavior	4	3
	10PCA1104	Web User Interface Design	4	3
	10PCA1105	Digital Computer Fundamentals	4	3
	10PCA1106	Software Lab -I(C and LINUX)	3	3
	10PCA1107	Software Lab – II (Web User Interface Design)	3	3
		Skill Based Course-I: Communication Skills*	2	-
		ICT (Addl. Credits) @	2	
TOTAL FOR SEMESTER I			30	21
II	10PCA2108	Object Oriented Concepts and C++	4	3
	10PCA2109	Operations Research	4	3
	10PCA2110	Operating Systems	4	3
	10PCA2111	Data Structures and Algorithms	4	3
	10PCA2112	Software Lab – III (C++)	3	3
	10PCA2113	Software Lab – IV (Multimedia)	3	3
	10PCA2114	Skill Based Course-I: Communication Skills*	2	3
	#10PCA2401/ 10PCA2402	IDC – I	4	4
	10PCA2115	ICT (Addl. Credits) @	2	1
TOTAL FOR SEMESTER II			30	26
III	10PCA3116	Programming in JAVA	4	3
	10PCA3117	Probability and Statistics	4	3
	10PCA3118	Data Base Systems	4	3
	10PCA3119	Software Engineering	4	3
	10PCA3120	Software Lab – V(JAVA)	3	3
	10PCA3121	Software Lab – VI(RDBMS)	3	3
		Skill Based Course-II: Quantitative Aptitude*	2	-
	#10PCA3403/ 10PCA3404	IDC –II	4	4
		Domain Study **	2	-
TOTAL FOR SEMESTER III			30	22

IV	10PCA4122	Programming with Win32 API and MFC	4	3
	10PCA4123	Accounting and Financial Management	4	3
	10PCA4124	Graph and Automata Theory	4	3
	10PCA4125	Computer Networks and Security	4	3
	10PCA4201A 10PCA4201B 10PCA4201C 10PCA4201D 10PCA4201E	Optional: a)Linux Administration b)Systems Programming c)Software Testing d)Component Programming e) Database Administration	4	4
	10PCA4126	Software Lab – VII(VC++)	3	3
	10PCA4127	Software Lab – VIII(PHP & MYSQL)	3	3
	10PCA4128	Mini Project	-	3
	10PCA4129	Skill Based Course-II: Quantitative Aptitude *	2	3
	10PCA4130	Domain Study **	2	3
	TOTAL FOR SEMESTER IV			30
V	10PCA5131	Distributed Technologies	4	3
	10PCA5132	Computer Organization and Architecture	4	3
	10PCA5202A 10PCA5202B 10PCA5202C 10PCA5202D	Optional: a) Principles of Programming Languages b) Principles of Compiler Design c) Computer Graphics d) Principles of SOA and BPM	4	4
	10PCA5133	Management Information Systems and ERP	4	3
	10PCA5134	Unified Modeling Techniques	4	3
	10PCA5135	Software Lab – IX(Distributed Programming)	3	3
	10PCA5136	Software Lab – X (XML & WML)	3	3
	10PCA5137	Comprehensive Study *** (Addl. Credits)	3	3
		Library	1	
	TOTAL FOR SEMESTER V			30
VI	10PCA6501	Major Project	30	20
TOTAL FOR SEMESTER VI			30	20
I-III		Extension Service - SHEPHERD		5
TOTAL FOR ALL SEMESTERS			180	150

@ Work to be assigned and evaluated by the Staff members. Internal marks to be given at the end of the year.

Code numbers according to the subjects chosen.

* Examination Fully Internal at the end of the year.

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

*** Paper fully internal

Sem.I
10PCA1101

Hours/week :4
Credit : 3

PROGRAMMING IN C AND UNIX

Objectives:

To develop programming skills using C language, to learn to use the specialities 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 - Built-in-functions. (12)

Unit – III

Function - Scope of Variables - Advanced features of functions - Low level I/O (UNIX file related system Calls). (12)

Unit – IV

Pointer - Pointer to Array - Pointer Array - Pointer Arithmetic - Pointer of Pointer - Functions and Pointers -Structures and Pointers - Dynamic Allocation - Function pointer. (12)

Unit – V

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

TEXT BOOKS

1. Rebecca Thomas, Jean Yates, "A User Guide to the UNIX System", Osborne McGraw-Hill, USA, Second Edition, 1985.

2. Brian W. Kernighan, Dennis M. Ritchie, "The C Programming Language", Prentice Hall of India Pvt. Ltd., New Delhi, 1989.

BOOK FOR REFERENCE

1. Byron S. Gottfried, "Programming with C", Schaum's Outline Series, Tata McGraw Hill Edition, New Delhi, 1991.

Sem. I
10PCA1102

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 Notations - Connectives - 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 and Partition methods - Jacobi , Gauss-Seidal iterative methods. Eigen values by power method. (12)

Unit – V

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

Note: Stress is 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,1987.

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, 1987.

BOOKS FOR REFERENCE

1. Bernard Kolman & Robert C.Busyby, "Discrete Mathematical Structures for Computer Science", Prentice Hall of India, New Delhi 1987.
2. Curtis F. Gerald, "Applied Numerical Analysis", Addison Wesley Publishing Company, London, 1978.

Sem. I
10PCA1103

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)

TEXT BOOK

1. Organisational Behavior, Prasad L.M, Sultan Chand and Sons, New Delhi, 2007

BOOKS FOR REFERENCE

1. Organisational Behavior, SS Khanka , S. Chand and company, New Delhi, 2002
2. Organisational Behavior, K. Aswathappa, 5th edition, Tata McGraw Hill, New Delhi.

Sem. I
10PCA1104

Hours/week : 4
Credit : 3

WEB USER INTERFACE DESIGN

Objective: To know the UI Design principles, the features of HTML and Scripting Language VB Script 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: structure - Tags - Document Layout - comments - headings - paragraphs - breaks - text formatting - lists (12)

Unit III:

HTML: 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)

TEXT BOOKS

1. Thomas A Powell, "Web Design – The Complete Reference", Tata McGraw-Hill, Second Edition, 2003.
2. Christopher J.Goddard, Mark White, "Mastering VB Script", Galgotia publications, New Delhi.

3. Thomas A Powell, "The Complete Reference - HTML", Osborne-McGraw-Hill, Third Edition, 2000.

BOOK FOR REFERENCE

Gary B. Shelly, H. Albert Napier, Ollie N. Rivers, "Web Design: Introductory Concepts and Techniques", Cengage Learning, 2008

Sem.I
10PCA1105

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)

TEXT BOOKS

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
10PCA1106

Hours/week: 3
Credit: 3

**SOFTWARE LAB – I
(C AND LINUX)**

1. Usage of Unix Commands
2. Simple Problems - Arithmetic, Logical and Ternary Operators
3. Problems in decision making- IF-Else, Switch case
4. Problems in Loop structures-While, For, Do-While Series and Sequence Manipulation
5. Problems in Single dimension array Sorting, Searching
6. Two and Multi dimensional array – Matrix manipulation- Using Functions
7. Recursion – Factorial, GCD, Adding two numbers
8. Problems in structures
9. Problems in File Handling
 - Texts file processing
 - Sequential File processing
 - Random Access
10. String Manipulation Using pointers
11. Pointers and Structures - Simple Problems

Sem. I
10PCA1107

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

VB Script

4. Script writing basics
5. Using Name, object and methods
6. Adding interactivity to a web page
7. Creating Dynamic web pages
8. Scripting Forms
9. Designing a calculator.

Sem. II
10PCA2108

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. (12)

Unit – II

Functions in C++ : Function prototyping - call by reference - return by reference - inline functions - default, const arguments - function - overloading - friend and virtual functions - 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 - 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 - multiple inheritance - hybrid

inheritance - virtual base classes - abstract classes - constructors in derived classes - member classes - nesting of classes. (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)

TEXT BOOK

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

BOOKS 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
10PCA2109

Hours/week : 4
Credit: 3

OPERATIONS RESEARCH

Objectives

To give detailed knowledge about Linear programming, Queueing theory; also to give the basics of Inventory models, sequencing 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

A) Theory of games: Two person zero sum game- Saddlepoint-mixed statistics-graphical solution-dominance property-reducing the game problem to an LPP

B) Sequencing: Assumption-optimal sequence algorithm-problem with n jobs-2machines, n jobs – 3 machines and n jobs m machines-graphical solution (12)

Unit – IV

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 – V

a) Queuing Theory: Queuing System - Characteristics of Queuing system - classification of queues - Poisson Queues - M/M/1 and M/M/C Queuing Models.

- b) 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

TEXT BOOKS

Units I & II

1. Hamdy A. Taha, "Operations Research-An Introduction", Macmillan Publishing Co, 5th Edition, 1987. (relevant portions only)

Units III, IV & V

2. Kanti Swarup, P K Guptha and Man Mohan, "Operations Research" , Sultan Chand & Sons , New Delhi ,1994. (relevant portions only)

BOOKS FOR REFERENCE

1. W.W. Garvin, "Introduction to Linear Programming", McGraw Hill, New Delhi, 1960.
2. P.K.Gupta, Man Mohan, "Operations Research and Quantitative Analysis", Sultan Chand & Sons, New Delhi First Edition, 1987.

Sem. II
10PCA2110

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)

TEXT BOOK

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

BOOKS 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
10PCA2111

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) R e c u r s i v e

algorithms - Hilbert's curve, Sierpinski curve, backtracking algorithms – the Eight queens problem, Knight's tour problem.
(12)

TEXT BOOKS

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,

BOOKS 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
10PCA2112

Hours/week : 3
Credit : 3

SOFTWARE LAB – II (C++)

Classes and Objects

1. Simple Problems Using classes
2. Constructors and Destructors
3. Static Polymorphism: Operator overloading & function overloading
4. All types of Inheritance.
5. Problems Using Overriding
6. Dynamic Polymorphism: Virtual functions.
7. Problems with pure virtual functions and abstract classes
8. Formatted I/O and File operation with Command Line Arguments
9. Templates [Dynamic programming]
10. Exception Handling
11. Problem solving using Graphics function

Data Structure Concepts Using Objects

12. Singly Linked list.
13. Binary Tree Creation and Traversals

Sem. II
10PCA2113

Hours/week: 3
Credit: 3

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
10PCA2114

Hours/week: 2
Credit: 3

SKILL BASED COURSE: COMMUNICATION SKILLS

Objectives:

To empower the students with sufficient ability, usage of vocabulary and styles of usage of English language.

Unit I

Listening Comprehension

- Ø Global as well as local comprehension based on the listening to audio cassettes; A communicative interaction is to be set up in the class room.
- Ø Testing accuracy of comprehension by asking 'yes' or 'no' questions.
- Ø Meaning of words the students find difficult, is to be given.
- Ø Pronunciation and intonation of words and sentences

Materials used:

- 1) Sweet and Salty – A Folk Tale, 2) The Magic Vessels – A Folk Tale, 3) The Crows and the Serpent – A Karadi Tale, 4) The Monkey and the Crocodile – A Karadi Tale, 5) Keep up your English – Cassette 1, 6) Keep up your English – Cassette 2, 7) Keep up your English – Cassette 3, 8) Tiger's Eye – Cassette 1, 9) Tiger's Eye – Cassette 2, 10) Tiger's Eye – Cassette 3.

Unit II

Video Viewing:

- Ø Introducing students to foreign accent
 - Ø Interaction based on certain important aspects of the clipping used
 - Ø Discussion of the theme and moral aspects in an interactive way
- Materials used:

- 1) The King and I, 2) Beethoven's 2nd, 3) Titanic, 4) The Sound of Music, 5) Mrs. Doubtfire

Unit III

Grammar and Reading Comprehension:

Text book used: "Strengthen Your English" (Second Edition) by Bhaskaran and Horsburgh

- Ø Rules on usage are to be explained clearly
- Ø Examples apart from the ones in the text are to be given
- Ø Students are made to answer the exercises following the rules on usage
- Ø The Comprehension questions following the reading passage are to be answered
- Ø To improve the usage of rules pertaining to the topic, a guided composition exercise is to be done

Unit IV

Speech Practice and Presentation Skills:

Speech Preparation: Writing out the speech / Presentation materials with coherence and cohesion.

- Delivery and speech presentation
- Instilling confidence and getting rid of stage fear by asking students speak in front of the class
- Adhering to the policy of "Fluency first and accuracy gradually".
- Building up learner confidence through encouragement and appreciation.

Unit V

Interview Skills:

- (a) Preparation
- Introducing yourself
 - Traits employers look for in applicants

- Self Inventory (Experience-Skills-Qualities)
- Your USP
- CV and Letter of Application

- (b) Presentation
- First Impression
 - Role of Body Language
 - Answering questions
 - Certain Do's and Don'ts

- (c) Post Presentation- Mock Interviews and Assessment
- Guest Lectures by HR personnel.

Unit 6

Group Dynamics / Discussion:

- Ø Interaction and communication in Group Discussion
- Ø Organisation principles in Group Discussion
- Ø Do's and don'ts of Group Discussion
- Ø Practical Sessions in Group Discussion

BOOKS FOR REFERENCE

1. Larry L. Barker, Communication (3rd Edition) – Prentice Hall – London -1984
2. Mohan, Krishna and Meera Banerji – Developing Communication Skills, Delhi- Macmillan – 1990
3. Stanton, Nicky, Mastering Communication, Hampshire: Palgrave, 1982
4. H. M. Prasad, Group Discussion and Interview – Tata McGraw Hill Publishing Company Limited, New Delhi, 2001

5. Edgar Thorpe and Showick Thorpe – Winning at Interviews – Pearson Education – Delhi, 2004
6. Hemant Goswami – How to be successful in Interviews and get a job – Chandika Press Ltd, Chandigarh, 2001.

Sem. III
10PCA3116

Hours/week: 4
Credit: 3

PROGRAMMING IN JAVA

Objectives

To understand the power of Java language in Internet programming.

Unit - I:

An Overview of Java – Java language Fundamentals – classes and objects – constructors – Garbage collection– The Finalize method – method overloading – Recursion – this, static and final usage – Nested and inner class – Arrays – Inheritance – Method overriding – Abstract methods and abstract classes – final methods and final classes (12)

Unit- II

Packages – Interfaces –Exception Handling – String Handling – Object class – Exploring Java.lang package. (12)

Unit -III

Util Packages – Multi threading –Thread priorities – Inter thread communications – Synchronization – Deadlocks. (12)

Unit -IV

I/O Streams – Byte stream class – Character stream class – Serialization – JDBC – Data manipulation. (12)

Unit V

AWT: AWT Controls, layout managers – Event handling – Applet: Applet architecture – HTML applet Tag –passing parameters to applet -java beans. (12)

TEXT BOOKS

1. Herbert Schildt, Java 2 Complete Reference, Tata McGraw Hill, Fourth Edition, 2001.

2. Ivan Bayross, Java 2.0 (Web enabled Commercial Application Development -BPB publications, New Delhi, 2000, (Chapters 11,13,14 & 16 only)

BOOKS FOR REFERENCE:

1. Peter Norton & William Stack, "Guide to Java Programming", First Edition 1997, Techmedia publications, New Delhi.
2. Lay S.HorstMann, Gray Cornell, "Core Java 1 & 2 – Fundamentals " 2nd Edition 2000.
3. Scott daks & Henry "Java Threads", 2nd Edition, Shroff Publishers & Distributors PVT Ltd

Sem. III
10PCA3117

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.

TEXT BOOKS

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.

BOOKS 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
10PCA3118

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

Transaction Processing and Concurrency Control: Transaction Concepts – Concurrency Control – Locking Methods, Timestamp Methods and Optimistic Methods for Concurrency Control – Database Recovery System – Recovery Concepts – Types – Recovery Techniques – Buffer Management – Database Security – Goals of Database Security – Firewalls – Data Encryption. (12)

Unit – V

Parallel Database Systems: Introduction to Parallel databases – Architecture – Key Elements of Parallel Database Processing – Query Parallelism – Distribution Database Systems – Distributed Databases – Distributed Query Processing – Concurrency Control in Distributed Databases – Recovery Control in Distributed Databases.

TEXT BOOK

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

BOOKS 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
10PCA3119

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)

TEXT BOOK

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

BOOK FOR REFERENCE

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

Sem. III
10PCA3120

Hours/week : 4
Credit : 3

SOFTWARE LAB – V (JAVA)

1. Classes And Objects
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 Bean

Sem. III
10PCA3121

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
10PCA4122

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.

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.

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.

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.

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.

TEXT BOOKS

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

BOOKS 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. IV
10PCA4123

Hours/week: 4
Credit: 3

ACCOUNTING AND FINANCIAL MANAGEMENT

Objective: To present the whole range of Bookkeeping and Accountancy and to give comprehensive coverage of 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) (12)

Tally: general frame work-accounting applications.

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)

BOOKS FOR STUDY

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

BOOKS 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
10PCA4124

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)

TEXT BOOKS

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.

BOOKS 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
10PCA4125

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 BOOKS

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
10PCA4201A

Hours/week : 4
Credit :4

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)

TEXT BOOK

1. Christopher Negus "Red Hat Linux 9 Bible", WILEY-Dreamtech India Pvt.Ltd, New Delhi, First Edition, 2003

BOOK FOR REFERENCE

1. Thomas Schenk, "Red Hat Linux System Administration", Techmedia, New Delhi, 2003.

Sem. IV
10PCA4201B

Hours/week: 4
Credit: 4

SYSTEMS PROGRAMMING

Objective:

To give an in-depth knowledge about systems concepts like DOS interrupts, BIOS, and UNIX internals and UNIX Networking

Unit I

BIOS and DOS services – DOS interrupts – DOS function requests
– BIOS interrupts (12)

Unit II

Programs, processes and Threads –Process in UNIX - UNIX I/O
(12)

Unit III

Files and Directories – UNIX special files - Signals – Times and Times
(12)

Unit IV

POSIX threads – thread Synchronization -Inter process communication
(12)

Unit V

Connection Oriented Communication – Connectionless Communication and Multicast
(12)

TEXT BOOKS

1. Steven Armbrust and Ted Forgeron "Programmer's Reference Manual for IBM personal computers", Galgotia Publishers Pvt Ltd, New Delhi.
2. Kay A. Robbins, Steven Robbins, "Unix Systems Programming", First Indian Reprint 2004, Pearson Education Pvt.Ltd, Delhi

BOOKS FOR REFERENCE

1. Sanjay K Bose, "Hardware and Software of Personal Computers", Wiley Eastern Ltd, New Delhi.
2. Uresh Vahalia "UNIX Internals", First Indian Reprint 2004, Addison Wesley Longman Pte. Ltd, New Delhi.

Sem. IV
10PCA4201C

Hours/week : 4
Credit : 4

SOFTWARE TESTING

Objective:

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)

TEXT BOOKS:

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

BOOK FOR REFERENCE

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

Sem. IV
10PCA4201D

Hours/week : 4
Credit : 4

COMPONENT PROGRAMMING

Objective:

To understand the concept of components, component programming and the implementation of components in different platforms.

Unit I:

Components – component benefits – requirements – COM – Interface – implementing a COM interface – interface theory – Behind the interface - ActiveX

Unit II:

EJB: Components of EJB – Enterprise bean on server side – Session beans: statefull and stateless – Interfaces: Home and Remote

Unit III:

Entity Beans – persistence – Bean managed and container managed – JNDI – message driven beans – deployment – security issues

Unit IV:

Web Services: SOAP – Service creation - Service Description – Service Discovery – Advanced web services

Unit V:

Component based Programming in DOTNET: creating a simple component – component class – usage – database components – using COM components.

TEXT BOOKS:

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. Date Rogerson, "Inside COM", Microsoft Press.
4. Matthew MacDonald, "The Complete Reference – ASP.NET", Tata McGraw Hill, New Delhi, 2002

BOOKS FOR REFERENCE

1. Budi Kurniawan, "Java for the Web with Servlets, JSP, and EJB", Sams Publishing, 2002
2. Eric Newcomer, "Understanding Web services: XML, WSDL, SOAP, and UDDI", Addison-Wesley, 2002
3. James McGovern, "Java Web services architecture", Morgan Kaufmann, 2003

Sem. IV
10PCA4201E

Hours/week : 4
Credit : 4

DATABASE ADMINISTRATION

Objective: To give the principles and practices of Database Administration

Unit I Database Architecture

Database Architecture – An overview of Databases and Instances – Internal Data structure – Internal memory structure – External and Process structures (12)

Unit II Database Design

Database implementation - Stand-Alone hosts – Networked hosts – Logical database layouts – Physical database layouts (12)

Unit III Database management

Managing the development process – Monitoring multiple Databases – Managing Rollback segments (12)

Unit IV Database Security and Recovery

Database Tuning – Database security and Auditing – Optimal Backup and Recovery procedures (12)

Unit V Advanced DBA

Managing Distributed Databases – DBA commands – Guidelines for Client-Server Environments (12)

Prerequisites

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

TEXT BOOK

Kevin Loney, "Oracle DBA Handbook", Oracle Press & Tata McGraw
Hill Edition, 1997

BOOK FOR REFERENCE

Freeman, Robert, "Portable DBA: Oracle", Tata McGraw Hill, 2005

Sem. IV
10PCA4126

Hours/week : 3
Credit : 3

SOFTWARE LAB – VII (VC++)

1. Creating a Overlapped Window using Windows API
2. Display Text, Draw Lines, Elipse, 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, elipse, circles for different mouse messages by mapping the messages - do not use the class-wizard
6. Design a Student information dialog box having all the controls Create student file and display the student information using SDI and serialization
7. Database operations using DAO/ODBC
8. Programming in OLE and ActiveX
9. A Simple COM Program

Sem. IV
10PCA4127

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 ADVANCED 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
10PCA4129

Hours/week: 2
Credit: 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 1:

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

Unit II:

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

Unit III:

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

Unit IV:

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

Unit V:

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

BOOK FOR STDUY:

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

BOOK FOR REFERENCE:

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

Sem. V
10PCA5131

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 .NET.

Unit I: Client server architecture: 2-tier model – 3-tier model – n-tier model – J2EE architecture – .NET 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)

TEXT BOOKS:

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.

BOOKS 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
10PCA5132

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)

TEXT BOOKS

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 FOR REFERENCE

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

Sem. V
10PCA5202A

Hours/week : 4
Credit : 4

OPTIONAL: PRINCIPLES OF PROGRAMMING LANGUAGES

Objective: To present the underlying principles in design and implementation of various programming languages.

Unit I : The study of programming languages: Need for the study-history-characteristics of good language- Effects of environments on languages.

Language design issues: Structure and operation of computer-virtual computer and binding times-language paradigms.

Language translation issues: programming languages syntax-stages in translation-formal translation models. (12)

Unit II: Data types: Properties of types and objects-Elementary data types-structured data types. (12)

Unit III: Encapsulation: Abstract data types- encapsulation by subprograms-Type definitions-storage management.

Sequence control: Implicit and explicit control-Sequencing with arithmetic and non arithmetic expressions-sequencing control between statements. (12)

Unit IV: Subprogram control: Subprogram sequence control-attributes of data control-shared data in subprograms.

Inheritance: More on abstract data types-derived classes-methods-abstract classes- objects and messages-abstraction concepts-polymorphism. (12)

Unit V: Advances languages designs: variations on subprogram control-Parallel programming –formal properties of languages-language semantics-hardware developments-software architecture-programming language trends. (12)

TEXT BOOK

Terrance W. Pratt, Marvin V.Zelkowitz, "Programming languages design and implementation", Prentice Hall of India pvt.ltd, New Delhi, 3rd edition, 1996.

BOOKS FOR REFERENCE

1. R.D. Tennent, 'Principles of programming Languages", Meera Publications, New Delhi, 1983.
2. Ellis Horowitz, "Fundamentals of Programming Languages", Meera publications, New Delhi, 1999.

Sem. V
10PCA5202B

Hours/week: 4
Credit: 4

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)

TEXT BOOK

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

BOOKS 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
10PCA5202C

Hours/week: 4
Credit: 4

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)

TEXT BOOK

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

BOOKS FOR REFERENCE

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

Sem. V
10PCA5202D

Hours/week : 4
Credit : 4

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

XML – XML structure –XSL – CSS - XML Schema - DTD – XPATH – XML Parsing – DOM and SAX (12)

UNIT – II

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

UNIT-III

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

UNIT-IV

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

UNIT-V

Cloud computing-Scalability – Reliability-Storage scalability-computing scalability – Case Study: Amazon, Windows Azure and SednaSpace (12)

TEXT BOOKS:

1. Mike Jasnowski, Java, XML and web services, IDG Books India Ltd, 2002
2. Chodavarapu, SOA Security, Wiley Dream Tech, 2008
3. Micheal Havey, Essential Business Process Modelling, OREILLY, 2005
4. 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
10PCA5133

Hours/week: 4
Credit: 3

MANAGEMENT INFORMATION SYSTEMS & ERP

Objectives

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 and to impart the knowledge on evolution implementation and advantages of an ERP System.

Unit – I

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

Unit – II

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)

Unit – III

Managing Information Technology - managing information resource and technologies - Global IT management - planning and implementing business change with IT. (12)

Unit – IV

Enterprise Resource Planning (ERP): an overview - benefits of ERP - ERP and related technologies - Business process reengineering - data warehousing - datamining - online analytical processing - supply chain management. (12)

Unit – V

ERP implementation: ERP implementation life cycle - implementation methodology - hidden cost - organizing the implementation - vendors, consultants and users contracts with vendors, consultants and employees project management and monitoring - ERP present and future - turbo charge the ERP systems - Enterprise Integration Applications - ERP and E-commerce - ERP and Internet. (12)

TEXT BOOKS**Unit I, II, III**

1. 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.

Unit IV, V

2. Alexis Leon, "ERP Demystified", Tata McGraw Hill Publishing Company Limited, New Delhi, 2000.

BOOK FOR REFERENCE

1. W.S. Jaswadekar, " Management Information Systems", Tata McGraw Hill Publishing Co. Ltd., New Delhi, 1998.

Sem. V
10PCA5134

Hours/week : 4
Credit :3

UNIFIED MODELING TECHNIQUES

Objectives

To specify, visualize, construct and document the artifacts of a software systems

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

Advanced Behavioral Modeling: Events and Signal – State machines – Process and Threads – Time and Space – State chart diagrams. Architectural Modeling – Components –Deployment –Collaborations- Patterns and frame works – Deployment diagrams – Systems and Models -Rational Unified Process.
(12)

UNIT V

The Unified Process – The four P's (People, Project, Product and Process in Software development) –Use Case driven process -An Architecture -Centric Process – An Iterative and Incremental Process. (12)

TEXT BOOKS

Units I, II, III, IV

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

Unit V

2. Grady Booch, James Rumbaugh and Ivar Jacobson, "The Unified Software Development Process", Addison – Wesley Longman Pvt.Ltd, Singapore, 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

Sem. V
10PCA5135

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
10PCA5136

Hours/week : 3
Credit : 3

SOFTWARE LAB – X (XML / WML)

1. Create a markup with XML: Day planner application
2. Writing DTD for Day planner application using XML
3. Writing a Microsoft XML Schema for Day planner application.
4. Modify the Day planner application using DOM (Document Object Model)
5. Writing SAX with day planner application.
6. Develop a XML messenger: Client /Server side
7. Create a simple WML page
8. Create a simple WML page using events and functions.
9. Create a client /server communication using GET/POST method using WML
10. Create a WML script using Servlets.

Sem. V
10PCA5137

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	(9)

BOOKS 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.

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Syllabus : 2010

Sem. VI
10PCA6501

Hours/week:30
Credit : 20

MAJOR PROJECT

SEM: II
10PCA2401

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)

TEXT BOOKS

1. Wendy G.Lehnert, "Internet 101 - a beginners guide to the internet and the world wide web ", addition wesley , 1999.
2. CIS terms school of computing - Jaipur, "INERNET - 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 FOR REFERENCE

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

Sem-II
10PCA2402

Hours/week: 3
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)

TEXT BOOK:

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

BOOK FOR REFERENCE:

Suresh K Basendra, "Computers Today", Galgotia publication private Limited, New Delhi, 2001

Sem- III
10PCA3403

Hours/week: 4
Credits: 4

IDC: COMPUTER APPLICATIONS FOR SOCIAL SCIENCES

Objectives

To give an introduction to computers and to enable the students to appreciate computer applications in social science using MS-WORD, MS-EXCEL & MS-ACCESS.

Unit – I

WINDOWS: Windows basics - Starting Windows - Using Mouse - Menus - Running Programs - Switching Tasks - Recycle bin- Control Panel – Accessories: Paintbrush - Notepad - Explorer. (12)

Unit – II

WORD: Introduction - Editing Document - Move and Copy Text and Help System - Formatting Text and Paragraph - Finding and Replacing Text and Spelling Checking - Using Tabs - Enhancing Document - Columns, Tables and other Features - Using Graphics, Templates and Wizards - Using Mail Merge (12)

Unit – III

SPREADSHEET: Introduction to Excel - Getting Started - Editing Cells and Using Commands and Functions - Moving Copying, Inserting and deleting Rows and Columns - Getting help and Formatting a Worksheet - Printing the Worksheet - Creating charts. (12)

Unit – IV

Overview of Power Point: What is PowerPoint-creating presentation - PowerPoint use - running a slide show - printing a presentation. (12)

Unit – V

MS-ACCESS: Managing your Data with Access. Introduction to Access - Creating a Simple Database and Tables - forms - entering and editing data - finding, sorting and displaying data - printing reports. (12)

TEXT BOOKS

1. Sanjay Saxena, "A First Course in Computers", Vikas Publishing House Pvt. Ltd., New Delhi: 2007
2. Ron Mansfield, "Working in Microsoft-Office", Tata McGraw-Hill Edition - 1997.

BOOK FOR REFERENCE

R.K Taxali, "PC Software for Windows Made Simple", Tata McGraw-Hill Publishing Company Ltd., New Delhi: 1998.

Sem- III
10PCA3404

Hours/week: 3
Credit: 4

IDC: FUNDAMENTALS OF PROGRAMMING

Objective: To equip student with programming skills through C Language and to understand and appreciate the Object Oriented Programming concepts.

Unit I

Introduction: Importance of C -Basic structure of C programs - Programming Style. Constants, Variables and Data Types: Character set, Keywords and Identifiers - Constants - Variables - Data types - Declaration of variables - Assigning values to variables.

Operators and Expressions: Arithmetic, relational, Logical, Assignment, Increment and decrement, conditional, bitwise, comma operators - Arithmetic expressions - Procedure and Associativity.
(12)

Unit II

Input Output Operator: getchar, putchar, Formatted output(sprintf) and formatted input (scanf) Control Structure: Decision making with if, if-else, switch, goto, break and continue statements, while, do while, for statements.

Arrays: One-dimensional and two-dimensional arrays, declaring arrays, storing arrays in memory - initialising arrays. (12)

Unit III

Functions: Basic functions - Return values and their types - calling functions - function arguments - external variables and scope rules.
(12)

Unit IV

Structures and Union: Structures - arrays of structures - arrays within structures - Structures - Structures and functions - Unions. (12)

Unit V:

Object Oriented Programming Concepts: class – object – encapsulation – Data Abstraction – Data hiding – Reusability - Polymorphism: Over loading – Over riding. (12)

TEXT BOOKS:

1. E.Balagurusamy, "Programming in ANSI C", Tata McGraw-Hill publishing company Ltd., New Delhi, Fourth edition, 2007.
2. Robert Lafore, "Object-Oriented Programming In Microsoft C++", Galgotia Publications, New Delhi, 2000.

BOOKS FOR REFERENCE:

1. Yashwant Kanethkar, "Let us C", BPB publications, New Delhi 2004
2. James Rumbaugh, "Object-oriented modeling and design", Prentice Hall, 1991

INTER DEPARTMENTAL COURSE - IDC**BIOCHEMISTRY**

- 10PBC2401 APPLIED NUTRITION
10PBC3402 FIRST AID MANAGEMENT

BIOTECHNOLOGY

- 10PBT2401 BASIC BIOINFORMATICS
10PBT3402 BASIC GENOMICS & PROTEOMICS

CHEMISTRY

- 10PCH2401 HEALTH CHEMISTRY
10PCH3402 INDUSTRIAL CHEMISTRY

COMMERCE

- 10PCO2401 FINANCIAL ACCOUNTING FOR MANAGERS
10PCO3402 MANAGEMENT CONCEPTS & ORGANIZATIONAL BEHAVIOR

COMPUTER APPLICATIONS

- 10PCA2401 INTERNET CONCEPTS
10PCA2402 FOUNDATION OF COMPUTER SCIENCE
10PCA3403 COMPUTER APPLICATIONS FOR SOCIAL SCIENCES
10PCA3404 FUNDAMENTALS OF PROGRAMMING

COMPUTER SCIENCE

- 10PCS2401A FUNDAMENTALS OF IT
10PCS2401B WEB DESIGN
10PCS3402A FLASH
10PCS3402B DREAM WEAVER

ECONOMICS

- 10PEC2401 ECONOMICS FOR MANAGERS
10PEC3402 INDIAN ECONOMY

ELECTRONICS

- 10PEL2401 ELECTRONICS IN COMMUNICATION
10PEL3402 COMPUTER HARDWARE

ENGLISH

- 10PEN2401 BUSINESS ENGLISH
10PEN3402 INTERVIEW SKILLS AND GROUP DYNAMICS

HISTORY

- 10PHS2401 PUBLIC ADMINISTRATION
10PHS3402 APPLIED TOURISM

HUMAN RESOURCE MANAGEMENT

- 10PHR2401 FUNDAMENTALS OF HRM
10PHR3402 PERSONALITY AND SOFT SKILLS DEVELOPMENT

INFORMATION TECHNOLOGY

- 10PIT2401A FUNDAMENTALS OF IT
10PIT2401B WEB DESIGN
10PIT3402A FLASH
10PIT3402B DREAM WEAVER

MATHEMATICS

- 10PMA2401 OPERATIONS RESEARCH
10PMA3402 NUMERICAL METHODS

PHYSICS

- 10PPH2401 MODERN PHOTOGRAPHY
10PPH3402 MEDICAL PHYSICS

PLANT BIOLOGY & PLANT BIOTECHNOLOGY

- 10PPB2401 NANOBIO TECHNOLOGY
10PPB3402 REMOTE SENSING AND GIS

TAMIL

- 10PTA2401 முருகு; கழிப்பு; நியூட்டன்; ஜி.கே. - 1
10PTA3402 முருகு; கழிப்பு; நியூட்டன்; ஜி.கே. - 2