

ACADEMIC REGULATIONS
Applicable for students admitted into
MASTER OF COMPUTER APPLICATIONS programme from 2011-12

The Jawaharlal Nehru Technological University Anantapur, Anantapur shall confer Master of Computer Applications (M.C.A) Degree to candidates who are admitted to the M.C.A program and fulfill all the requirements for the award of the degree.

1. ELIGIBILITY FOR ADMISSION:

Admission to the MCA Degree programme shall be made subject to the eligibility, qualification prescribed by the competent authority from time to time.

Admissions shall be made on the basis of rank obtained by the qualifying candidates at the entrance test, subject to reservations or policies framed by the Government of Andhra Pradesh from time to time.

2. ADMISSION PROCEDURE:

Admissions as per the existing stipulations of A.P State Council of Higher Education (APSCHE), Government of Andhra Pradesh, admissions are made into the first year as follows:

- (a) A - Category Seats are to be filled by the Convener, through ICET
- (b) B - Category Seats will be filled by the Management as per the norms stipulated by Govt. of Andhra Pradesh.

3. COURSE WORK:

3.1A candidate after securing admission must pursue the MCA course of study for Six semesters duration

3.2Each semester shall be of 90 instruction days.

3.3A candidate admitted to a programme should complete it within a period equal to twice the prescribed duration of the programme from the date of admission.

4. ATTENDANCE:

- 4.1**A Candidate shall be deemed to have eligibility to write end semester examinations if he has put in at least 75% of aggregate attendance on considering all subjects/labs in the semester.
- 4.2**Condonation of shortage of attendance up to 10% i.e. from 65% and above and less than 75% may be granted by the Institute Academic Committee.
- 4.3**Shortage of attendance below 65% in aggregate shall in no case be condoned.
- 4.4**Condonation of shortage of attendance shall be granted only on genuine and valid reasons on representation by the candidate with supporting evidence.
- 4.5**A stipulated fee shall be payable towards Condonation of shortage of attendance to the Institute.
- 4.6** Students whose shortage of attendance is not condoned in any semester are not eligible to take their end examination of that semester and their registration shall stand cancelled.
- 4.7**A student will not be promoted to the next semester unless he satisfies the attendance requirements of the current semester, as applicable.
- 4.8** A student detained due to shortage of attendance will have to repeat that semester when offered next.

5. CREDIT SYSTEM NORMS:

Credit system norms given in table -1

Table -1

Subject	Period(s)/Week	Credit(s)
Theory	01	01
Practical	03	02
Seminar	..	02
Project Work	..	12

6. EVALUATION:

The performance of the candidate in each semester shall be evaluated subject wise, with maximum of 100 marks for Theory and 100 marks for Practical's on the basis of internal evaluation and end semester examination.

- 6.1** For the theory subjects 60 marks shall be awarded based on the performance in the end semester examination where in 5 questions are to be answered out of 8 questions, each question carry 12 marks. 40 marks shall be awarded based on the internal evaluation, based on the better of the marks secured in the two mid marks secured in the two midterm examinations held one in the middle of semester (I-IV units) another immediately after the completion of (V-VIII units) with four questions to be answered out of 6 questions in 2 hours, evaluated for 40 marks.
- 6.2** For practical subjects 60 marks shall be awarded based on the performance in the end semester examinations, 40 marks shall be awarded based on the internal evaluation. 10 marks shall be awarded based on best of the two internal lab examinations including viva voce and 30 marks shall be awarded based on day to day work including Observation and Lab record.
- 6.3** For seminar there shall be an internal evaluation of 100 marks, out of which 80 marks for presentation, day-to-day evaluation for the student's active participation and 20 marks for report submission.
- 6.4** A candidate shall be deemed to have secured minimum academic requirement in the subject/practical, if he secures a minimum of 40 % marks in the end examination and a minimum aggregate of 50% of total marks in the end semester examination and internal evaluation taken together. For the seminar, a candidate should secure a minimum of 50% marks.
- 6.5** In case the candidate does not secures the minimum academic requirement in any subject/practical. He has to re-appear for the end examination in that subject/practical.

7. RE-REGISTRATION FOR IMPROVEMENT OF INTERNAL EVALUATION MARKS FOR THEORY SUBJECTS

7.1 The candidate should have completed the course work for all five semesters pending project work submission.

7.2 Out of the subjects the candidate has failed in the examination due to internal evaluation marks secured being less than 50%, the candidate shall be given one chance for each theory subject and for a maximum of three theory subjects for improvement of internal evaluation marks.

7.3 The candidate has to re-register for the chosen subjects and fulfill the academic requirements. Re-registration shall not be permitted after the commencement of class work for that semester.

7.4 For each subject, the candidate has to pay a fee equivalent to one third of the semester tuition fee.

7.5 In the event of availing the improvement of internal evaluation marks, the internal evaluation marks as well as end examination marks secured in the previous attempt(s) for the re-registered subjects stand cancelled.

8. EVALUATION OF PROJECT WORK

8.1 Registration of Project work : A candidate is permitted to register for the project work after satisfying the attendance requirement of all the courses (theory and practical courses of I to V Semester)

8.2 A Departmental Committee (D.C) consisting of HOD, Supervisor and one internal senior faculty shall monitor the progress of the project work.

8.3 The work on the project shall be initiated in the penultimate semester and continued in the final semester. The candidate can submit Project thesis with the approval of D.C. at the end of the VI semester Instruction as per the schedule. Extension of time within the total permissible limit for completing the programme is to be obtained from the Head of the Institution.

8.4 The student must submit status report at least in two different phases during the project work period. These reports must be approved by the D.C before submission of the Project Work.

8.5 The viva-voce examination may be conducted for all the candidates as per the VI semester examination schedule.

8.6 Three copies of the Thesis / Dissertation are to be certified in the prescribed by the supervisor and HOD. The copies are to be submitted to the Head of the Department.

8.7 For carrying out project work, a total of 100 marks will be awarded, Out of which 60 marks shall be awarded by a Board consisting of Supervisor, HOD and an External Examiner, based on the project valuation and viva-voce examination. 40 marks shall be awarded based on internal evaluation out of which 20 marks shall be awarded by the Supervisor and remaining 20 marks shall be awarded by Project Review Committee, consisting of HOD, Supervisor and two other senior faculty members in the department, based on two seminars given by the student on his/her project.

9. CREDIT POINT AVERAGE (CPA) AND CUMULATIVE CREDIT POINT AVERAGE (CCPA):

9.1 For a semester/year

$$\text{CREDIT POINT AVERAGE [CPA]} = \frac{1}{10} \frac{\sum_i C_i T_i}{\sum_i C_i}$$

Where C_i = Credits earned for Course i in any semester/ year,

T_i = Total marks obtained for course i in any semester/year,

9.2 For the entire programme

$$\text{CUMULATIVE CREDIT POINT AVERAGE [CCPA]} = \frac{1}{10} \frac{\sum_n \sum_i C_{ni} T_{ni}}{\sum_n \sum_i C_{ni}}$$

n -refers to the semester in which such courses were credited

9.3 Overall Performance

CCPA	Classification of Final Result
7.0 and above	First Class with Distinction
6.0 and above but below 7.0	First Class
5.0 and above but below 6.0	Second Class

10. TRANSCRIPTS:

After successful completion of the entire programme of study, a transcript consisting performance of all academic years will be issued as a final record. Duplicate transcripts will also be issued, if required, after payment of requisite fee. Partial transcript will also be issued up to any point of study to a student on request.

11. ELIGIBILITY:

A student shall be eligible for the award of M.C.A Degree, if he fulfills all the following conditions:

- (i) Registered and successfully completed all the components prescribed in the programme of study to which he is admitted.
- (ii) Successfully acquired all the **164 credits** as specified in the curriculum corresponding to the branch of study within the stipulated time.
- (iii) No disciplinary action is pending against him.

12. AWARD OF DEGREE:

The Degree will be conferred and awarded by Jawaharlal Nehru Technological University Anantapur, Anantapur on the recommendations of the Principal of Annamacharya Institute of Technology and Sciences (Autonomous).

13. AMENDMENTS TO REGULATIONS:

The Chairman, Academic Council of Annamacharya Institute of Technology and Sciences, Rajampet (Autonomous) reserves the right to revise, amend, or change the Regulations, Scheme of Examinations, and / or Syllabi or any other policy relevant to the needs of the society or industrial requirements etc., without prior notice.

14. GENERAL:

Where the words "he", "him", "his", "himself" occur in the regulations, they include "she", "her", "herself".

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MCA COURSE STRUCTURE

First Semester MCA

Subject Code	Name of the Subject	Hrs. Per week		C	Maximum Marks		
		L	P		Internal	External	Total
1P2B11	Mathematical Foundations of Computer Science	4	0	4	40	60	100
1P2B12	Computer Programming	4	0	4	40	60	100
1P2C13	Probability and Statistics	4	0	4	40	60	100
1P2A14	Accounting and Financial Management	4	0	4	40	60	100
1P2B15	Information & Communication Technology	4	0	4	40	60	100
1P2C16	Technical Communication & Computer Ethics	4	0	4	40	60	100
1P2B17	Computer Programming Lab	0	3	2	40	60	100
1P2B18	Information & Communication Technology Lab	0	3	2	40	60	100
1P2C19	English Communication Skills Lab	0	3	2	40	60	100
Total		24	9	30	360	540	900

Note: L- Lecture; P-Practical; C – Credits.

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MCA COURSE STRUCTURE

Second Semester MCA

Subject Code	Name of the Subject	Hrs. Per week		C	Maximum Marks		
		L	P		Internal	External	Total
1P2B21	Computer Organization	4	0	4	40	60	100
1P2B22	Business Data Processing	4	0	4	40	60	100
1P2B23	Computer Oriented Numerical Methods	4	0	4	40	60	100
1P2C24	Operations Research	4	0	4	40	60	100
1P2A25	Organization Structure & Personal Management	4	0	4	40	60	100
1P2B26	Data Structures	4	0	4	40	60	100
1P2B27	Assembly Language Programming Lab	0	3	2	40	60	100
1P2B28	COBOL Lab	0	3	2	40	60	100
1P2B29	Data Structures Lab	0	3	2	40	60	100
Total		24	9	30	360	540	900

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MCA COURSE STRUCTURE

Third Semester MCA

Subject Code	Name of the Subject	Hrs. Per week		C	Maximum Marks		
		L	P		Internal	External	Total
1P2B31	Database Management Systems	4	0	4	40	60	100
1P2B32	Computer Communications	4	0	4	40	60	100
1P2B33	Network Programming	4	0	4	40	60	100
1P2B34	Java Programming	4	0	4	40	60	100
1P2B35	Design & Analysis of Algorithms	4	0	4	40	60	100
1P2B36	Operating Systems	4	0	4	40	60	100
1P2B37	DBMS Lab	0	3	2	40	60	100
1P2B38	Network Programming Lab	0	3	2	40	60	100
1P2B39	Java Programming Lab	0	3	2	40	60	100
Total		24	9	30	360	540	900

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MCA COURSE STRUCTURE

Fourth Semester MCA

Subject Code	Name of the Subject	Hrs. Per week		C	Maximum Marks		
		L	P		Internal	External	Total
1P2B41	Software Engineering	4	0	4	40	60	100
1P2B42	System Software	4	0	4	40	60	100
1P2B43	Advanced Java for Web Technologies	4	0	4	40	60	100
1P2B44	Computer Graphics & Image Processing	4	0	4	40	60	100
1P2B45	Elective I	4	0	4	40	60	100
1P2B46	Elective II	4	0	4	40	60	100
1P2B47	Software Engineering Lab	0	3	2	40	60	100
1P2B48	Web Technologies Lab	0	3	2	40	60	100
1P2B49	Computer Graphics Lab	0	3	2	40	60	100
Total		24	9	30	360	540	900

Elective I

1. Data Ware Housing and Data Mining
2. Artificial Intelligence and Neural Networks
3. Distributed Operating Systems

Elective II

1. Distributed Data bases
2. Design Patterns
3. Management Information Systems

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MCA COURSE STRUCTURE

Fifth Semester MCA

Subject Code	Name of the Subject	Hrs. Per week		C	Maximum Marks		
		L	P		Internal	External	Total
1P2B51	Simulation & Modeling	4	0	4	40	60	100
1P2B52	ASP & .Net Technologies	4	0	4	40	60	100
1P2B53	Object Oriented Analysis & Design through UML	4	0	4	40	60	100
1P2B54	Software Project Management	4	0	4	40	60	100
1P2B55	Elective III	4	0	4	40	60	100
1P2B56	Elective IV	4	0	4	40	60	100
1P2B57	ASP & .Net Technologies Lab	0	3	2	40	60	100
1P2B58	Unified Modeling Language Lab	0	3	2	40	60	100
1P2B59	Advance Web Technologies Lab	0	3	2	40	60	100
Total		24	9	30	360	540	900

Elective III

1. Middle ware Technologies
2. Soft Computing
3. Software Architecture

Elective IV

1. Cloud Computing
2. Embedded Systems
3. Mobile Application Development

Sixth Semester MCA

Code	Subject	Credits
1P2B61	Project Seminar	2
1P2B62	Project Dissertation / Thesis	12

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)
FIRST SEMESTER MCA**

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

UNIT-I MATHEMATICAL LOGIC: Statements and notations, Connectives: AND, OR, Conditional, Bi-conditional, Negation, Truth Tables, Tautology, Contradiction, Well formed formulas, Logical equivalence, Equivalence implication, Normal forms.

UNIT-II PREDICATES: Predicative logic, Quantifiers, Universal Quantifiers, Free & Bound variables, Rules of inference, Consistency, Proof of contradiction.

UNIT-III SET THEORY: Introduction, Set representation, Sub sets, cardinality of a set, Venn diagrams, operations on sets, Disjoint sets, Power set, Cartesian product, Properties of sets.

UNIT-IV RELATIONS AND FUNCTIONS:

Relations: Operations on Relations, Properties of Binary Relations, Equivalence, Compatibility and partial ordering relations, Lattices and its properties, Hasse diagram, Transitive closure, Representing Relations, Diagram of POSET.

Functions: Types of Functions: One – One, Onto, Bijective, Identity, Inverse Function, Composition of functions, Recursive Functions.

UNIT-V ALGEBRAIC STRUCTURES: Algebraic system examples, Binary Operations and its properties, Group, Abelian Group, Sub Group, Monoid, Semi groups, Group homomorphism, and Isomorphism.

UNIT-VI ELEMENTARY COMBINATORICS: Basis of counting, Enumerating Combinations & Permutations with repetitions, Constrained repetitions, Binomial Coefficients, Binomial Multinomial theorems, The principles of Inclusion – Exclusion. Pigeon hole principles and its application

UNIT-VII RECURRENCE RELATION: Generating Functions & Sequences, Calculating Coefficient of generating function, Homogeneous Recurrence relations: First Order, Second Order, Third and Higher Order Recurrence relations, Inhomogeneous Recurrence Relation: First Order, Second and Higher Order.

UNIT-VIII GRAPH THEORY APPLICATIONS: Representation of Graphs with examples, Vertex, Degree, Sub Graph, Multi Graph, Simple Graph, Complete Graph, Bipartite Graph, Regular Graph, Digraph, Operations on Graphs, Euler Circuits, Hamiltonian Graphs, Chromatic Number, Planar Graphs, Trees, Spanning Trees: DFS, BFS, Minimal Spanning Trees: Prim's, and Kruskal's Algorithms.

TEXT BOOKS:

1. Discrete Mathematics for Computer Scientists & Mathematicians, 2/e, J.L.Mott, A. Kandel, T.P. Baker, PHI
2. Mathematical Foundations of Computer Science, D. Chandra Sekharaiah, Prism Books.

REFERENCE BOOKS:

1. Discrete Mathematical Structures with Application to Computer Science, Tremblay, Monohar. McGraw Hill Publication.
2. Elements of Discrete Mathematics – A computer oriented approach, C.L.Liu, D.P. Mahopatra, Third Edition, TMH.

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First Semester MCA

COMPUTER PROGRAMMING

UNIT-I INTRODUCTION TO PROGRAMMING: History of programming languages, programming language paradigms, programming language qualities, language processing: interpretation, translation and binding, programming tools: Algorithm, flowchart, pseudo code and implementations

UNIT-II INTRODUCTION TO C LANGUAGE: C character set, delimiters, keywords, constants, identifiers and variables, Data types, anatomy of a C program, expressions, precedence and associativity of operators, type casting, formatted and unformatted I/O statements, storage classes and control statements

Arrays and Strings: array concept, types of array: One dimensional and multi-dimensional array, Introduction to string, string representation and initialization, array of strings and string manipulation functions, Applications of strings

UNIT-III FUNCTIONS: Introduction to function, system defined and user defined function, Local and global variables, parameter passing mechanism: pass by value and pass by reference, scope, Recursion: recursive function, applications of recursion

Pointers: features, Dynamic memory management of 'C', declaration and initialization of pointers, arithmetic operations on pointer, array of pointers, pointer to structures

UNIT-IV Introduction to Structure and union, structure declaration and initialization, nested structure, array of structure, array within a structure, pointer to structure, passing structures through function, union: declaration, initialization and its usage, typedef, enumerated types.

Files: Types of file: binary and text file, operations on file: open, close, read, write and seek, programs to implement file, command line argument and its usage.

UNIT V C++ BASICS: Structure of a C++ program, Data types, variables, Expressions, Operators, Type conversions, Control flow statements, Arrays. C++ Functions, Scope of variables, Parameter passing methods, Default arguments, Functions with variable number of arguments, Recursive functions, Pointers to functions.

UNIT VI Data Abstraction, Class specification, Class objects, Accessing class members, Inline functions, Access control specifiers, Friend functions and friend classes, Constant member functions, Static data and member functions.

Constructors and Destructors, Copy constructor, Static data members with constructors and destructors, Nested classes, New and Delete operators, Dynamic creation and destruction of objects.

UNIT VII Function overloading, Operator overloading, Function templates and Class templates. Need for virtual functions, Definition of virtual functions, Pure virtual functions, Virtual destructors, Dynamic binding through virtual functions, Abstract classes. Inheritance, Forms of inheritance, Defining the Base and Derived classes, Inheritance and member accessibility, Object composition, delegation.

UNIT VIII C++ Stream classes hierarchy, File streams and console streams, Manipulators, Overloading operators << and >>, File Operations, Error handling during file manipulation. Exception handling model of C++, Exception handling constructs, Handling uncaught exceptions, Benefits of exception handling, Rules for handling exceptions

TEXT BOOKS:

1. Programming language concepts, 3rd edition- ghezzi, mehdi, jazayeri, john wiley & sons.
2. Mastering C++ , K.R. Venugopal, Rajkumar & T. Ravi Shankar, Tata Mcgraw Hill.
3. Programming in C and Data Structures, J.R. Hanly, Ashok N. Kamthane, A. Ananda Rao, Pearson Education.

REFERENCE BOOKS:

1. Programming with ANSI and Turbo C – Ashok N. Kamthane, pearson Education.
2. C++, the Complete Reference, 4th Edition, Herbert Schildt, TMH.
3. Object Oriented Programming in C++, 4th Edition, R.Lafore, SAMS, Pearson Education.
4. Learning c++ a hands-on approach-Eric Nagler, Jaico publishing house.

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First Semester MCA

PROBABILITY AND STATISTICS

UNIT –I PROBABILITY: Introduction, Sample Space and events, axioms of probability-Some Elementary theorems-Conditional probability-Total Probability, Baye's theorem.

UNIT- II RANDOM VARIABLES: Random Variable, Discrete and Continuous Random variable, Properties, Moments, Moment Generating Functions.

UNIT – III DISTRIBUTIONS: Binomial, Poisson and Normal distribution – related properties.

UNIT- IV SAMPLING DISTRIBUTION AND ESTIMATION: Populations and samples-Sampling distribution of Means (known and unknown) proportions, sums and differences.

Estimation: Point estimation-interval estimation-Bayesian estimation

UNIT – V TESTS OF SIGNIFICANCE: Introduction, Student's t-test, F-test, χ^2 – test, Estimation of proportions.

UNIT- VI TEST OF HYPOTHESIS: Means and proportions-Hypothesis concerning one and two means-Type I and Type II errors. One -tail, two -tail tests.

UNIT-VII CURVE FITTING: The method of least squares – correlation for univariate and bivariate distributions, Rank Correlation, Inferences based on the least squares estimations – Linear Regression, Curvilinear regression – multiple regressions.

UNIT-VIII QUEUING THEORY: Introduction, the Basic Queuing Process, Pure Birth and Death Process

TEXT BOOKS:

1. Mathematical Statistics, Gupta, Kapoor, S.Chand.
2. Text Book of Probability and Statistics By Dr.Shahnaz Bathul, VGS Publications

REFERENCEBOOKS:

1. Probability and Statistics for MCA, T.K.V.Iyengar, B.krishna Gandhi, S.Ranganathan, M.V.S.S.N.Prasad, S.Chand and Company Ltd.
2. Probability and Statistics with Reliability, Queuing and Computer Science Applications, Kishor S.Trivedi,PHI

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First Semester MCA

ACCOUNTING AND FINANCIAL MANAGEMENT

UNIT I INTRODUCTION TO ACCOUNTING: Principles, concepts and conventions, double entry system of accounting, classification of accounts and debit-credit rules.

Financial Accounting: Introduction, Process, Principles and Concepts.

Financial Statements: Introduction to basic books of accounts, journal and ledger – trial balance – preparation of final accounts: trading account, profit and loss account and balance sheet.

UNIT II FINANCIAL ANALYSIS THROUGH RATIOS: Ratio Analysis – classification of ratios –analysis and interpretation of financial statements through ratios of liquidity, solvency and profitability.

UNIT III Methods of Depreciation – Straight Line, Depletion, Machine Hour Rate, Diminishing Balance, Sum of Digits, Sinking Fund and Insurance Policy Methods. Inventory Valuation methods- FIFO, LIFO, Average Weighted Average, Base Stock and HIFO methods.

UNIT IV FUNDS FLOW AND CASH FLOW ANALYSIS: Meaning, Importance, statement of changes in working capital, statement of sources and application of funds , Fund Flow analysis, Cash flow analysis, cash flow statements: preparation, analysis and interpretation.

UNIT V INTRODUCTION TO FINANCIAL MANAGEMENT: Meaning and scope, role of financial manager, objectives of time value of money – goals of financial management.

UNIT VI CAPITAL BUDGETING: Capital budgeting: features, proposals, methods of capital budgeting, payback method, accounting rate of return (ARR), Net Present Value Method (NPV) and Internal Rate of Return (IRR) - simple problems.

UNIT VII MARGINAL COSTING- Introduction, Definition, meaning and BEP analysis and BEP in units.

Standard Costing – Introduction , Variance analysis, Material Cost variance , Material Price Variance , Labor variance and sales variance.

Budgetary Control – Introduction and classification of budgets production, material / purchase sales, sales overhead, cash and factory overheads, budgets, flexible budget.

UNIT VIII BREAK EVEN ANALYSIS: Concept of Break Even Point, Cost-Volume-Profit Analysis, Determination of Break Even Point, Margin of Safety and P/V ratio, Impact of changes in cost or selling price on BEP, Practical applications of Break Even Analysis.

TEXT BOOKS:

1. Financial Accounting, S.N.Maheshwari, Sultan Chand, 2009.
2. Management Accounting: Theory and Practice, Pandikumar M.P 1st edition, Excel Books, 2007.
3. Financial Management and Policy, Van Horne, James.C., Pearson ,2009.

REFERENCES:

1. Management Accounting , Khan My, Jain P.K , 4th Edition , Tata Mcgraw Hill, 2007.
2. Financial Accounting, Tulsian, S Chand, 2009.
3. Financial Statement Analysis, Khan and Jain, PHI, 2009.
4. Financial Management, I.M.Pandey, Vikas Publications.
5. Financial Management, Bhat Sundhindra, Excel: 2009.
6. Financial Management, Prasanna Chandra, T.M.H, 2009.

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First Semester MCA

INFORMATION & COMMUNICATION TECHNOLOGY

UNIT I BASIC STRUCTURE OF COMPUTER S: Computer types, Functional Units, Basic Operational concepts, Bus structure, Software, Performance, Multiprocessors and Multicomputer and Historical Perspective. Generation of Programming Languages – Machine Languages, Assembly Language, High-level Programming, Fourth Generation Languages, Fifth Generation Languages.

UNIT II INTRODUCTION TO SEMICONDUCTOR MEMORIES: SRAM, DRAM, SDRAM, ROM, PROM, EEPROM, Flash Memory and Cache Memory.

UNIT III INTRODUCTION TO SECONDARY STORAGE DEVICES: Magnetic Hard Disks, Optical System and Magnetic tape systems.

UNIT IV INTRODUCTION TO COMPUTER PERIPHERALS: Input Devices, Output Devices, Serial Communication Links and Standard I/O Interfaces: PCI, SCSI and USB.

UNIT V DISCRETE COMPONENTS OF COMPUTER: Mother Board, Cabinet, Memory, Processor and Peripherals, Configuring a Computer System.

UNIT VI COMPUTER NETWORKS: History of Networks, Types of Networks: LAN, MAN, WAN, Intranet, Internet, Extranet, Network Topologies.

Network Components: Transmission Media, NIC Hubs, Switches, Bridges, Routers, Gateways, Modems.

UNIT VII Introduction to OSI Reference Model, Introduction to TCP/IP: Layers, IP, ARP, RARP, ICMP, TCP, UDP, DNS, Email, FTP, TFTP, WWW, HTTP and Telnet

UNIT VIII INTRODUCTION TO WEB TECHNOLOGY: Dynamic Web Pages, Active Web pages and XML

TEXT BOOKS:

1. Carl Hamacher, Zvonko Vranesic and Safat Zaky, Computer Organization, 5/e. Mc Graw-Hill International Edition 2002.
2. Achut S Godbole and Atula Kahate, Web Technologies : TCP/IP to Internet Applications Architectures , Tata McGraw-hill, 2003.
3. Peter Norton , Introduction to Computers , 6/e, Tata McGraw Hill , 2006.

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First Semester MCA

TECHNICAL COMMUNICATION & COMPUTER ETHICS

UNIT I BASICS OF TECHNICAL COMMUNICATION: Introduction, Process of Communication, Language as a Tool, Levels of Communication, Communication Networks, Importance of Technical Communication.

UNIT II BARRIERS TO COMMUNICATION: Definition of Noise, Classification of Barriers.

Technology in Communication: Impact of Technology, Software for Creating Messages, Software for Writing Documents, Software for Presenting Documents, Transmitting Documents, Effective use of Available Technology.

UNIT III ACTIVE LISTENING: Introduction, Types of Listening, Traits of good Listener, Active versus passive listening, Implications of effective listening.

UNIT IV EFFECTIVE PRESENTATION STRATEGIES: Introduction, Defining purpose, Analyzing Audience and Locale, Organizing Contents, preparing outline, Visual Aids, Understanding Nuances of Delivery, Kinesics, Proxemics, Paralinguistics, Chromatics, Sample speech.

UNIT V GROUP COMMUNICATION: Introduction, Group Discussion, Organizational Group discussion, Group discussion as part of selection process Meetings, conferences.

UNIT VI INTERVIEWS: Introduction, Objectives, Types of Interviews, Job Interviews.

Resume Writing: Format and Style, Sample Resumes.

UNIT VII OVERVIEW OF ETHICS: What are Ethics? Ethics in the Business World, Ethics in Information Technology (IT).

Ethics for IT Professionals and IT users: IT professionals, The Ethical behaviour of IT professionals, IT Users, Case study.

Privacy: Privacy Protection and the Law, Key Privacy and Anonymity Issues, Case Study

UNIT VIII SOFTWARE DEVELOPMENT: Strategies to Engineer Quality s/w, Key Issues, Case study.

Employer/Employee Issues Use of Non-traditional workers, Whistle Blowing, Case study.

TEXT BOOKS:

1. Technical Communication, Principles and Practices, Meenakshi Raman and Sangeeta Sharma, Oxford University Press, 2004 (Chapters 1,2,3,4,5,6,7).
2. Ethics in Information Technology, George Reynolds, Thomson Course Technology, 2003 (Chapters 1,2,4,7,8).

REFERENCE BOOKS:

1. Effective Technical Communication, M Ashraf Rizvi, TMGH Publications.
2. Basic Communication Skills for Technology, Andrea J Ruthurford, Pearson Education, Asia.
3. English for Technical Communication, Aysha Viswamohan, Tata Mc-Graw Hill.
4. Ethics in Engineering, Mike W Martin and Ronal Schinzinger, 3rd edition, Tata McGraw Hill, 2003.

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First Semester MCA

COMPUTER PROGRAMMING LAB

1. C program that implement the expression, typecasting statements in the presence of decision statements and loop statements.
2. C program that implement one dimensional array operations on integer and float data values.
3. C program that implement library function to perform various String operations.
4. C program that implement manipulation of string without library function.
5. C program that implement function and parameters of array, string, float and integer data types and test different parameter passing mechanisms.
6. C program that implement function to perform string operations
7. C program that implement recursive function
8. C program process one dimensional array using pointer.
9. C program process two dimensional array using pointer.
- 10.C program that uses nested structure and passing simple structure to function as an argument
- 11.C program that implement file operations on text file.
- 12.C program that implement file operations on binary file.
- 13.C program that implement file operations on random basis?(implementation of random file)
- 14.C++ program implements function with default argument and variable number of arguments.
- 15.C++ program that contains all access control specifiers, Static members and copy constructor.
- 16.C++ program that creates class objects dynamically and pass objects to a function.
- 17.C ++ program that implement function overloading
- 18.C++ program that demonstrates operator overloading and uses simple data types, string and manipulation of Objects.
- 19.C++ program that demonstrates the purpose and usage of function template and class template.
- 20.C++ program that demonstrates the dynamic binding through virtual functions.

21.C++ program that demonstrates the

1. Multilevel inheritance
2. Multiple inheritance
3. Hybrid inheritance
4. Hierarchical inheritance
5. Simple inheritance
6. Multipath inheritance

22.C++ program that demonstrate the behaviour of access specifiers in the presence of inheritance.

23.++ program that demonstrates the working of Object composition and delegation

24.C++ program to perform file operations using file streams and error handling mechanism.

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(AN AUTONOMOUS INSTITUTION)**

First Semester MCA

INFORMATION & COMMUNICATION TECHNOLOGY LAB

TASK 1: Introduction to Computer's Advantages and Disadvantages. Draw the block diagram of computer.

TASK 2: Identify the peripherals of a computer like Input and Output Devices.

TASKS 3: Identify the Components of a CPU and their function, components with the configuration of each peripheral device is to be submitted to your instructor.

TASK 4: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a viva.

TASK 5: Demonstrate an experiment for testing the hardware failures in a Computer.

TASK 6: Demonstrate an experiment for testing the software failures in a Computer.

TASK 7: Identify the components of network like Network Interface Cards, Hubs, Switches, Bridges, Routers, Gateways, Modems and Transmission Media.

TASK 8: Students should get connected to their Local Area Network and access the internet. In the process they configure the TCP/IP setting.

TASK 9: Students should do BIOS settings for configuration of system. For example student can change booting option.

TASK 10: Demonstrate how to access the website and how to use the search engines. A few topics would be given to the students for which they need to search on Google.

TASK 11: Demonstrate how to create email ids for sending mails with attachments and show down loading procedure files.

TASK 12: Develop a static web page using frames, tables, forms, lists, hyperlinks, images etc.

TASK 13: Develop a dynamic web page based on task 11 by using JavaScript for performing basic validations.

TASK 14: Develop a well formed XML page for storing employee/student/some other information.

TASK 15: Demonstrate the usage of TELNET.

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First Semester MCA

ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

Syllabus:

The following course content is prescribed for the English Language Laboratory Practice

- 1. Phonetics- Introduction to the Sounds of English – vowels, Diphthongs and consonants**
- 2. Situational Dialogues/Role play**
- 3. Reading Comprehension**
- 4. Oral Presentations/Public speaking**
- 5. Group Discussion**
- 6. Interviews**
- 7. Resume**
- 8. Listening Comprehension**

EXERCISE 1: Phonetics–English pronunciation– basics in phonetics-introduction to sounds of English – vowels – diphthongs – consonants – phonetic transcription.

EXERCISE 2: Fundamentals of Interpersonal Communication– starting a conversation- responding appropriately and relevantly.

EXERCISE 3: Dialogues- Formal and Informal– using the right body language– role play in different situations.

EXERCISE 4: Reading Comprehension – Reading for facts – scanning – skimming – guessing meaning from context

EXERCISE 5: Reading Comprehension – Sample Passages from Reference Books may be done by students.

EXERCISE 6: Oral Presentations- developing and organizing the presentations– verbal and visual support in presentations– delivering the presentation.

EXERCISE 7: Informative, group and special occasion presentations– persuasive presentations.

EXERCISE 8: Group Discussions– characteristics of successful GDs– strategies– techniques for individual contribution- intervention, summarizing, modulation of voice, body language, relevance, fluency and coherence.

EXERCISE 9: Organizing Group Discussions.

EXERCISE 10: Interview Skills– concept and process, pre-interview planning, opening strategies, answering strategies, projecting a positive image, interview through tele and video-conferencing.

EXERCISE 11: Organizing mock interviews.

EXERCISE 12: Resume Preparation - design– structure and presentation, planning, defining the career objective, projecting one’s strengths and skill-sets, summary.

EXERCISE 13: Listening Comprehension – Listening for understanding – responding relevantly.

EXERCISE 14: Listening Comprehension - Exercises to improve Listening Skills of Students.

SUGGESTED SOFTWARE:

1. Sky Pronunciation Suite
2. Clarity Pronunciation Power 1
3. Active Listening from Clarity
4. Active Reading from Clarity
5. It’s your Job from Clarity
6. Globarena Career Lab
7. Cambridge Advanced Learners' Dictionary with exercises
8. Oxford Advanced Learner's Compass, 7th Edition
9. Language in Use, Foundation Books Pvt Ltd
10. Learning to Speak English - 4 CDs
11. Microsoft Encarta
12. Murphy's English Grammar, Cambridge
13. Time series of IQ Test, Brain-teasers, Aptitude Test etc. English in Mind, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge

TEXT BOOKS:

1. Developing Communication Skills by Krishna Mohan & Meera Benerji (Macmillan).
2. Speaking English Effectively by Krishna Mohan & NP Singh (Macmillan).
3. Oxford Practice Grammar with Answers, John Eastwood, Oxford.
4. Handbook of English Grammar and Usage, Mark Lester and Larry Beason, Tata McGraw-Hill.
5. A text book of English Phonetics for Indian Students by T. Balasubramanian (Macmillan).
6. TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS).
7. English Skills for Technical Students, WBSCTE with British Council, OL
8. Everyday Dialogues in English by Robert J Dixon, Prentice – Hall of India Ltd.
9. Professional Communication by Koneru, McGraw Hill.

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)**

Second Semester MCA

COMPUTER ORGANIZATION

UNIT I NUMBER SYSTEMS AND COMPUTER ARITHMETIC: Signed and unsigned numbers, Addition and subtraction, Multiplication, Division, Floating point representation, Logical operation, Gray code, BCD codes, Error detecting codes, Boolean algebra, Simplification of Boolean expressions, K-Maps.

UNIT II COMBINATIONAL AND SEQUENTIAL CIRCUITS: Decoders, Encoders, Multiplexers, Half and Full adders, Shift registers, Sequential circuits, Flip-flops.

UNIT III MEMORY ORGANIZATION: Memory hierarchy, Main memory-RAM, ROM chips, Memory address map, Memory contention to CPU, Associative Memory-Hardware logic, Match, Read and Write logic, Cache Memory-Associative mapping, Direct mapping, Set-associative mapping, hit and miss ratio.

UNIT IV BASIC CPU ORGANIZATION: Instruction formats-INTEL-8086 CPU Architecture-Addressing modes - generation of physical address- code segment registers, Zero, one, two, and three address instructions.

UNIT V INTEL 8086 ASSEMBLY LANGUAGE INSTRUCTIONS: Data transfer instructions-Input- Output instructions, Address transfer, Flag transfer, arithmetic, logical, shift, and rotate instructions.

UNIT VI INTEL 8086 ASSEMBLY LANGUAGE INSTRUCTIONS: Conditional and unconditional transfer, Iteration control, Interrupts and process control instructions, Assembler directives, Programming with assembly language instructions.

UNIT VII MICRO PROGRAMMED CONTROL: Control Memory, Address Sequencing, Micro program example, Design of Control Unit, Micro Programmed control.

UNIT VIII INPUT -OUTPUT ORGANIZATION: Peripheral devices, Input-output interface-I/O Bus and interface modules, I/O versus Memory bus, Isolated versus memory mapped I/O, Modes of transfer-Programmed I/O, Interrupt-initiated I/O, Priority interrupts-Daisy chaining, Parallel priority, interrupt cycle, DMA- DMA control, DMA transfer, Input output processor-CPU-IOP communication.

TEXT BOOKS:

1. Computer System Architecture, M. Morris Mano, 3rd Edition, PHI/Pearson Education, 2008.
2. Fundamentals of Computer Organization and Design, Sivarama P.Dandamudi, Springer Int. Edition.
3. Assembly Language programming, Peter Albert.

REFERENCE BOOKS:

1. Computer Organization, Carl Hamacher, Zvonko Vranesic, Safwat Zaky, 5th Edition, McGraw Hill.
2. Computer Organization and Architecture, William Stallings, 7th Edition, Pearson/PHI, 2007.
3. Intel 8086 programming, V. Douglas Hall, Tata McGraw-Hill.

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(AN AUTONOMOUS INSTITUTION)**

Second Semester MCA

BUSINESS DATA PROCESSING USING COBOL

UNIT I INTRODUCTION: History of COBOL, Basic Structure of a COBOL Program, Coding format for COBOL programs, Character Set, COBOL Words, Data names and Identifiers, Types of Data, IDENTIFICATION DIVISION- Paragraphs in the IDENTIFICATION DIVISION, ENVIRONMENT DIVISION- Sections of the ENVIRONMENT DIVISION, and Assigning Files to devices in the ENVIRONMENT DIVISION.

UNIT II DATA DIVISION: The file section of the DATA DIVISION, The Working-Storage Section of the DATA DIVISION.

Procedure Division – DISPLAY and ACCEPT Statements, Moving data and printing information, computing in COBOL: The Arithmetic verbs.

UNIT III DECISION MAKING: Decision making using the IF and EVALUATE statements, Basic PERFORM Statement, Alter statement, Exit Statement, Conditional Statements.

UNIT IV DIFFERENT TYPES OF CLAUSES AND VERBS : Usage Clause, Synchronized Clause, Justified Clause, Redefines Clause and Renames Clause, Sign Clause, Text Manipulation with the STRING and UNSTRING Statement, Interactive Processing using SCREEEN Section.

UNIT V ARRAY PROCESSING AND TABLE HANDLING : Different Types of PERFORM Statement, Single-Level Arrays and Tables, Multiple-Level Arrays and Tables.

UNIT VI SEQUENTIAL FILE PROCESSING, SORTING AND MERGING: Sequential File Processing: Systems overview of Sequential File Processing, Sequential File Updating, Sorting and Merging: The SORT Feature, The MERGE Statement and Sample Programs.

UNIT VII INDEXED AND RELATIVE FILE PROCESSING: Indexed File Processing: Systems Considerations for Organizing Disk Files, Processing Indexed Disk Files, and Relative File Processing: Processing Relative Disk Files.

UNIT VIII REPORT WRITER AND SUBROUTINES: Report writer: Benefits of Report Writing Module, The Report Section in the Data Division, Procedure Division Statements. Subroutines: Structure of a COBOL Subroutine, COPY and CALL Statement, Advantages and Disadvantages of COBOL Subroutines.

TEXT BOOKS:

1. COBOL Programming including MS COBOL and COBOL-85, M K Roy and D Ghosh Dastidar, 2nd Edition, Tata McGraw Hill, 2001.
2. Structure COBOL Programming, Nancy Stern and Robert A Stern, 8th Edition, John Wiley & Sons, 2008.

REFERENCES:

1. Structured COBOL Programming, Fray B Shelly, Thomas J Cashman, Roy O Foreman, 2nd Edition, Thomson Course Technology, 1999.
2. Introduction to COBOL, A Guide to Modular Structured Programming, David M. Collopy, 1st Indian Reprint, Pearson Education, 2005

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(AN AUTONOMOUS INSTITUTION)**

Second Semester MCA

COMPUTER ORIENTED NUMERICAL METHODS

UNIT-I NUMBER REPRESENTATION AND ERRORS: Representation of Numbers in Different Bases, Base β numbers, Conversions, Floating Point Representation, Computer errors in representing numbers, Errors, Relative and Absolute, Taylors Series.

UNIT-II TRANSACTIONAL AND POLYNOMIAL EQUATIONS: Introduction, Bisection method, Iteration methods based on first degree equation-Secant method, Regular-Falsi method and Newton-Rapson method, Iteration methods based on second degree equation - Muller method, Rate of convergence - Newton Rapson method.

UNIT-III SYSTEM OF LINEAR ALGEBRAIC EQUATIONS AND EIGEN VALUE PROBLEMS :Introduction - Linear system of equation. Direct Methods-Gauss Elimination Method, Gauss-Jordan Elimination Method, Triangularization Method, Cholskey Method.

UNIT-IV SYSTEM OF LINEAR ALGEBRAIC EQUATIONS AND EIGEN VALUE PROBLEMS: Iteration methods - Jacobi iteration method, Gauss-Seidal Iteration Method, Eigen values and Eigenvectors, Power Method.

UNIT-V INTERPOLATION AND APPROXIMATION: Introduction – Taylor’s series, Linear interpolation, Lagrange Interpolation, Newton divided difference Interpolations (no derivation), Finite difference operators. Interpolating Polynomials using finite differences – Gregory Newton forward and backward difference interpolation, Stirling and Bessel Interpolation (no derivation).

UNIT-VI INTERPOLATION AND APPROXIMATION: Piecewise and Spline Interpolation - Piecewise Linear Interpolation, Piecewise Quadratic Interpolation, Piecewise Cubic Interpolation, Cubic Spline Interpolation, Direct method.

UNIT-VII DIFFERENTIATION AND INTEGRATION: Introduction, Numerical Differentiation – Methods based on Finite Differences. Numerical Integration, Methods based on Interpolation – Trapezoidal Methods, Simpson rule, 3/8 Simpson rule, Composite Integration methods – Trapezoidal Rule, Simpson’s Rule.

UNIT-VIII ORDINARY DIFFERENTIAL EQUATIONS: INITIAL VALUE PROBLEMS: Introduction, Numerical Methods – Euler’s method, Single step methods – Taylor series methods, Range – Kutta method, second order method, fourth order method.

TEXT BOOKS:

1. M K Jain, S.R.K.Jain, R.K.Jain: Numerical Methods for Scientific and Engineering Computation, 5th edition, New Age International Publishers.

REFERENCE BOOKS:

1. Numerical Mathematics and Computing by Ward Cheney and David Kincaid, 5th edition, Thomson Publications.

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Second Semester MCA

OPERATIONS RESEARCH

UNIT I Introduction to Operations Research-Basic definition, Scope, Objectives, Phases, Models and Limitations of Operations Research, Linear Programming Problem – Formulation of LPP, Graphical solution of LPP, Simplex Method, Artificial variables, Big-M method, Two-phase Method, Degeneracy and Unbound solutions.

UNIT II Revised simplex method – Formulation of LP Problems, Computational Procedure, Duality in LP- Introduction, Comparison of solutions of the dual and its primal, Dual simplex method.

UNIT III Transportation Problem – Formulation, Solution, Unbalanced Transportation problem, finding basic feasible solutions- Northwest corner rule, least cost method and Vogel's approximation method, Optimality test – the Stepping stone method and MODI method, Assignment model – Formulation, Hungarian method for optimal solution, solving unbalanced problem. Travelling salesman problem as assignment problem.

UNIT IV Sequencing models, Solution of Sequencing Problem – Processing n Jobs through 2 Machines – Processing n Jobs through 3 Machines – Processing 2 Jobs through m machines Processing n Jobs through m Machines.

UNIT V Replacement Models, Replacement of Items that Deteriorate whose maintenance costs increase with time without change in the money value, Replacement of items that fail suddenly: Individual replacement policy, Group replacement policy.

UNIT VI Dynamic programming, Characteristics of dynamic programming, Dynamic programming approach for Capital budgeting, Stage Coach/Shortest Path, Cargo loading and Reliability problems.

UNIT VII Game Theory, Competitive games, Rectangular game, Saddle point, Minimax (Maximin) method of optimal strategies, Value of the game, Solution of games with saddle points, Dominance principle, Rectangular games without saddle point – mixed strategy for 2 X 2 games.

UNIT VIII Inventory models, Inventory costs, Models with deterministic demand – model (a) demand rate uniform and production rate infinite, model (b) demand rate non – uniform and production rate infinite, model (c) demand rate uniform and production rate finite.

TEXT BOOKS:

1. Operations Research, A.M. Natarajan, P. Balasubramani, A. Tamilarasi, Pearson Education, 2005.

REFERENCES:

1. Operations Research, R. Panneerselvam 2/e, PHI 2008.
2. Operations Research, P.K. Gupta and D.S. Hira, S.Chand & CO., 2007.

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Second Semester MCA

ORGANIZATION STRUCTURE AND PERSONAL MANAGEMENT

UNIT I INTRODUCTION TO MANAGEMENT: Concepts of Management and organization – nature, importance and functions and theories of management, systems approach to management, leadership styles, and social responsibilities of management.

UNIT II INTRODUCTION TO ORGANIZATION: Designing Organizational structures: Basic concepts related to Organization – Department and Decentralization, types and structures of organization.

UNIT III DECISION PROCESS APPROACH: Parts of organization system, dynamics of decision, role of system, Types models: mathematical planning models, deterministic and probabilistic models.

UNIT IV PERSONNEL MANAGEMENT: Evolution, objectives, personnel policies. Personnel management vs HRM, position of the personnel department in the organization, Role of personnel manager as line manager and staff manager.

UNIT V MAN POWER PLANNING: Need-strategies and limitations, manpower inventory, manpower forecasting, job description, recruitment, job specification and selection, interviewing techniques, transfers and promotion policies.

UNIT VI TRAINING AND DEVELOPMENT: Objectives and policies planning, organizing the training department, training manager and his job, on and off the job training techniques, career planning, objectives of performance appraisal.

UNIT VII COMMUNICATION: Importance of communication, Interpersonal communication, Barriers of communication, communication in organizations, using communication skills to manage conflicts.

Personality– Transactional Analysis, Perception: Perceptual process, Development of Attitudes and Values, Team Effectiveness,

UNIT VIII CONTEMPORARY STRATEGIES: Total Quality Management (TQM), six sigma, People Capability Maturity Model (PCMM) levels, performance management, Business Process Outsourcing (BPO), business process re-engineering, bench marking and balanced score card.

TEXT BOOKS:

1. Dr LM Prasad , “Principles & Practice of Management” , 7e, S.Chand.
2. Organization Structure and Personnel Management, P.Subbarao HPH, 2009.
3. Organizational Behavior, Aswathappa.K: Himalaya Publishers.

REFERENCES:

1. Industrial Business Management, Martand T Telsang, S.Chand.
2. Human Resources Management, Dr L.M.Prasad, S.Chand.
3. Dynamic Personnel Administration, Rudrabasavaraj MN, Himalaya.
4. Personnel Management, Mamoria & Gankar, HPH, 2009.

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Second Semester MCA

DATA STRUCTURES

UNIT I INTRODUCTION TO DATA STRUCTURES: Concept of Data Structures, classification of data structures, ARRAYS- Terminology, Classification of arrays, Operations on arrays, sparse matrices representation.

UNIT II LINKED LIST: Definition, Single linked lists, double linked lists, Circular linked lists, Circular double linked lists, Applications of Linked list: Sparse Matrix Manipulation, Polynomial Representation.

UNIT III STACKS: Introduction, Definition, Representation of stacks- Array and Linked list representations, Operations on stacks, APPLICATIONS OF STACKS-Evaluation of Arithmetic Expression, Implementation of Recursion, Factorial Calculation and Towers of Hanoi.

UNIT IV QUEUES: Introduction, Definition, Representation of Queues- Arrays and Linked lists, Various Queue structures, Operations on Queues, Applications.

UNIT V SORTING: Bubble Sort, Selection Sort, Insertion Sort, Merge Sort, Radix Sort and Quick Sort

Searching: Linear Search, Binary Search, and Fibonacci Search, analyzing search and sorting algorithms.

UNIT VI TABLES: classification of tables, hashing techniques, open hashing, and closed hashing, comparison of collision resolution techniques.

UNIT VII TREES: Binary Tree, Binary Search Tree (BST), Representation and operations on BST, Recursive and Non- Recursive Tree Traversal Techniques: In order, post order, pre order and applications.

UNIT VIII ADVANCED TREES: Height Balanced Trees, Heaps, Heap Sort, B-Trees, Threaded Binary Trees, Advantages of special Trees, GRAPHS: Types of graphs, representation of graphs.

TEXT BOOKS:

1. Samanta.D, “Classic Data Structures”, Prentice Hall of India (PHI).

REFERENCES:

1. Data structures and algorithm analysis in C – Mark Allen Weiss, Pearson education
2. Data Structures using C – A.M.Tanenbaum, Y.Langsam, and M.J. Augenstein, Pearson education / PHI, Eighth Edition.
3. An Introduction to Data Structures with Applications, Trembley, Sorenson, 2/e, TMH.
4. C programming with data structures- T.Sudha and B.Poornima, Anmol publications

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)
Second Semester MCA

ASSEMBLY LANGUAGE PROGRAMMING LAB

Write assembly language programs for the following using MASM.

1. Write assembly language programs to evaluate the expressions:
 - i) $a = b + c - d * e$
 - ii) $z = x * y + w - v + u / k$
2. Write an ALP of 8086 to take N numbers as input and do the following operations on them.
 - a) Arrange in ascending and descending order.
 - b) Find max and minimum
3. Write an ALP of 8086 to take a string as input and do the Following Operations on it.
 - a) Find the length
 - b) Find it is Palindrome or not
 - c) Find whether given string is substring or not.
 - d) Reverse a string
 - e) Concatenate by taking another string
4. Write the ALP to implement the above operations as procedures and call from the main procedure.
5. Write an ALP of 8086 to find the factorial of a given number as a Procedure and call from the main Program which display the result.
6. Write an assembly language program to encrypt digits as shown below:
Input digit: 0 1 2 3 4 5 6 7 8 9
Encrypted digit: 4 6 9 5 0 3 1 8 7 2
7. Write an assembly language program to read a string of characters from the user and that prints the vowel count.

Example. Input: Advanced Programming in UNIX

Output:

<i>Vowel</i>	<i>count</i>
a or A	3
e or E	1
i or I	3
o or O	1
u or U	1

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)
Second Semester MCA**

COBOL LAB

Develop the Programs using the following concepts:

1. Using Arithmetic Verbs, MOVE Verb, ACCEPT Verb, DISPLAY Verb and COMPUTE Verb
2. Control Statements and Perform Statements
3. Table handling facilities
4. Create and process Sequential Files and to Process Master files using Transaction Files
5. Sort a File, Merge two Files and Search a File for a given record using search verb
6. Create and Process an Indexed File
7. Create and Process a Relative File
8. Program using subroutines
9. Program using report generator

DATA STRUCTURES LAB

1. Program to perform the operations create, insert, delete and search on a **single dimensional array**. Use primitive data or structure data.
2. Program to perform the operations of **single linked list** using primitive data or structure data. Use **array representation** of linked list.
3. Program to perform the operations of **single linked list** using primitive data or structure data. Use **dynamic representation** of linked list.
4. Program to perform the operations of **circular single linked list** using primitive data or structure data. Use **dynamic representation** of linked list.
5. Program to perform the operations of **double linked list** using primitive data or structure data. Use **dynamic representation** of linked list.
6. Program to perform the operations of **circular double linked list** using primitive data or structure data. Use **dynamic representation** of linked list.
7. Program that demonstrates the **polynomial manipulation** using **linked list**.
8. Program to implement **stack** data structure using **array representation**. Use primitive data or string data.
9. Program to implement **stack** data structure using **linked list representation**. Use primitive data or string data.
10. Program to convert given **infix expression to post fix expression**.
11. Program to **evaluate** the given **post fix** expression.
12. Program to demonstrate the **recursion implementation** using **stack**.
13. Program to perform the operations of **simple Queue**. Use **array representation**.
14. Program to perform the operations of **simple Queue**. Use **linked list representation**.
15. Program to perform the operations of **circular Queue**. Use **linked list/array representation**
16. Program to perform the operations of **Dequeue**. Use **linked list/array representation**
17. Program to perform the **operations** insert a node, delete a node, search and traverse using **Binary Search Tree**.
18. Program to accept a set of integer or float or string values and **construct a Binary Search Tree** then **search for a given element**.
19. Program to construct a **Heap tree and sort** the values.
20. Program to demonstrate the implementation of **Priority Queue** using **Heap Tree**.
21. Program to perform the **operations** insert a node, delete a node, search and traverse using **Height Balanced Tree**.

22. Programs to demonstrate the following **Searching** techniques using integer or float or string or structure data.

1. Serial search using array or linked list data structures.
2. Binary search
3. Fibonacci search

23. Programs to demonstrate the following **Sorting** methods using integer or float or string or structure data.

1. Selection sort
2. Bubble sort
3. Quick sort
4. Merge sort
5. Radix sort

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
(AN AUTONOMOUS INSTITUTION)**

Third Semester MCA

(1P2B31) DATABASE MANAGEMENT SYSTEMS

UNIT I INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS:

Data Vs Information, Purpose of databases, views of data, database languages, Relational databases, database design, data storage and querying, transaction management, database architecture, database users and administrators, data models.

UNIT II E-R MODEL: Overview of the Design Process, E-R Model, attributes, constraints, keys, Entity-Relationship diagrams, E-R diagrams design issues, Extended E-R features, Specialization, Generalization, Aggregation.

UNIT III RELATIONAL MODEL: Structure of Relational database, Relational Algebra, Tuple relational calculus, Domain relational calculus, QBE (Query-by-Example), Datalog.

UNIT IV STRUCTURED QUERY LANGUAGE (SQL): Introduction to SQL, Data Definition commands, Data Manipulation Commands, SELECT Clause, SQL Operators, SQL Functions, Join queries, Sub queries , Nested queries, Views, integrity constraints.

UNIT V DATABASE DESIGN-NORMALIZATION: Design Process, Normal Forms-1st, 2nd, 3rd and BCNF, Functional Dependencies, Multi Valued Dependency-4th Normal Form, 5th NF/Projection-Join Normal form and De-Normalization

UNIT VI STORAGE AND FILE STRUCTURE: Overview of Physical Storage media , Magnetic Disks, RAID, File Organization, Organization of Records in Files and Data-Dictionary Storage

Indexing and Hashing: Ordered Indices, B+-Tree Index Files, B-Tree Index files, Multiple-key access, Static and Dynamic Hashing , Bitmap indices and Indexed Sequential Access Methods.

UNIT VII TRANSACTION MANAGEMENT: Transaction concept, ACID properties, Transaction state, Atomicity and durability, concurrent execution, concept of Serializability and Testing for Serializability.

Concurrent Control: Lock-Based protocols, Time Stamp-Based protocol, Validation-based protocol, Multiple Granularity, Multiversion Schemes Dead lock handling.

UNIT VIII RECOVERY SYSTEM: Failure Classification, Storage structure, Recovery and atomicity, Log-Based Recovery, Recovery with concurrent Transactions, Buffer management, Advanced Recovery Techniques, ARIES Recovery Technique and Remote Back systems.

TEXT BOOKS:

1. Abraham Silberschatz, Henry F. Korth and S. Sudarshan. Database system Concepts. McGraw Hill International Edition, 2006, 5th Ed.
2. Elmasri, Navate, Fundamentals of Database Systems, Person Education, 2008.

REFERENCES:

1. C.J Date, Introduction to Database Systems, Pearson Education, 2009.
2. S.Shah and V. Shah SPD, Oracle for Professionals, The X team, 2010.
3. PS Deshpande, SQL/PLSQL for Oracle 9i , dreamtec Press, 2007.
4. Raghurama Krishna, Johannes Gehrke, Database management systems, TMH.

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Third Semester MCA

(1P2B32) COMPUTER COMMUNICATIONS

UNIT I INTRODUCTION: Applications of Networks, Network hardware, Network Software, Reference Models-OSI Reference model, TCP/IP Reference Model, OSI versus TCP/IP.

UNIT II MULTIPLEXING AND SWITCHING TECHNIQUES: Frequency division Multiplexing, Synchronous Time division multiplexing, Statistical time division multiplexing.

circuits switching: packet switching, circuit-switch networks, packet-switching principles, x.25 , frame relay.

UNIT III DATA LINK LAYER: Data Link layer design issues, framing, error control, flow control, Error Detection and Correction, Elementary data link protocols, Sliding Window protocols.

UNIT IV MEDIUM ACCESS CONTROL: Channel allocation, Multiple access protocols-Aloha, CSMA, collision free protocols, Limited-Contention Protocols, Ethernet-Manchester Encoding, Back-off algorithm, Wireless LANs.

UNIT V NETWORK LAYER: Network layer design issues , Routing Algorithms-the Optimality Principle, Shortest path Routing, Flooding, Distance Vector Routing, Link State Routing, Hierarchical Routing, Broadcasting routing and Congestion control algorithms.

UNIT VI INTERNETWORKING: Connectionless versus connection oriented Tunneling, Internetwork Routing, Fragmentation, IP Protocol, IP Address, Internet Control Protocols-ICMP, ARP, RARP, OSPF, BGP and Internet multicasting.

UNIT VII TRANSPORT LAYER: Transport Services, Internet transport protocols- UDP, TCP.

Wireless and Mobile Networks: Wireless Links and Network Characteristics, CDMA, Wi-Fi: 802.11 Wireless LANs, Architecture, MAC layer, Frame, IP Subnet, Bluetooth and Mobile IP

UNIT VIII NETWORK SECURITY: Cryptography, Symmetric-key algorithms-DES, AES, Public-key algorithms-RSA, Digital Signatures, Authentication Protocols-Kerberos and e-mail security-PGP, PEM.

TEXT BOOKS:

1. Andrew S. Tanenbaum. Computer Networks, Pearson education, 2009, 4th Ed.
2. James F. Kurose, Keith W. Rose. Computer Networks- A Top-Down Approach Featuring the internet, Pearson education, 2009.

REFERENCE BOOKS:

1. S. Keshav. An engineering Approach to Computer Networking, ATM Networks, the Internet and the Telephone Network. Pearson education, 2009.
2. Williams Stallings. Data and Computer Communication. PEA, 2003, 7th Ed.
3. Nadir F. Mir, Computer and Communication Networks. Pearson Education, 2009.

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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Third Semester MCA

(1P2B33) NETWORK PROGRAMMING

UNIT I INTRODUCTION: Linux/UNIX Operating System; The Linux/UNIX Architecture; Features of Linux/UNIX; POSIX standard; Locating Commands: man , apropos and whatis; General Purpose Utilities: cal, date, calendar, who, printf, tty, stty, uname, passwd, lock,echo, tput, bc, script, spell and ispell; Unix file system; Navigating the File System: pwd, cd, mkdir,rmdir and Relative pathnames; Handling Ordinary Files: cat, cp, rm, mv, more, lp, file, wc, od, split, cmp, find, comm, diff,chmod, The vi editor, umask; The Process basics, ps,nice, at and batch, cron, time commands; Filters: grep, Regular Expression, egrep, fgrep, Simple filters:pr, head, tail, cut, paste, sort, uniq, tr commands;

UNIT II ESSENTIAL SHELL PROGRAMMING: shell variables; shell constants; command substitution; parameter substitution; shell meta characters; shell commands: test, control structures, arithmetic in shell, shell functions, input and output redirection,pipes and tee; debugging shell scripts.

UNIT III FILE PROCESSING: File types, FILE stream, Standard I/O (fopen, fclose, fseek, fgetc, getc, getchar, fputc, putc, putchar, printf, scanf), file descriptor, system calls for file processing (open, creat, read, write, close, lseek, stat family, umask, dup, dup2, fcntl, link, symlink, unlink); file permissions and security, system calls (chmod, chown), directory management system calls (opendir, readdir, closedir, seekdir, telldir)

UNIT IV LINUX / UNIX PROCESSES I: The Environment of a Process, main function, Process Termination, Memory Layout of a C Program, Environment Variables, setjmp and longjmp Functions, getrlimit, setrlimit Functions,Linux/UNIX Kernel Support for Processes.

UNIT V LINUX / UNIX PROCESSES II: Process Identifiers , fork, vfork, exit, wait, waitpid, waitid, wait3, wait4 functions, Race Conditions, exec functions, system Function, Process Accounting, User Identification, Process Times. Terminal Logins, Network Logins, Process Groups, Sessions, Controlling Terminal, tcgetpgrp, tcsetpgrp, and tcgetsid Functions.

UNIT VI SIGNALS: Signal types, Kernel Support for Signals, Signal function, signal mask, sigaction function. The sigsetjmp and siglongjmp Functions, kill, alarm, raise, pause, sigpause functions.

UNIT VII INTERPROCESS COMMUNICATION: Introduction; Pipes, pipe, popen Functions, Co-processes; FIFOs; XSI IPC; Message Queues; Semaphores, shared memory.

UNIT VIII NETWORK IPC:

Sockets: Introduction; Socket Descriptors; Addressing; Connection establishment; Data transfer system calls ; Out-of-band data; Non blocking and asynchronous I/O, Implementation of TCP/IP and UDP.

TEXT BOOKS:

1. W.Richard Stevens, Stephen A. Rago. Advanced Programming in the UNIX Environment, Pearson Education / Prentice-Hall of India, 2005, 2nd Ed.
2. Sunitabha Das, Unix concepts and applications –2010.

REFERENCE BOOKS:

1. Terrence Chan. Unix System Programming Using C++. Prentice-Hall of India / Pearson Education, 1999.
2. Marc J. Rochkind. Advanced UNIX Programming. Pearson Education, 2005, 2nd Ed.
3. Maurice. J. Bach. The Design of the UNIX Operating System. Pearson Education / PHI, 1987.
4. Uresh Vahalia. UNIX Internals. Pearson Education, 2001.

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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Third Semester MCA

(1P2B34) JAVA PROGRAMMING

UNIT I CLASSES AND OBJECTS : concepts of classes, objects, methods, access control, this keyword, garbage collection, simple java program, constructors, parameter passing, recursion, string handling.

UNIT II INHERITANCE : Hierarchical abstractions, Base class object, subclass, subtype, substitutability, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance. Member access rules, super keyword and its uses, using final with inheritance, polymorphism- method overriding, abstract classes, Method overloading.

Inner Classes-Uses of inner classes, local inner classes, anonymous inner classes, static inner classes, examples.

UNIT III PACKAGES AND INTERFACES : Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, Interfaces vs Abstract classes, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces. Exploring packages –java.util.

UNIT IV EXCEPTION HANDLING AND MULTITHREADING: Concepts of exception handling, benefits of exception handling, Termination or presumptive models, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes. Differences between multi threading and multitasking, thread life cycle, creating threads, synchronizing threads, daemon threads, thread groups.

UNIT V EVENT HANDLING: Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes, GUI programming. The AWT class hierarchy, user interface components- labels, button, canvas, scrollbars, text components, check box, check box groups, choices, lists panels – scrollpane, dialogs, menubar, graphics, layout manager – layout manager types – border, grid, flow, card and gridbag.

UNIT VI FILES-STREAMS: Byte Streams, Character Streams, text Input/output, Binary input/output, random access file operations, File management using file class, using java.io.

Enumeration, Auto-boxing: Enumeration, Type Wrappers, Auto boxing. **Generics:** What are Generics?, A Simple Generics Example, A Generics Class with two Type Parameters, The General Form of a Generic Class. **String Handling:** The String Constructors, String Length, Special String Operations, Character Extraction, String Comparison, Searching Strings, Modifying a String, Data Conversion Using valueOf (), Changing the Case of Characters Within a String, Additional String Methods, String Buffer, String Builder.

UNIT VII APPLETS: Concepts of Applets, differences between applets and applications, life cycle of applet, types of applets, creating applets, passing parameters to applets.

Swing – Introduction, limitations of AWT, MVC architecture, components, containers, exploring swing- JApplet, JFrame and JComponent, JIcon and JLabel, Jtextfield, Jbutton – The JButton class, JCheckbox, JRadiobuttons, JCombobox, JTabbed Pane, JScroll Pane, JTree, and JTable.

UNIT VIII NETWORKING: Basics of network programming, addresses, ports, sockets, Socket connection, simple client server program, multiple clients, Java .net package,

TEXT BOOKS:

1. Herbert schildt, Java. The complete reference. TMH, 2010, 7th Ed.
2. T. Budd. Understanding OOP with Java. Pearson education, 2008, Updated Ed.

REFERENCE BOOKS:

1. J.Nino and F.A. Hosch. An Introduction to programming and OO design using Java. John Wiley and sons, 2004.
2. T. Budd. An Introduction to OOP. Pearson education, 2009, 2nd Ed.
3. Y. Daniel Liang. Introduction to Java programming. Pearson education, 2010, 6th Ed.
4. R.A. Johnson. An introduction to Java programming and object oriented application development. Thomson, 2009.

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Third Semester MCA

(1P2B35) DESIGN AND ANALYSIS OF ALGORITHMS

UNIT I INTRODUCTION: Algorithm, Pseudo code for expressing algorithm, Fundamentals of algorithmic problem solving - analysis, time complexity and space complexity, Asymptotic notations - O-notation, Omega notation, and theta notation, Examples of sort and merge algorithms.

UNIT II DIVIDE AND CONQUER: General Method, Merge sort, Quick sort, Binary search, Binary tree traversals and related properties.

UNIT III DECREASE AND CONQUER: General Method, insertion sort, depth first search, breadth first search, topological sorting. Transform and conquer: presorting, balanced search trees, heap and heap sort.

UNIT IV DYNAMIC PROGRAMMING: General Method, Warshall's and Floyd's algorithms, the knapsack problem, Travelling sales person problem, optimal storage concept.

UNIT V GREEDY TECHNIQUE: General Method, Prim's algorithm, Kruskal's algorithm, Dijkstra's algorithm, minimum spanning tree, single Source shortest paths.

UNIT VI BACK TRACKING: General Method, n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

UNIT VII BRANCH AND BOUND: LC search, bounding, LC branch and bound, FIFO branch and bound.

UNIT VIII NP-HARD AND NP-COMPLETE PROBLEMS: Basic concepts, non-deterministic algorithms, NP-HARD, NP-COMPLETE classes, COOKS theorem.

TEXT BOOKS:

1. T. H. Corman, C Leiserson, Rivest, Ronald and stein Clifford. Introduction to algorithms. MGH, New York, 2001, 2nd Ed.
2. Anany Levitin. Introduction to the design and analysis of algorithms. Pearson education, 2003, 2nd Ed.

REFERENCE BOOKS:

1. E Horowitz, S Sahni, S Rajasekaran. Fundamentals of computer algorithms. Universities press, 2008, 2nd Ed.
2. Richard Neopolitan, Kumarss Naimipour. Foundations of algorithms using C++ pseudocode, Jones and Bartlett Learning, 1998, 2nd Ed.
3. Baase, Sara and van gelder Allen. Computer algorithms: Introduction to design and analysis, Addison-Wesley, MA, 2000, 3rd Ed.

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Third Semester MCA

(1P2B36) OPERATING SYSTEMS

UNIT I OPERATING SYSTEM INTRODUCTION: Operating Systems objectives and functions, OS Structure, OS Operations, Evolution of Operating Systems- Simple, Batch, Multi Programmed, Time-Shared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems, Operating System Services, System Calls, Types of System Calls, System Programs, Operating System Design and Implementation.

UNIT II PROCESS AND CPU SCHEDULING: Process Concepts- The Process, Process State, Process Control Block, Threads, Process Scheduling- Scheduling Queues, Schedulers, Context Switch, Preemptive Scheduling, Dispatcher, Scheduling Criteria, Scheduling Algorithms:-First-come First-served Scheduling, Shortest-Job-First Scheduling, Priority Scheduling, Round-Robin Scheduling, and Multilevel Queue Scheduling.

UNIT III PROCESS COORDINATION: Process Synchronization, the Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, and Monitors.

UNIT IV MEMORY MANAGEMENT AND VIRTUAL MEMORY MANAGEMENT: Logical and Physical Address Space, Swapping, Contiguous Memory Allocation, Paging, Structure of Page Table, Segmentation, Segmentation with Paging, Demand Paging, Performance of Demand Paging, Page Replacement, Page Replacement Algorithms: FIFO Page Replacement, Optimal Page Replacement, LRU Page Replacement and counting-Based Page Replacement, Thrashing.

UNIT V FILE SYSTEM INTERFACE: The Concept of a File, Access methods, Directory Structure, Protection. File System Structure, Allocation methods, Free Space Management, Directory Implementation.

UNIT VI MASS STORAGE STRUCTURE: Overview of Mass Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling Algorithms, Disk Management, RAID Levels, Stable-Storage Implementation.

UNIT VII DEADLOCKS: System model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock.

UNIT VIII PROTECTION: System Protection- Goals of Protection, Principles of Protection, Access Matrix, Implementation of Access Matrix, Access Control, Revocation of Access Rights.

Security: - The Security Problem, Program Threats, System and Network Threats, User Authentication, Firewalling to protect Systems and networks.

TEXT BOOKS:

1. Abraham Silberchatz, Peter B. Galvin. Operating System Principles. Wiley Student Edition, 2010, 8th Ed.
2. Andrew S Tanenbaum. Modern Operating Systems. Pearson/ PHI, 2011, 3rd Ed.

REFERENCE BOOKS:

1. R. Elmasri, A.G.Carrick and D.Levine. Operating Systems. MGH, 2010.
2. A.S. Godbole. Operating Systems. TMH, 2009, 2nd Ed.
3. W. Stallings. Operating Systems-Internal and Design Principles, Pearson Education, 2009, 6th Ed.

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Third Semester MCA

(1P2B37) DBMS LAB

List of Sample Problems/Experiments

1. Creation, altering and drop of tables and inserting, deleting and update the rows into a table using SELECT Command.
2. Queries using integrity constraints.
3. Queries using SQL operators like, relational, logical and set operators.
4. Queries using SQL functions.
5. Queries using conversion and Aggregate functions.
6. Queries using join conditions.
7. Create Views, Sequences.
8. Write a Simple PL/SQL Program to display students' details.
9. Create PL/SQL block using IF/ELS IF/NESTED IF statement.
10. Create PL/SQL block using WHILE/FOR Loops.
11. Create PL/SQL block using CASE Statement.
12. Create PL/SQL block using CURSORS.
13. Create PL/SQL block using EXCEPTION handling.
14. Create PL/SQL block using FUNCTION / PROCEDURE/TRIGGER/
PACKAGE.

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Third Semester MCA

(1P2B38) NETWORK PROGRAMMING LAB

List of Sample Problems/Experiments:

Experiment - 1:

A) The objective of this exercise is to give experience in using telnet to connect to the Linux host, login using the user id and password provided, and then to logout.

1. Fire up the telnet client specifying Lab system as the host.
2. When prompted provide your user id and password.
3. Logout or exit from the session.

B) The objectives of this exercise are to

- * Familiarize yourself with a couple of commonly used commands, and,
- * Let you explore the system a little.

1. Get help on the ls command, and then use the ls command to display the files and directories.
2. Find out who else is on the system.
3. What is your current directory (present working directory)?
4. Pipe the output of the ls -l / command to ls.output and see what you get.

C) The objectives of these exercises are to find out how you can see what a system is running and what resources the system is using.

1. Use the ps -ef | more command to locate what daemons are running on the system.
2. Use the top command to display the system activity.

Experiment - 2:

A) The objectives of these exercises are to:

See how Linux can handle multiple file systems

Examine the /proc file system which Linux uses to provide information about its internal operation

1. Find out what devices are mounted and what file systems are in use.
2. Examine a couple of the /proc files using the more command (hint, use the ls command to see what files exist within the /proc system).

The objective of this exercise is to familiarize you with the hierarchy of files within a file system.

3. Use the cd command to go to the “root” of the file system.
4. Use the cd command to go to your home directory.
5. create a directory ‘test’ under your home directory.
6. create a file ‘real.file’ within this directory.
7. create a symbolic link in your home directory to ‘real.file’ called ‘symbolic.link’.

B) The objective of this exercise is to work with files, directories and links.

Explore your file system:

Identify 1st level directories

Locate a symbolic link

Use the umask command to display current default

Create 3 files (‘all’, ‘group’, ‘owner’) and assign permissions:

All - r/w to owner, group, and others

Group - r/w to owner and group, r/o to others

Owner - r/w to owner, r/o to group, none to others

Experiment - 3:

Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers.

Experiment - 4:

Write a shell script that deletes all lines containing a specific word in one or more files which are supplied as argument to it.

Experiment - 5:

A) Write a shell script to find factorial of the given integer.

B) Write a shell script to print prime numbers upto given limit.

Experiment - 6:

Write an awk script to find number of characters, words, and lines in a file.

Experiment-7:

Write a C program to implement the "cat" utility (file creation, display, file appending, etc.)

Experiment - 8:

Write a C program that accepts one or more file/directory names as command line input and reports the information such as file type, file permissions, access times, etc.,

Experiment - 9:

Write a C program to list for every file in a directory, its inode number, size and file name.

Experiment - 10:

Write a C program that permits a parent process to accept an integer from standard input and communicate to child process. The child process then computes the factors up to that integer and print.

Experiment - 11:

Write C programs that illustrate communication between two unrelated processes using a named pipe (FIFO).

Experiment - 12:

Write C programs that illustrate the communication between two unrelated processes using MessageQueues/SharedMemory.

Experiment – 13:

Write C programs that illustrate the communication between two processes using TCP/IP (or) UDP protocols with Socket.

REFERENCE BOOKS:

1. A practical guide to linux commands, editors and shell programming: Mark G.sobell-2nd edition-Prentice hall, 2005.
2. W.Richard Stevens, Stephen A. Rago: Advanced Programming in the UNIX Environment, 2nd Edition, Pearson Education / Prentice-Hall of India, 2005.
3. Terrence Chan: UNIX System Programming Using C++, Prentice-Hall of India / Pearson Education, 1999.

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Third Semester MCA

(1P2B39) JAVA PROGRAMMING LAB

1. Programs using constructor .
2. Creation of classes and use of different types of functions.
2. Count the number of objects created for a class using static member function.
3. Write programs on interfaces.
4. Write programs on packages.
5. Write programs using function overloading and overriding .
6. Programs using inheritance.
7. Programs using IO streams.
8. Programs using files.
9. Write a program using exception handling mechanism .
10. Programs using AWT.
11. Programs on swings.

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Fourth Semester MCA

(1P2B41) SOFTWARE ENGINEERING

UNIT – I OVERVIEW: Introduction: FAQ's about software engineering, Professional and ethical responsibility. Socio-Technical systems: Emergent system properties; Systems engineering; Organizations, people and computer systems; Legacy systems.

UNIT – II CRITICAL SYSTEMS, SOFTWARE PROCESSES:

Critical Systems: A simple safety-critical system; System dependability; Availability and reliability.

Software Processes: Models, Process iteration, Process activities; The Rational Unified Process; Computer-Aided Software Engineering.

UNIT – III REQUIREMENTS: Software Requirements: Functional and Non-functional requirements; User requirements; System requirements; the software requirements document.

Requirements Engineering Processes: Feasibility studies; Requirements elicitation and analysis; Requirements validation; Requirements management.

UNIT – IV SYSTEM MODELS, PROJECT MANAGEMENT :

System Models: Context models; Behavioral models; Data models; Object models; Structured Methods

Project Management: Management activities; Project planning; Project scheduling; Risk management

UNIT – V SOFTWARE DESIGN:

Design concepts: The Design process, Design Concepts.

Architectural Design: Architectural design decisions; System organization; Modular decomposition styles;

Object-Oriented design: Objects and Object Classes; An Object-Oriented design process; Design Evolution.

UNIT – VI RAPID SOFTWARE DEVELOPMENT: Agile methods; Extreme programming; Rapid application Development, Software Evolution: Program evolution dynamics; Software maintenance; Evolution processes; Legacy system evolution

UNIT – VII VERIFICATION AND VALIDATION: Planning; Software inspections; automated static analysis; Verification and formal methods. Software testing: System testing; Component testing; Test case design; Test automation.

UNIT – VIII SOFTWARE COST ESTIMATION: Productivity; Estimation techniques; Algorithmic cost modeling, Project duration and staffing.

TEXT BOOKS:

1. Ian Sommerville. Software Engineering. Pearson Education Publications, 2007 (Chapters-: 1, 2, 3, 4, 5, 6, 7, 8, 11, 14, 17, 21, 22, 23, 26), 8th Ed.
2. Roger S. Pressman. Software Engineering - A Practitioners approach. McGraw-Hill, 2007, 7th Ed.

REFERENCE BOOKS:

1. Shari Lawrence Pfleeger, Joanne M. Atlee. Software Engineering Theory and Practice. Pearson Education, 2006, 3rd Ed.
2. Waman S Jawadekar. Software Engineering Principles and Practice, Tata McGraw Hill, 2004.

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Fourth Semester MCA

(1P2B42) SYSTEM SOFTWARE

UNIT-I Introduction to Systems Programming and Assembly language Programming.

UNIT-II Introduction to Instruction Formats, Data formats – Role of Base Register, Index Register.

UNIT-III Introduction to grammars, languages, finite state machines.

UNIT-IV INTRODUCTION TO ASSEMBLER: databases used in assembler design, Design of Assembler Single Pass and Double Pass

UNIT-V INTRODUCTION TO MACROS: Various types of Macros, Design of Macro processor – Single Pass and Double Pass

UNIT-VI INTRODUCTION TO LOADERS: Functions of a loader, types of Loaders, databases used in Loaders, Design of Loaders – Absolute and DLL.

UNIT-VII INTRODUCTION TO COMPILERS: A brief discussion on various phases of compilers. Applications of FSM and grammars in compiler design.

UNIT-VIII INTRODUCTION TO SOFTWARE TOOLS: Text editors, Interpreters, Program Generators, Debug Monitors.

TEXT BOOKS:

1. Donovan. Systems Programming, Tata McGraw Hill, 2001.

REFERENCE BOOKS:

1. Dhamdhare. System Programming. Tata McGraw Hill. Aug 1999, (2nd Revised Ed).
2. Leland, L.Beck. System Software. Pearson Education, Aug, 1996.

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Fourth Semester MCA

(1P2B43) ADVANCED JAVA FOR WEB TECHNOLOGIES

UNIT I HTML COMMON TAGS: Introduction, HTML Basics- Text, Colors, Links, Images, Lists, Forms, Frames, Tables, Web Page Design. Cascading Style Sheets- Introduction to CSS, Types of CSS.

UNIT II JAVA SCRIPT: Introduction to JavaScript, Basics of JavaScript, Control Structures, Pop Up Boxes, Functions, Arrays, Events, Objects and Simple Web Application. Dynamic HTML- Introduction, Object Model and Collections- Dynamic Style and Frame Collection. Filters and Transitions. ActiveX control.

UNIT III XML: Introduction, Document type definition, XML Schemas, Document Object Model, XML and Data Binding, Presenting XML(XSL), **XML Processors:** DOM and SAX.

UNIT IV JAVA BEANS: Introduction to Java Beans, Advantages of Java Beans. JDK, Introspection- Properties, Events and Methods. Using Bound Properties, Bean Info Interface, Constrained Properties, Persistence, Customizers, Java Beans API, and Introduction to EJB's.

UNIT V WEB SERVERS AND SERVLETS: Introduction to Servlets, Web Servers, Deployment of Servlets- How to write servlet, how to execute servlet, Lifecycle of a servlet, JSDK, The Servlet API, The javax.servlet package, Reading Servlet parameters, Reading Initialization parameters, The javax.servlet HTTP package, Handling HTTP Request and Responses, Cookies, Session Tracking.

UNIT VI INTRODUCTION TO JSP: The Problem with servlet, The anatomy of JSP page, JSP Processing, JSP application design with MVC, Setting up and JSP environment, Installing the Java Software Development Kit, Tomcat Server and Testing Tomcat, JSP Standard Tag Library(JSTL).

UNIT VII JSP APPLICATION DEVELOPMENT: Generating Dynamic Content- Directive Elements, Template Text, Beans and JSP, Action Elements. Using scripting elements. Implicit JSP Objects, Conditional Processing- Declaring Variables and methods. Error handling and debugging.

UNIT VIII DATABASE ACCESS: Introduction, Database Programming with JDBC- How JDBC works, JDBC Architecture, JDBC Driver Types. Studying javax.sql.* package, Installation of MySQL, Accessing Database from JSP page- Use of Prepared Statement. Deploying Java Beans in a JSP Page.

TEXT BOOKS:

1. Patrick Naughton and Herbert Schildt. Complete Reference Java. 2002, 2nd Edition
2. Hans Bergstan. Java Server Pages. SPD publications, 2003, 3rd Ed.

REFERENCE BOOKS:

1. Knuckles. Web Applications Technologies Concepts. John Wiley, 2006, 1st Ed.
2. Wang. An Introduction to Web Design and Programming. Thomson, 2007, 1st Ed.
3. Pekowsky. Java Server Pages. Pearson, 2008.
4. D.Flanagan, Java Script, O'Reilly, SPD.
5. Michael Morrison, XML Unleashed, Tech Media sams.
6. O'neil, Java Beans Programming, TMH, 2005.

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Fourth Semester MCA

(1P2B44) DATA WAREHOUSING AND MINING

UNIT I INTRODUCTION TO DATA WAREHOUSING: What is Data Warehousing? Difference between DBMS and Data Warehouse, Data Warehouse Architecture, Data Warehouse Implementation, The Role of OLAP, OLTP Technology for Data Mining and Data Warehouse, Further Development of Data Cube Technology, From Data Warehousing to Data Mining,

Introduction to Data Mining: What is Data mining?, Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Major issues in Data Mining, A Multidimensional Data model.

UNIT II DATA PREPROCESSING: Need for Preprocessing the Data, Data cleaning, Data integration and Transformation, Data Reduction, Discretization and concept Hierarch Generation, Data Mining Applications.

UNIT III DATA MINING PRIMITIVES, LANGUAGES AND SYSTEM ARCHITECTURE: Data Mining primitives, Data Mining query Languages, Designing Graphical User Interface Based on Data Mining Language, Architectures of Data Mining Systems

UNIT IV CONCEPTS DESCRIPTION: Characterization and Comparison: Data Generalization and summarization-Based characterization, Efficient methods for data cube computation, Attribute-oriented induction.

UNIT V MINING FREQUENT PATTERNS, ASSOCIATIONS AND CORRELATIONS: Basic concepts, Efficient and scalable Frequent Item set Mining Methods, Mining various kinds of Association Rules, From Association mining to correlation Analysis, Constraint- Based Association Mining.

UNIT VI CLASSIFICATION AND PREDICTION: Issues regarding classification and prediction, classification by Decision Tree induction, Bayesian classification, and classification by Back propagation, classification based on concepts from Association Rule Mining, Classifier Accuracy.

UNIT VII CLUSTER ANALYSIS: Introduction, A Categorization of Major Clustering Methods, Partitioning Methods, Density-Based Methods. Model based clustering methods, Outlier Analysis.

UNIT VIII MINING COMPLEX TYPES OF DATA: Multidimensional Analysis and Descriptive Mining of complex Data objects, Mining Spatial Databases, Mining multimedia Data bases, Mining Text Databases, Mining the World Wide Web.

TEST BOOKS:

1. Jiawei Han and Micheline Kamber. Data Mining-concepts and Techniques. Morgan Kallfman March 2006, 2nd Ed.

REFERENCE BOOKS:

1. Pang- Ning Tan, Michael Steinbach, vipin kumar. Introduction to Data Mining. Pearson Education , 2007.
2. K.P. Soman shyam Diwakar, V. Ajay. Insight into Data Mining -Theory and Practice, PHI 2006.

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Fourth Semester MCA

**(1P2B4A) COMPUTER GRAPHICS AND IMAGE PROCESSING
(Elective – I)**

UNIT – I Introduction to computer graphics, uses of computer graphics, Geometric Objects: Scalars, points, and vectors; Graphic Hardware: Hardcopy technologies, Display technologies, Graphics input devices,, Graphic primitives: Two-dimensional primitives, Three-dimensional primitives; Coordinate systems and frames;

UNIT – II 2-D PRIMITIVES: Line drawing: Incremental or DDA (digital differential algorithm), Bresenham Line drawing Algorithm, Circles drawing: Midpoint Circle Algorithm, Bresenham Circle Algorithm; Ellipses drawing: Midpoint Ellipse Algorithm.

UNIT – III 2-D Line Clipping: Cohen-Sutherland line clipping, Liang-Barsky line clipping. **2-D polygon clipping:** Sutherland-hodgman polygon clipping.

UNIT – IV 2-D Transformations: Translation, Scaling and Rotation; Transformations in homogeneous Coordinates; Concatenation of transformations; Window-to-Viewport coordinate transformation.

3-D Transformations: Rotation, translation and scaling.

UNIT V INTRODUCTION: Image Processing, origins of Image Processing, examples, components of an image processing, Models: image sampling and quantization, pixels, representation as a matrix, linear and non-linear operations.

UNIT VI IMAGE TRANSFORMATIONS: Fourier Transformation, one-dimensional, two-dimensional, Inverse Fourier Transformation using a Forward Transform algorithm, Fast Fourier Transform

UNIT VII IMAGE RESTORATION: Image Restoration process, Inverse Filtering, Minimum mean Square error Filtering.

Color Models: The RGB color model, the CMY and CMYK color model, the HIS color model, Color Transformations.

UNIT VIII IMAGE COMPRESSION: Coding Redundancy, Image Compression models, Error-free Compression, Lossy Compression.

Image Segmentation: Detection of Discontinuities, Thresholding, region-based segmentation

TEXT BOOKS:

1. James D. Foley, Andries Van Dam, Steven K. Feiner, John F. Hughes. Computer Graphics. Addison-Wesley, 1997.
2. R. C. Gonzalez and R. E. Woods. Digital Image Processing. 2008, 3rd Ed.

REFERENCE BOOKS:

1. Donald Hearn and Pauline Baker. Computer Graphics- C Version. Pearson Education, 2003, 2nd Ed.
2. Tony Chan, Jianhong Shen. Image Processing and Analysis Variational, PDE, Wavelet, and Stochastic Methods. Paperback, September 2005, (ISBN-13: 9780898715897).
3. H. J. Trussell, M. J. Vrhel , Hardback. Fundamentals of Digital Imaging. Cambridge university press, 2008, (ISBN-13: 9780521868532).

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Fourth Semester MCA

**(1P2B4B) SOFTWARE TESTING METHODOLOGIES
(Elective – I)**

UNIT – I INTRODUCTION: Purpose of testing, Dichotomies, Model for testing, Consequences of bugs, Taxonomy of bugs.

UNIT – II FLOW GRAPHS AND PATH TESTING: Basic Concepts of path testing, predicates, path predicates and achievable paths, path sensitizing, path instrumentation, application of path testing.

UNIT – III TRANSACTION FLOW TESTING: Transaction flows, transaction flow testing techniques.

Data Flow Testing: Basics of Dataflow testing, strategies in dataflow testing, application of dataflow testing.

UNIT – IV DOMAIN TESTING: domains and paths, Nice and Ugly domains, domain testing, domains and interface testing, domains and testability.

UNIT V PATH, PATH PRODUCTS AND REGULAR EXPRESSIONS: path products and path expressions, Reduction procedure and Applications.

UNIT VI LOGIC BASED TESTING: Overview, decision tables, path expressions, KV charts, specifications.

UNIT VII STATE, STATE GRAPHS AND TRANSITION TESTING: State graphs, good and bad state graphs, state testing, Testability tips.

UNIT VIII GRAPH MATRICES AND APPLICATION: Matrix of graph, relations, powers of a matrix, node reduction algorithm, Building tools.

TEXT BOOKS:

1. Boris Beizer. Software testing techniques. Dreamtech, 2009, 2nd Ed.

REFERENCE BOOKS:

1. Edward kit. Software testing in the real world. Addison-Wesley professional, July 1995.
2. Dr.K.V.K.K.Prasad. Software Testing Tools. Dreamtech press, New Delhi, 2007, Revised ed.

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Fourth Semester MCA

**(1P2B4C) DISTRIBUTED OPERATING SYSTEMS
(Elective I)**

UNIT I INTRODUCTION: What is distributed systems, Distributed System goals, Hardware Concepts, software concepts, Design issue of Distributed systems.

UNIT II COMMUNICATION IN DISTRIBUTED SYSTEMS: Layered protocol, ATM Networks, Client server model, Remote Procedure call, Group communication, Real time distributed systems.

UNIT III SYNCHRONIZATION: Logical clocks, mutual exclusion, election algorithms, atomic transactions and deadlocks.

UNIT IV PROCESSOR AND PROCESSORS: Threads, system models, processor allocation methods, scheduling fault tolerance.

UNIT V DISTRIBUTED FILE SYSTEMS: File system design and implementation – trends in DFS.

UNIT VI SHARED MEMORY: Bus based multiprocessors, ring based multiprocessor, switched multi processors, NUMA Comparison of shared memory.

UNIT VII CONSISTENCY MODELS – 7 models, Page based Distributed Shared Memory, shared variable DSM, object based DSM.

UNIT VIII CASE STUDIES: MACH and CHORUS

TEXT BOOKS:

1. Andrew S. Tanenbaum. Distributed Operating System. Prentice Hall International Inc, 1995.

REFERENCE BOOKS:

1. George coulouris, Jean dollimore, Tim kindberg. Distributed systems concepts and design. Pearson Education, May 2011, 5th Ed.

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Fourth Semester MCA

**(1P2B4D) DISTRIBUTED DATABASES
(Elective II)**

UNIT I DISTRIBUTED DATABASES: An Overview Features of Distributed versus Centralized Databases, Why Distributed Databases? Distributed Database Management Systems (DDBMSs)

UNIT II LEVELS OF DISTRIBUTION TRANSPARENCY: Architecture for Distributed Databases, Types of Data Fragmentation, Distributed Database Access Primitives, Distribution Transparency for Read-Only Applications, Distribution Transparency for Update Applications, and Integrity Constraints in Distributed Databases.

UNIT III DISTRIBUTED DATABASE DESIGN: A Framework for Distributed Database Design, the Design of Database Fragmentation, and The Allocation of Fragments. Translation of Global Queries into Fragment Queries.

UNIT IV OPTIMIZATION OF ACCESS STRATEGIES: A Framework for Query Optimization, Join Queries, General Queries.

The Management of Distributed Transaction: A Framework for Transaction Management, Supporting Atomicity of Distributed Transactions, Concurrency Control for Distributed Transactions.

UNIT V CONCURRENCY CONTROL: Foundations of Distributed Concurrency Control, Distributed Deadlocks, Concurrency Control Based on Timestamps.

UNIT VI READABILITY: Basic Concepts, Non blocking Commit Protocols, Determining a Consistent View of the Network, Detection and Resolution of Inconsistency, Checkpoints and Cold Restart.

UNIT VII DISTRIBUTED DATABASE ADMINISTRATION: Catalog Management in Distributed Databases, Authorization and Protection, Commercial Systems: Tanclem's ENCOMPASS Distributed Database Systems, IBM's Inter System Communication.

UNIT VIII HETEROGENEOUS DISTRIBUTED DATABASE SYSTEMS: DDM: A Distributed Database Manager Based on Adaplex, Distributed INGRES, and Problems of Heterogeneous Distributed Databases, MULTIBASE.

TEXT BOOK:

1. Stefano ceri, Giuseppe Pelagatti. Distributed Databases Principles and System. MGH, Aug 2008.

REFERENCE BOOK:

1. M.tamer ozsu, Patrick valduriez. Principles of Distributed database systems. July 2007, 3rd Edition.

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Fourth Semester MCA

**(1P2B4E) MULTIMEDIA APPLICATION DEVELOPMENT
(Elective –II)**

UNIT I FUNDAMENTAL CONCEPTS IN TEXT AND IMAGE: Multimedia and hypermedia, World Wide Web, overview of multimedia software tools. Graphics and image data representation graphics/image data types, file formats. Color in image and video: color science, color models in images, color models in video.

UNIT II FUNDAMENTAL CONCEPTS IN VIDEO AND DIGITAL AUDIO: Types of video signals, analog video, digital video, digitization of sound, MIDI, quantization and transmission of audio.

UNIT III ACTION SCRIPT I: ActionScript Features, Object-Oriented ActionScript, Datatypes and Type Checking, Classes, Authoring an ActionScript Class.

UNIT IV ACTION SCRIPT II: Inheritance, Authoring an ActionScript2.0 Subclass, Interfaces, Packages, Exceptions.

UNIT V APPLICATION DEVELOPMENT: An OOP Application Framework, Using Components with ActionScript MovieClip Subclasses.

UNIT VI MULTIMEDIA DATA COMPRESSION: Lossless compression algorithm: Run-Length Coding, Variable Length Coding, Dictionary Based Coding, Arithmetic Coding, Lossless Image Compression, Lossy compression algorithm: Quantization, Transform Coding, Wavelet Based Coding, Embedded Zerotree of Wavelet coefficients Set Partitioning in Hierarchical Trees(SPIHT).

UNIT VII BASIC VIDEO COMPRESSION TECHNIQUES: Introduction to video compression, video compression based on motion compensation, search for motion vectors, MPEG, Basic Audio compression Techniques.

UNIT VIII MULTIMEDIA NETWORKS: Basics of Multimedia Networks, Multimedia Network Communications and Applications: Quality of Multimedia Data Transmission, Multimedia over IP, Multimedia over ATM Networks, Transport of MPEG-4, Media-on-Demand (MOD).

TEXT BOOKS:

1. Ze-Nian Li and Mark S. Drew. Fundamentals of Multimedia. PHI/Pearson Education Oct 2003.
2. Colin Mook, SPD, Essentials ActionScript 2.0. O'Reilly. Jun 2004.

REFERENCES:

1. Nigel Chapman and Jenny chapman. Digital Multimedia. Wiley-Dreamtech, Aug 2006.
2. Macromedia FlashMX Professional 2004 Unleashed, Pearson.2004.

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Fourth Semester MCA

**(1P2B4F) MANAGEMENT INFORMATION SYSTEMS
(Elective II)**

UNIT I INTRODUCTION: MIS Definition, Role of MIS, Impact of the MIS, Management as a Control System, Organization as a System, MIS for a Digital Firm.

Decision Making: Decision-Making Concepts, Decision-Making Process, Behavioral Concepts in Decision-Making, Organizational Decision-Making.

UNIT II INFORMATION SYSTEMS IN GLOBAL BUSINESS TODAY: The role of Information System in Business Today, Perspective of Information Systems.

Organizations and Strategy: Organizations and Information Systems, How Information Systems Impact Organizations and Business Firms, Using Information Systems to Achieve Competitive Advantage, Porter's Competitive Forces Model.

UNIT III INFORMATION, KNOWLEDGE, BUSINESS INTELLIGENCE: Information Concept, Classification of Information, Methods of Data and Information Collection, Value of the Information, Knowledge and Knowledge Management Systems.

Database and Information Management: Organizing Data in Traditional File Environment, The Database Approaches to Data Management, Using Databases to improve Business and Decision Making.

UNIT IV PITFALLS IN MIS DEVELOPMENT: Fundamental weaknesses, soft spots in planning, design problems, Introduction to E-Commerce and E-Commerce challenges, Security and ethical issues of information system.

UNIT V CONCEPTUAL SYSTEM DESIGN: Define the Problems, set system objectives, establish system constraints, determine information needs, determine information sources, develop alternative conceptual designs and select one, document the system concept, prepare the conceptual design report.

UNIT VI ENHANCING DECISION MAKING: Systems for Decision Support, Executive Support Systems , the Growth of International Information Systems, Organizing International Information Systems, Managing Global Systems, Technology Issues and Opportunities for Global Value Chains.

UNIT VII DETAILED SYSTEM DESIGN I: Inform and involve the Organization, Aim of detailed design, Project management of MIS detailed design, Identify dominant and trade off criteria, Define the sub systems, Sketch the detailed operating systems and information flows.

UNIT VIII DETAILED SYSTEM DESIGN II: Determine the degree of automation of each operation, inputs, outputs, and processing, early system testing, software, hardware and tools, document the detailed design.

TEXT BOOKS:

1. R.G. Murdick, J.E Ross and J.R clagget. Information Systems for Modern Management. PHI, 1994, 3rd Ed.,
2. Kenneth C. Laudon, Jane P. Laudon. Management Information Systems, Managing the Digital Firm, Pearson Education, 2010, 11th Ed.

REFERENCES:

1. Waman S Jawadekar. Management Information Systems Text and Cases, MGH, Jun 2009.
2. Robert schultberis, Mary sumner. Management information systems. PHI,1999.
3. C.S.V Murthy. Management information systems text and applications,. HPH, 2011, 3rd Ed reprint.

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Fourth Semester MCA

(1P2B47) SOFTWARE ENGINEERING LAB

Case study 1: library case study

- (a) Identify the operations, users.
- (b) Find work flow
- (c) Select process model, do the requirement Analysis, Design, Model, Architecture
- (d) Prepare Test cases, test plan
- (e) Documentation

Case Study 2: Retail Domain

- (a) Identify the operations, users, POS (point of Sales)
- (b) Find Work flow (how the supplier supplies the orders, invoices, purchases etc.,)
- (c) Select process model, do the requirement Analysis, Design, Model, Architecture
- (d) Prepare Test cases, test plan
- (e) Documentation

Case Study 3: Bank Domain

- (a) Identify the operations, user,
- (b) Find Work flow (third party funds transfer, online funds transfer, deposits etc .,)
- (c) Select process model, do the requirement Analysis, Design, Model, Architecture
- (d) Prepare Test cases, test plan
- (e) Documentation

Case Study 4: Insurance Domain

- (a) Find the operations, user.
- (b) Find work flow
- (c) Select process model, do the requirement Analysis, Design, Model, Architecture
- (d) Prepare Test cases, test plan
- (e) Documentation

Case Study 5: Any Internet Application

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Fourth Semester MCA

(1P2B48) WEB TECHNOLOGIES LAB

1. Develop static pages of an online Bookstore. The pages should resemble www.amazon.com. The website should consist the following pages
 - Home Page
 - Registration Page
 - Login Page
 - Books Catalogue
 - Shopping Cart
 - Payment By Credit Card
 - Order Confirmation
2. Design a web page using Cascading Style Sheet
3. Validate the Registration, user login, user profile, and payment by credit card pages using JavaScript
4. Create and save an XML document at the server, which contains 10 users information. Write a program which takes User ID as input and returns the user details by taking the user information from the XML document
5. Write XML file which will display the Book information which includes
1) Title of the Book 2) Author Name 3) ISBN Number 4) Publisher Name
5) Edition 6) Price
6. Write a simple bean program which converts rupees into dollar value. Your program must accept the rupees value from Properties window in which rupees property is set. The display of dollar value must be in the BeanBox.
7. Write a simple bean program for generating the traffic signal
8. Install Tomcat Web Server on port 8080. Convert the above created static web pages into dynamic web pages using servlets.

9. Assume four users user1, user2, user3 and user4 having passwords-pwd1, pwd2, pwd3 and pwd4 respectively. Write a Servlet for doing the following:
 - a) Create a cookie and add these four user ids and passwords to the cookie
 - b) Read the user id and password entered in the Login form and authenticate with the value available in the cookies. If he is a valid user you should welcome him/her by the name else you should display “You are not an authorized User”. Use init-parameters to do this.
10. Install database MySql. Create a table which should contain at least the following fields such as name, password, email-id, phone number. Write a JSP program to connect to database and extract data from tables and display them. Insert the details of the users who register with web site whenever new user clicks the submit button in the registration page.
11. Develop a JSP page for news channel to conduct opinion poll on any topic. Users will respond through yes/no answers. Later display the results in percentages.
12. Create tables in database which contain the details of book such as book name, price, quantity, and amount, Modify the catalogue page in such a way that you should connect to database and extract data from tables and display them in catalogue page using JDBC.

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Fourth Semester MCA

(1P2B49) DATA WAREHOUSING AND MINING LAB

The objective of the lab exercises is to use data mining techniques to identify customer segments and understand their buying behavior and to use standard databases available to understand DM processes using WEKA(or any other DM tool)

1. Gain insight for running pre-defined decision trees and explore results using MS OLAP Analytics.
2. Using IBM OLAP Miner – Understand the use of data mining for evaluating the content of multidimensional cubes.
3. Using Teradata Warehouse Miner – Create mining models that are executed in SQL.
4. Build the OLAPX Cube.
5. Perform OLAPX Operations.
6. Perform credit risk assessment Task using WEKA Tool.
7. Build Multidimensional data models for Hospital Management System.

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Fifth Semester MCA

(1P2B51) SIMULATION AND MODELING

UNIT I SYSTEM MODELS: Concepts, continuous and discrete systems, System modeling, types of models, subsystems, corporate model, and system study.

UNIT II SYSTEM SIMULATION: Techniques, comparison of simulation and analytical methods, types of simulation, distributed log models, cobweb models.

UNIT III CONTINUOUS SYSTEM SIMULATION: Numerical solution of differential equations, Analog computer, Hybrid computers, continuous system simulation languages CSMP, system dynamic growth models, logistic curves.

UNIT IV PROBABILITY CONCEPTS IN SIMULATION: Monte-Carlo Techniques, stochastic variables, probability functions, Random Number generation algorithms.

UNIT V QUEUING THEORY: Arrival pattern distribution, servicing times, queuing disciplines, measure of queues, mathematical solution of queuing problems.

UNIT VI DISCRETE SYSTEM SIMULATION: Events, generation of arrival patterns, simulation programming tasks, analysis of simulation output.

UNIT VII GPSS and SIMSCRIPT: General description of GPSS AND SIMSCRIPT, programming in GPSS.

UNIT VIII Simulation programming techniques data structures, Implementation of activities events and queues, Event scanning, simulation algorithms in GPSS and SIMSCRIPT.

TEXT BOOKS:

1. Geoffrey Gordon. System Simulation. PHI, 2006, 2nd Ed.
2. Jerry Banks and John Carson. Discrete Event System Simulation. PHI, 2005, 4th Ed.

REFERENCE BOOKS:

1. Averill M. Law, W. David Kelton. Simulation Modeling and Analysis. McGrawHill, 2006, 3rd Ed.
2. 1. Frank L. Severance. System Modeling and Simulation. Wiley, 2001.
3. Jerry Banks. Handbook of Simulation: Principles, Methodology, Advances, Applications and Practice. Wiley, 1998.

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Fifth Semester MCA

(1P2B52) .NET TECHNOLOGIES

UNIT I INTRODUCTION TO .NET FRAMEWORK: .NET Overview- Behind Microsoft .NET- The .NET Platform-.NET Framework Design Goals-.NET Framework- Common Language Runtime –CLR Environments and Executables-Metadata-JIT Compilation-Automatic Memory Management-Assemblies and Manifests-Intermediate Language(IL)- CTS and CLS- CLR Execution.

UNIT II INTRODUCTION TO C# .NET PROGRAMMING: A Demonstration of Visual C#- Common Elements in Visual C- C# Core Language Features- Types- Classes- Structures- Enumeration- Inheritance- Interfaces- Polymorphism- Arrays and Collections- Generics- Operator Overloading- Delegates and Events- Introduction to LINQ Programming- Exception Handling- MSIL Programming.

UNIT III INTRODUCTION TO VISUAL BASIC .NET: Introduction to Visual Basic .NET- Modules- Variables- Error Handling- Arrays, Lists- Collections- Files- Directories- Streams- Object Serialization- Regular Expressions- Threading- Assemblies and AppDomains- Reflection- Windows Forms applications and GDI+- Windows Forms Custom Control Creation- Windows services.

UNIT IV APPLICATION DEVELOPMENT USING ADO .NET: Features of ADO .NET- Architecture of ADO .NET- ADO .NET Providers- Accessing Database using ADO .NET- Connection Opening and Closing- Command Object- Data Adapter- Dataset- Data Tables- Controlling table views with DataViews and DataRelation Objects- Data-binding in Windows Forms and Web Forms.

UNIT V INTRODUCTION TO ASP.NET: Introduction- Working in ASP.NET Controls- Session and Cookies- Caching- Authentication and Authorization-Web User Controls- Working with Web Config file- Implementing Security- Crystal Reports-Creating Setup and Deployment.

UNIT VI XML: Introduction to .NET and XML- Reading and Writing XML- Reading and Writing XML Data using XML Reader and XML Writer- Manipulating XML with DOM- XML Data Validation- XML DOM Object Model-XML and ADO.NET.

UNIT VII WEB SERVICES: Introduction to Web Services- Web Services Protocol and Standards- WSDL-Overview of UDDI- Calling a Web Service from a Browser- Calling a Web Service by using a proxy- Creating a Simple Web Service-AJAX.

UNIT VIII .NET MOBILE: .NET Mobile Introduction- Mobile Examples- Emulators- Forms- Events- Input- Validation- Lists- Selection- Images- Utilities

TEXT BOOKS:

1. Thuan L. Thai. .NET Framework Essentials. O'Reilly, 2003, 3rd Ed.
2. Donis Marshall. Programming Microsoft Visual C# 2008. Microsoft Press 2008.
3. Francesco Balena. Programming Microsoft Visual Basic .NET. Microsoft Press 2006.

REFERENCE BOOKS:

1. Rebecca M. Riordan. Microsoft ADO.NET Step by Step. Microsoft Press 2002.
2. Kogent, ASP.NET 3.5 Black Book, Dream Tech Publications, 2010.
3. Andy Wigley, Peter Roxburgh. Building Microsoft ASP.NET Applications for Mobile Devices. Microsoft Press 2003, 2nd Ed.

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Fifth Semester MCA

(1P2B53) UML AND DESIGN PATTERNS

UNIT I INTRODUCTION: Object Orientation, importance of modeling, principles of modeling, UML architecture and Conceptual model of UML.

Structural Modeling: Classes, Relationships, Common Mechanisms, Advanced classes, advanced relationships, Interfaces, Packages, modeling Class and Object Diagrams

UNIT II BEHAVIORAL MODELING: Interactions, Interaction diagrams, Use cases, Use case Diagrams, Collaborations and Activity Diagrams.

UNIT III ADVANCED BEHAVIORAL MODELING: Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

UNIT IV ARCHITECTURAL MODELING: Component, Deployment, Component diagrams and Deployment diagrams.

UNIT V INTRODUCTION TO DESIGN PATTERN: Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns Solve Design Problems, Selection and use of Design Pattern.

UNIT VI CREATIONAL PATTERNS: Abstract Factory, Builder, Factory Method, Prototype.

UNIT VII STRUCTURAL PATTERN: Adapter, Bridge, Composite, Decorator, Façade, Flyweight, Proxy.

Behavioral Pattern-I: Chain of Responsibility, Command, and Interpreter, Iterator

UNIT VIII BEHAVIORAL PATTERN-II: Mediator, Memento, Observer, State, Strategy, Template Method, Visitor.

TEXT BOOKS:

1. Grady Booch, James Rumbaugh, Ivar Jacobson. The Unified Modeling Language User Guide. Pearson Education.1998.
2. Erich Gamma. Design Patterns. Pearson Education.1995.
3. Michael Blaha and James Rumbaugh. Object Oriented Modeling and Design with UML, 2005.

REFERENCE BOOKS:

1. Craig Larman. Applying UML and Patterns: An introduction to Object - Oriented Analysis and Design and Unified Process. Pearson Education.1998.
2. Bernd Oestereich. Developing software with UML- Addison-Wesley, June 2002.
3. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado. UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd.2004.

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Fifth Semester MCA

(1P2B54) SOFTWARE ARCHITECTURE

UNIT I INTRODUCTION TO SOFTWARE ARCHITECTURE: An Engineering Discipline for Software, Status of S/W Arch, Architecture Business Cycle, Importance of Architectures, Software Processes and the Architecture Business Cycle, Features of Good Architecture.

UNIT II ARCHITECTURE STYLES: Pipes and Filters, Data Abstraction and Object Oriented organization, Even-based Implicit Invocation, Layered Systems, Registers, Interpreters, Process Control, Heterogeneous Architectures.

UNIT III SHARED INFORMATION SYSTEMS: Database Integration, Interpretation in Software Development Environments, Architectural Structures for Shared Information Systems.

UNIT IV ARCHITECTURAL DESIGN GUIDANCE: Guidance for User Interface Architectures, Case Study in Inter Operability: World Wide Web.

UNIT V PATTERN TYPES: Architectural Patterns, Structural Patterns, Patterns for Distribution, Patterns for Interactive Systems.

UNIT VI FORMAL MODELS AND SPECIFICATIONS: Formalizing the Architectural of a Specific System, Architectural Style, and Architectural Design Space.

UNIT VII ARCHITECTURAL DESCRIPTION LANGUAGES: ADL's today, capturing Architectural Information in an ADL, Application of ADL's in system Development, Example of ADL.

UNIT VIII REUSING ARCHITECTURAL ASSETS WITHIN AN ORGANIZATION: Creating Products and Evaluating a Product Line, Organizational Implications of a Product Line, Component Based Systems, Software Architectures in Figure: Legacy Systems.

TEXT BOOKS:

1. Mary Show, David Garlan. "S/W Arch. Perspective: on an Emerging Discipline". PHI, 1996.
2. Len Bass, Paul Elements, Rick Kazman. Software Architecture in Practice. PEA, 1998.

REFERENCE BOOKS:

1. Buschmann. Pattern Oriented Software Architecture. Wiley, 1996.
2. Garmus, Herros. "Measuring the software process-A practical Guide to Functional Measure", 1996, PHI.

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Fifth Semester MCA

**(1P2B5A) MIDDLE WARE TECHNOLOGIES
(Elective III)**

UNIT I Introduction to client server computing: Evolution of corporate computing models from centralized to distributed computing, client server models, Benefits of client server computing, pitfalls of client server programming.

UNIT II Benefits of Java programming with CORBA: Web Integration – problems in traditional web application, using java applets, java Servlets and JSP, Component models – Java beans, Enterprise Java Beans(EJB).

UNIT III CORBA with Java: Review of Java concept like RMI, RMI API, JDBC, Client/Server CORBA-style, the object web: CORBA with Java.

UNIT IV HTTP/CGI Versus CORBA/Java ORBs: HTTP, CGI, HTML forms, HTTP/CGI count, Servlet Versus CORBA/Java ORBs – Servlet, Servlet count.

UNIT V Core CORBA / Java: Two types of Client/Server invocations-static, dynamic, The static CORBA, first CORBA program, ORBlets with Applets, Dynamic CORBA – The portable count, the dynamic count multi count.

UNIT VI Existential CORBA: CORBA initialization protocol, CORBA activation services, CORBAIDL mapping CORBA java – to – IDL mapping, The introspective CORBA / Java object.

UNIT VII Java Bean Component Model: Events, properties, persistency, Introspection of beans, CORBA Beans.

UNIT VIII EJBs and CORBA: Object transaction monitors CORBA OTM's, EJB and CORBA OTM's, EJB container frame work, Session and Entity Beans, the EJB client/server development process. The EJB container protocol, support for transaction EJB packaging, EJB design Guidelines.

TEXT BOOKS:

1. Robert Orfali and Dan Harkey. Client/Server programming with Java and CORBA. John Wiley and Sons, SPD 1998, 2nd Ed.

REFERENCE BOOKS:

1. A Vogel and K.Duddy. Java programming with CORBA. G.Brose, Wiley-dreamtech, India John Wiley and sons, 2001, 3rd Ed.

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Fifth Semester MCA

**(1P2B5B) SOFT COMPUTING
(Elective III)**

UNIT I INTRODUCTION: From conventional AI to computational intelligence, Neural Networks, Fuzzy set theory, Neuro-Fuzzy and soft computing characteristics.

Fuzzy Sets- Basic Definition and Terminology, Set-theoretic operations, Member function formulation and parameterization.

UNIT II FUZZY RULES, FUZZY REASONING AND FUZZY INFERENCE SYSTEMS: Fuzzy Rules and Fuzzy Reasoning- Extension principle and Fuzzy Relations, Fuzzy if-then Rules, Fuzzy Reasoning.

Fuzzy Inference Systems-Mamdani Fuzzy Models, Sugeno Fuzzy Models, Input Space Partitioning and Fuzzy Modeling.

UNIT III DERIVATIVE-BASED OPTIMIZATION: Descent Methods, The Method of steepest Descent, Classical Newton's Method, Step Size Determination-Initial Bracketing, Line Searches Termination Rules.

UNIT IV DERIVATIVE-FREE OPTIMIZATION: Genetic Algorithms Simulated Annealing, Random Search, Downhill Simplex Search.

UNIT V SUPERVISED LEARNING NEURAL NETWORKS: Perceptrons-ADALINE, Backpropagation Multilayer perceptrons, RADIAL Basis Function Networks.

UNIT VI UNSUPERVISED LEARNING AND OTHER NEURAL NETWORKS: Competitive Learning Networks, Kohonen Self-Organizing Networks, Learning Vector Quantization, Hebbian Learning.

UNIT VII NEURO - FUZZY MODELING: Adaptive Neuro-Fuzzy Inference Systems: ANFIS Architecture, Hybrid Learning Algorithm, Learning Methods that Cross-fertilize ANFIS and RBFN.

UNIT VIII APPLICATIONS: Printed Character Recognition, Inverse Kinematics Problems, Automobile MPG prediction, Fuzzy-Filtered Neural Networks.

TEXT BOOKS:

1. J.S.R.Jang, C.T.Sun and E.Mizutani. Neuro-Fuzzy and Soft Computing. PHI, 2004.
2. S.Rajasekaran and G.A.V.Pai. Neural Networks, Fuzzy Logic and Genetic Algorithms. PHI.2003.

REFERENCE BOOKS:

1. Timothy J.Ross. Fuzzy Logic with Engineering Applilcation. McGraw Hill.1997.
2. David E. Goldberg. Genetic Algorithms: Search, Optimization and Machine Learning. Addison Wesley.1996.
3. R.Eberhart, P.simpson and R.Dobbins. Computational Intelligence PC Tools. AP Professional, Boston 1996.

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Fifth Semester MCA

**(1P2B5C) SOFTWARE PROJECT MANAGEMENT
(Elective III)**

UNIT I SOFTWARE PROJECT MANAGEMENT: Introduction, Basic Concepts, Project Management, Project Planning, Quality Management.
Conventional Software Management: The Waterfall Model, Conventional Software Management performance.

UNIT II EVOLUTION OF SOFTWARE ECONOMICS: Software Economics, Pragmatic software cost estimation.
Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, Peer inspections.

UNIT III THE OLD WAY AND THE NEW: The Principles of Conventional Software Engineering, Principles of modern software management, transitioning to an iterative process
Life cycle phases: Engineering and Production Stages, Inception, Elaboration, Construction, Transition phases. **Artifacts of the process:** The Artifact sets, Management artifacts, Engineering artifacts, Programmatic artifacts.

UNIT IV MODEL BASED SOFTWARE ARCHITECTURES: A Management perspective and Technical perspective.
Work Flows of the process: Software process workflows, Iteration workflows,
Checkpoints of the process: Major mile stones, Minor Milestones, Periodic status assessments.

UNIT V ITERATIVE PROCESS PLANNING: Work breakdown structures, Planning guidelines, Cost and Schedule estimating, Iteration planning process, Pragmatic planning, **Project Organizations and Responsibilities:** Line-of-Business Organizations, Project Organizations, Evolution of Organizations. **Process Automation:** Automation Building blocks, The Project Environment.

UNIT VI PROJECT CONTROL AND PROCESS INSTRUMENTATION: The Seven Core Metrics, Management Indicators, Quality indicators, Life cycle expectations, Pragmatic Software Metrics, Metrics automation, **Tailoring the Process:** Process discriminates.

UNIT VII FUTURE SOFTWARE PROJECT MANAGEMENT: modern Project Profiles, Next generation Software economics, Modern process transitions.

UNIT VIII CHANGE METRICS: Overview, Metric Derivation, Pragmatic Change Metrics. **Case Study:** The command Center Processing and Display system- Replacement (CCPDS-R).

TEXT BOOKS:

1. Walker Royce. Software Project Management. Pearson Education, 2009.
2. Ian Somerville. Software Engineering. Pearson Education, 2010, 9th Ed.

REFERENCE BOOKS:

1. Bob Hughes and Mike Cotterell. Software Project Management. Tata McGraw-Hill Edition. 2010.
2. Joel Henry. Software Project Management. Pearson Education, 2003.
3. Pankaj Jalote. Software Project Management in practice. Pearson Education, 2005.

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Fifth Semester MCA

**(1P2B5D) CLOUD COMPUTING
(Elective IV)**

UNIT I Cloud Computing Introduction, History of Cloud Computing, uses, services, types of cloud computing.

UNIT II Applications of Cloud Computing, feature perspective of Cloud computing and developments of cloud computing.

UNIT III Working of cloud computing and Collaboration of Cloud computing.

UNIT IV Centralizing email communication, cloud computing for community, collaboration on schedules, collaborating on group projects and events, cloud computing for corporation and mapping schedules managing projects.

UNIT V Collaborating on calendars, schedulers and task management, exploring on line scheduling and planning, collaborating on event management, collaborating on contact management, collaborating on project management, collaborating on word processing, spreadsheets and databases.

UNIT VI Evaluating web mail services, evaluating instant messaging, evaluating web conference tools .

UNIT VII Creating groups on social networks, evaluating on line groupware, collaborating via blogs and wikis.

UNIT VIII Understanding cloud Storage, evaluating on line file storage , exploring on line book marking services , exploring on line photo editing applications, exploring photo sharing communities , controlling it with web bases desktops.

TEXT BOOK:

1. Michael Miller. Cloud computing. Pearson Education, New Delhi, 2009.

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES::RAJAMPET
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Fifth Semester MCA

**(1P2B5E) INFORMATION SECURITY
(Elective – IV)**

UNIT I Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs.

UNIT II Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation, location of encryption devices, key distribution Approaches of Message Authentication, Secure Hash Functions and HMAC,

UNIT III Public key cryptography principles, public key cryptography algorithms, digital signatures, Kerberos, X.509 Directory Authentication Service.

UNIT IV **EMAIL PRIVACY:** Pretty Good Privacy (PGP) and S/MIME.

UNIT V IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management.

UNIT VI Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security(TLS), Secure Electronic Transaction (SET).

UNIT VII Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3, Intruders, Viruses and related threats.

UNIT VIII Firewall Design principles, Trusted Systems, Intrusion Detection Systems

TEXT BOOKS:

1. William Stallings. Network Security Essentials (Applications and Standards). Pearson Education.
2. Bruce Schneier. Applied Cryptography. Toha Wiley and Sons, 1996, 2nd Ed.
3. Stallings. Cryptography and Network Security - Principles and Practice. Prentice Hall, 2002, 3rd Ed.

REFERENCE BOOKS:

1. Eric Maiwald. Fundamentals of Network Security. Dreamtech press, 2003.
2. Charlie Kaufman, Radia Perlman and Mike Speciner. Network Security - Private Communication in a Public World. Pearson/PHI, 2002.
3. Whitman. Principles of Information Security. Thomson, 2008, 3rd Ed.

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Fifth Semester MCA

**(1P2B5F) MOBILE APPLICATION DEVELOPMENT
(Elective IV)**

UNIT I J2ME OVERVIEW: Java 2 Micro Edition and the World of Java, Inside J2ME, J2ME and Wireless Devices.

Small Computing Technology: Wireless Technology, Radio Data Networks, Mobile Radio Networks, Messaging, PDAs.

J2ME Architecture and Development Environment-J2ME Architecture, Small Computing Device Requirements, Run-Time Environment, MIDlet Programming, Java Language for J2ME, J2ME Software Development Kits, Hello World J2ME Style, Multiple MIDlets in a MIDlet Suite, J2ME Wireless Toolkit.

UNIT II COMMANDS, ITEMS, AND EVENT PROCESSING: J2ME User Interfaces, Display Class, The Palm OS Emulator, Command Class, Item Class, Exception Handling.

UNIT III HIGH-LEVEL DISPLAY SCREENS: Screen Class, Alert Class, Form Class, Item Class, List Class, Text Box Class, Ticker Class.

UNIT IV LOW-LEVEL DISPLAY CANVAS: The Canvas, User Interactions, Graphics, Clipping Regions, Animation.

UNIT V RECORD MANAGEMENT SYSTEM: Record Storage, Writing and Reading Records, Record Enumeration, Sorting Records, Searching Records, Record Listener.

UNIT VI JDBC OBJECTS: The Concept of JDBC, JDBC Driver Types, JDBC Packages, Overview of the JDBC Process, Database Connection and Statement Objects, Result set, Transaction Processing, Metadata, Data Types, and Exceptions.

UNIT VII JDBC AND EMBEDDED SQL: Model Programs, Tables, Indexing, Inserting Data into Tables, Selecting Data from a Table, Metadata, Updating Tables, Deleting Data from a Table, Joining Tables, Calculating Data, Grouping and Ordering Data, Sub queries, Views.

UNIT VIII GENERIC CONNECTION FRAMEWORK: The Connection, Hypertext Transfer Protocol, Communication Management Using HTTP Commands, Session Management.

TEXT BOOKS:

1. James Keogh. J2ME: The Complete Reference. Tata McGraw-Hill.2002.

REFERENCE BOOKS:

1. Michael Juntao yuan. Enterprise J2ME - Developing Mobile Java Applications. Pearson Education, 2004.
2. Ray Rischpater. Beginning Java ME Platform. Apress, 2009.

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Fifth Semester MCA

(1P2B57) .NET TECHNOLOGIES LAB

1. Write a simple program in c# to write a string on the screen
2. Write a program in C# to prompt the user for some input and then take some action
3. Write a program in C# to demonstrate different kinds of arrays including jagged arrays.
4. Write a program to demonstrate boxing
5. Write a program in C# to override a method which calculates pay of employees to take bonus into account.
6. Write a Program to implement an Interface
7. Write a program in C# to create a base class shape and derived classes i.e., Rectangle, Circle, and Triangle. Invoke the method from base class shape using polymorphism
8. Write a VB.Net program to accept a string and convert the case of the characters.
9. Develop a menu based VB.Net application to implement a text editor with cut, copy, paste, save and close operations.
10. Develop a VB.Net application to perform timer based quiz of 10 questions.
11. Develop a VB.Net application using the File, Directory and Directory controls to implement a common dialog box.
12. Develop a database application to store the details of students using ADO.NET.
13. Develop a VB.Net application using Datagrid to display records.

14. Create a simple ASP.NET page to Output Text with a form, two HTML text boxes an HTML button, and an HTML element. Create an event procedure for the button.

15. Create a application for Accessing a SQL Database by Using ADO.NET by connecting to the SQL Server database and call a stored procedure. You then display the data in a Repeater control.

16. Write a program that displays a button in green color and it should change into yellow when the mouse moves over it.

17. Write a program containing the following controls:

- A ListBox
- A Button
- An Image
- A Label

The listbox is used to list items available in a store. When the user clicks on an item in the listbox, its image is displayed in the image control. When the user clicks the button, the cost of the selected item is displayed in the control.

18. Create a Form that receives the user name, address, date, nationality, country preferred for working and skill sets from the user and stores the user name in the client using cookies. The country preferred data should appear in a drop down list whereas, others should be entered in a textbox. Validate all the controls. The Form is named “formexp.aspx”. The date should appear between “1/1/1900” and “1/1/2090”.

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Fifth Semester MCA

(1P2B58) UNIFIED MODELING LANGUAGE LAB

Select 2 or 3 Projects from the following and design UML diagrams

1. Online Library System
2. Airlines Reservation System
3. ATM Model
4. Online Gas Booking System
5. Auction Applications
6. Point of Sale

REFERENCES:

1. Bernd Oestereich. Developing software with UML. Addison-Wesley, June 2002.
2. Mark Priestley. Practical Object-Oriented Design with UML. Tata McGraw Hill, 2005.
3. Craig Larman. Applying UML and Patterns: An introduction to Object - Oriented Analysis and Design and Unified Process. Pearson Education, 2008.
4. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado. UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd.2004.

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Fifth Semester MCA

(1P2B59) ADVANCED WEB TECHNOLOGIES LAB

J2EE Mini Project

Create a J2EE application, for Online Banking or E-Banking which allows customers to plug into a host of banking services from a personal computer by connecting with the banks computer.

Required Tools

1. My Eclipse
2. Tomcat
3. HTML Toolkit
4. Oracle 9i

J2ME Mini Project

Create a MIDP application, where the user can enter player name and points. The program saves the information to the record using RMS at MIDP device. Program should also print out the top 10 player list to the end user.

Required Tools

1. Sun Java Wireless Toolkit 2.5.2.
2. My Eclipse 3.0
3. Net Beans 6.0