SYLLABUS FOR M.B.A UTTARANCHAL TECHNICAL UNIVERSITY

First Semester (All papers are compulsory)

MBA 101	Principles and Practice of Management	100 marks
MBA 102	Business Environment	100 marks
MBA 103	Quantitative Analysis for Business Applications	100 marks
MBA 104	Financial and Management Accounting	100 marks
MBA 105	Managerial Economics	100 marks
MBA 106	Business Communication	100 marks
MBA 107	Computer Application in Business	100 marks
MBA 108	Seminar and viva – voce (50 marks each)	100 marks

Second Semester (All papers are compulsory)

MBA 201	Financial Management	100 marks
MBA 202	Human Resource Management	100 marks
MBA 203	Organizational Behaviour	100 marks
MBA 204	Production and Operation Management	100 marks
MBA 205	Marketing Management	100 marks
MBA 206	Management Information System	100 marks
MBA 207	Research Methodology	100 marks
MBA 208	Seminar and Vice – voce (50 marks each)	100 marks

(Summer Training for 6 to 8 weeks in corporate world or in Designated Organization shall be compulsory for all students immediately after Second Semester Examinations)

Third Semester (Two (2) Compulsory papers and Four (4) Optional Papers- Three (3) papers from one of the Major specialization group and one (1) from the Minor specialization group besides Summer training Report, Seminar based on Summer Training Report and Viva – voce)

MBA 301	Strategic Management	100 marks
MBA 302	International Business	100 marks
MBA 303	)	100 marks
MBA 304	) Four papers – Three from one major group	100 marks
MBA 305	) and one from another Minor group	100 marks
MBA 306	)	100 marks
MBA 307	)	100 marks
MBA 308	)	100 marks
MBA 309	) Summer Training Report and Seminar based on	
	) Summer Training Report (50 marks each)	100 marks
MBA 310	) Viva – voce	

Optional Specialization Groups – A, B, C, D, E, and F
Major and Minor Specilization group- Three (3) papers from one of the Major specialization groups and one (1) paper from another Minor specialization group

A- Marketing Management Group

MBA 303 – M –1 Consumer Behaviour
MBA 303 – M –2 Marketing Research
MBA 303 – M –3 Marketing of Service
MBA 303 – M –4 Industrial Marketing
MBA 303 – M –5 Rural Marketing

B- Human Resource Management Group

MBA 304 – H - 1 Industrial Relation
MBA 304 – H – 2 Counseling Skills for Managers
MBA 304 – H – 3 Wage and Salary Administration
MBA 304 – H – 4 Social Security & labour Welfare
MBA 304 – H – 5 Industrial Psychology

C- Financial Management Group

MBA 305 – F - 1 Security Analysis and Portfolio management
MBA 305 – F – 2 Financial Institution and Markets
MBA 305 – F – 3 Working Capital Management
MBA 305 – F – 4 Corporate Tax Planning & Tax Management
MBA 305 – F – 5 Management Control System

D- Information Technology Group

MBA 306 – IT - 1 Data Base Management System
MBA 306 – IT– 2 Computer Architecture and Operating System
MBA 306 – IT– 3 Data Communication Network
MBA 306 – IT– 4 Information Technology
MBA 306 – IT– 5 Visual Basic

E- International Business Group

MBA 307 – IB - 1 International Marketing Management
MBA 307 – IB– 2 International Business Environment
MBA 307 – IB– 3 International Trade Procedure & Documentation
MBA 307 – IB– 4 International Business law & Taxation
MBA 307 – IB– 5 International Marketing Logistics

F- Coo-perative management Group

MBA 308 – CM - 1 Principles And Practices in Co-operative
MBA 308 – CM– 2 Enterprise Development
MBA 308 – CM– 3 Micro Finance

Fourth Semester (Two (2) Compulsory papers- and Three (3) Optional Papers- Two (2) papers from one of the Major Specialization group and one (1) from the other Minor specialization Group besides project Report and Viva – voce)

MBA 401	Corporate legal Environment	100 marks
MBA 402	Project Management & Entrepreneurship	100 marks
MBA 403	Project Report (Dissertation)	100 marks
MBA 404	)	100 marks
MBA 405	)	100 marks
MBA 406	) Three papers – Two from one major group	100 marks
MBA 407	) and one from another Minor Group	100 marks
MBA 408	)	100 marks
MBA 409	)	100 marks
MBA 410	) Vice voce	100 marks

A- Marketing Management Group)

MBA 404 – M –1- Marketing Communication & Advertising	100 marks
MBA 404 – M –2- Sales & Distribution Management	100 marks
MBA 404 –M – 3- Product Management	100 marks

B- Human Resource Management Group

MBA 405 – H – 1 – Labour Laws	100 marks
MBA 405 – H – 2 – Human Resource Planning And Development	100 marks
MBA 405 – H – 3 – Organizational Change & Intervention Strategies	100 marks

C- Financial Management Group

MBA 406 – F – 1 – Cost Accounting	100 marks
MBA 406 – F – 2 – International Financial Management	100 marks
MBA 406 – F – 3 – Management of Financial Service	100 marks

D- Information technology Group

MBA 407 – IT – 1 – Internet Application	100 marks
MBA 407 – IT – 2 – System Analysis and Design	100 marks
MBA 407 – IT – 3 – Strategic management of Information Technology	100 marks

E – International Business Group

MBA 408 – IB – 1 – Multinational Financial Management	100 marks
MBA 408 – IB – 2 – Import/ Export Management	100 marks
MBA 408 – IB – 3 – Financing of Foreign Trade	100 marks

F- Co-operative management Group

MBA 409 – CM – 1 – Agri. Business Management	100 marks
MBA 409 – CM – 2 – Rural development	100 marks
MBA 409 – CM – 3 – Enterprise Development	100 marks
MBA 409 – CM – 4 – Micro Finance	100 marks

1. **Pattern of Examination:** The maximum marks for each paper, except in case of Project Report, Training Report, Seminar, Viva- voce, shall be of 100 (one hundred) marks of which 70 (seventy) marks shall be awarded on the basis of the external Semester Examination and 30 (Thirty) marks shall be awarded on the basis of Internal Examination. However, in the matter of Examination papers related to Information Technology group the External Semester Examination paper shall be of 50 (Fifty) marks & the Practical Examination shall be of twenty (20) marks. The practical Examination twenty (20) marks shall be conducted by the External Expert appointed by the University in similar manner as Viva – voce Expert is appointed. In case of training Report, Seminar, Viva – voce the maximum marks shall be 50 (Fifty) 100 (One Hundred) as the case may be and the project (Dissertation shall be of 200 (two Hundred) marks. The Seminar, training Report, shall be assessed by the Internal Expert appointed by the head of Department/ Director of the Affiliated Institution for the students of the respective Department/ Institution. The project report (Dissertation) shall be evaluated by the External expert appointed by the University. The Viva – voce will be conducted jointly by an Internal expert nominated by the head of the Department / Director of the Affiliated Institution in case of their respective students and by an External Expert appointed by the University with the approval of the Vice- chancellor on the basis of the panel of the experts submitted by the Head of department. On similar line the Viva – voce Expert shall be appointed by the University.

   Marks for Internal Examination shall be awarded on the basis of the Assignments, Internal tests and students general performance – class participation in Assignments of 5 (five) marks each for each paper, except in Seminar, Viva – voce, Training Report, Project Report, shall be required to be completed by each student, out of which the best one shall be assessed for the Internal Assessment. 3 (Three) Internal tests of 10 (ten) marks each in each paper, except in Seminar, Viva – voce, Training Report, Project Report shall be conducted by the Department / Affiliated Institution, out of which the performance in best 2 (Two) shall be counted for the purpose of the Internal Assessment. Accordingly there shall be a Maximum of (five) 5 marks for Assignment, 20(twenty) marks for Internal Test and 5 (five) marks for general performance in class participation and attendance of the student. These 5 marks in each paper as mentioned above shall be awarded by the teacher concerned on the basis of the class participation and attendance of the student.

   In so far as the External Semester questions paper is concerned each examination paper shall be of three hours duration with the maximum marks being 70 (Seventy). The pattern of Question Paper setting for External Semester Examination is indicated at Annexure – 1. The duration of the Internal Tests and the modalities of the Tests shall be decided by the teacher concerned in the respective subjects in consultation with the head of the Department/ Director of the Affiliated Institution as the case may be. The maximum marks for Internal Assessment shall be 30 (Thirty) as indicated above.

   The Department/ Affiliated Institute shall forwarded the Internal Examination marks awarded by the teacher/ Internal Expert concerned in the respective paper to the registrar before start of the External Semester Examination for being incorporated with the result of the Semester Examination.

2. **Presentation of Seminar:** Each student shall be required to present a seminar in each semester, except in the fourth semester where the emphasis is on the Project report, lasting approximately for one hour divided into 5 minutes for introduction of the topic by the chairperson, 35 minutes for presentation of the seminar by the student concerned, 15 minutes for summing up by the chair person. The marks shall be awarded by the Internal Expert appointed by the Head of the Department/ Director of the Affiliated Institute for respective students, on the basis of pre determined criteria illustrated at Annexure- II. In the First Semester, the Student being fresh to the environment and coming from different academic

background, the topic of the Seminar shall be on general subjects of their choice. In second Semester the seminar shall be on the topics related to Trade, Industry, Commerce, Corporate world and Corporate Affairs. The seminar in the Third Semester shall be based on the training Report.

3. Summer Training And Project Report: It is compulsory for all the students to attend and complete 45-60 days training at the end of Second Semester in any trading, commercial, Industrial, Financial or similar organization to be approved by the Department/ Affiliated Institution as the case may be for their respective students. On completion of the training the student shall submit Training Report to the Department/ Affiliated Institution within fifteen days of the completion of the training. In the Fourth Semester. The students are required to undertake a Project under the supervision of a Teacher and for that purpose the topic of the project work and time schedule shall be allotted by the designated teacher concerned to the students under their charge immediately at the beginning of a third Semester so that the project report shall be in the form of Dissertation and two copies of the report shall be submitted by the students in the Department/ Affiliated Institution before conclusion of the Fourth Semester Examination. The Department/ Affiliated Institution Immediately shall forward one copy of the said Project Report to the registrar after the students, for getting it evaluated by the External Expert, have submitted it. The teacher concerned under whose supervision must certify the Project report and the guidance the Project has been undertaken.

4. Eligibility for Passing the Examination: The Minimum marks for passing the examination in each of the Semester shall be 50% (Fifty Percent) in aggregate subject to a minimum of 45 % (Forty Five %) in each paper. Further a student who has secured minimum marks to pass in each paper as mentioned above but has not secured the minimum marks to pass in aggregate for the Semester concerned shall be eligible to reappear in two papers in which he/she secured minimum marks in that semester so as to improve the aggregate marks in the concerned Semester

5. Provisions regarding Promotion: No student shall be admitted to Second year of the course unless he/she has passed in at least 12 (Twelve) papers out of Sixteen (16) papers offered by him /her during the first year of the course (First & Second Semester Examinations Taken together) In that way a student can be allowed to reappear, in 4 (Four) Examination paper of External Semester Examination in which he/she failed in respective Semester Examination, during Second year of the course as back paper. Further the student will be allowed to re-appear in any paper in the respective External Semester Examination subject to the condition that the total numbers of papers shall be within the total limit of (four) (4) back papers in a year as mentioned in this Para and further that total number of attempts for a paper shall not exceed the total span period of programme of 4 (four) years. Further all students shall have to pass the Degree programme within the span period of the programme which is four years from the date of the admission in the programme. In case of those students whose back papers are more than 4 (Four) as mentioned above, they shall not be allowed to proceed to Second Year (Third Semester) unless they pass the First year course (First Semester and Second Semester) The students who have thus failed shall be Ex–students and shall repeat the respective Semester. The back paper examination held with the respective regular Semester Examination. If a student fails to clear the degree programme during the span period of four years from the date of admission then he or she shall not be eligible to be readmitted in the MBA degree programme. The Ex-students shall be exempted from paying Fees and may be exempted from attending the classes. Back papers facilities shall not be available in Internal Examination.

It is here by clarified that promotion from First Semester to the second Semester shall be further subject to the condition that at the end of the First Semester , a student would be promoted provisionally to the Second Semester provided he/she has appeared in the First Semester Examination and his/her continuation to the second Semester shall be subject to the condition that on declaration of the result of the First Semester he/she should not have failed in more than four Examination papers. In case the student fails in more than four Examination papers, his/her admission to the Second Semester shall stand cancelled.
Similarly, promotion from Second Semester to the Third Semester shall be subject to the condition that at the end of the Second Semester, a student would be promoted provisionally to the Third Semester provided he/she has appeared in the second Semester Examination and his/her continuation to the Third Semester shall be subject to the condition that on declaration of the result of the Second Semester Examination he/she should not have failed in a total of more than four Examination Papers First and Second Semester Examinations taken together. In case if the student fails in a total of more than four Examination papers in the First and Second Semester taken together, his/her admission to the third semester shall stand cancelled.
The promotion to the subsequent Semester shall also be subject to the condition that at the end of the previous Semester a student would be promoted provisionally to the subsequent Semester provided that he/she has appeared in the previous Semester Examination and his/her continuation in the concerned subsequent Semester shall be subject to the condition that on declaration of the result of the previous Semester Examination and any back papers that the student may have appeared in, he/she should not have a cumulative of more than four back papers.

It is further approved that the provisions mentioned in these ordinance are also applicable to the ongoing students of respective courses.

6.Provisions for Attendance: To constitute a regular course of study a student must attend at least 75% (seventy five percent) of the lectures in each paper. If the attendance is short than 75% (seventy five percent) then he or she shall not be eligible to sit in the respective Semester Examination.

7. Award of Division: A student who obtained 60% (Sixty Percent) or more marks in aggregate in all the semester taken together shall be awarded First Division, those with 50% (Fifty percent) or more marks less than 60% shall be awarded Second Division. In case of those students whose aggregate marks are 75% (Seventy five percent) or more shall be declared passed with distinction and this fact shall be indicated in the mark sheet of Final Semester.

8. Medium of Instructions: The medium of Instruction of study and the examinations shall be English.

9.Admission fees & Other Charges: Admission fee and other charges to be levied from the students shall be as such decided by the University from time to time.

10. Omnibus Clause: This ordinance and the syllabus shall come into effect from the academic session 2005-2006with effect from July, 2005. In case of any clarification on any points mentioned in the ordinances and the syllabus or for any dispute on any points the decision of the university with the approval of the Vice- Chancellor would be final and binding on all concerned.

Annexure - I

Pattern for question Paper Setting-External Semester Examinations:

In the External Examination paper in each subject, except Training Report, Project, Seminar& Viva voce, the examination paper will carry a maximum of *70 marks normally divide among the questions and will be for duration of three hours. The question paper will be divide into two sections. There will be a compulsory short case study or some problem seeking solution under section A. In section b, there will be four questions all of which have to be attempted. First question Section B will ask for a short note (to answers any 4 out of 8) **Each of the other three (3) questions will include an alternate choice.** A model of the question paper is present below.

Note: All questions have to be attempted.

Section – A

1. Short case study / problem – Case study/ Problem given should not be of more than five hundred words

Section - B

2. Write short notes (up to fifty words) on any **four** of the following **3 marks each**
   (a)
   (b)
   (c)
   (d)
   (e)
   (f)
   (g)
   (h)
3. Describe X Y Z .?

   OR

   Describe A B C .? **14 marks each**

4. (Pattern as same in 3) **14 marks each**
   What is A.B.C.?
   OR
   What is X.Y.Z.?

5. (Pattern as same in 3) **14 marks each**
   Explain the U. V .W
   OR
   Explain R. S. T

(Incase of the papers related to Information technology Group the question paper will be of 50 marks consisting of 10 marks each question as above mentioned since in this group there will be practical examination in each paper of 20 marks.)*

Note: Their must be 8 questions in examinations papers as per indicated above and should be within the syllabus – copy enclosed.

Annexure – II

Seminar Assessment Sheet

Name of the Student: Chair Person:

Topic of Seminar: Date of Seminar:

Parameter	**Maximum marks**	*Marks Obtained*	**Parameter**	**Maximum marks**	*Marks Obtained*
Text Abstract	04		**Handling Queries**		
Text Reference	04		Confidence	10	
Data Source (Credibility)	04		Adequacy	10	
Data Analysis	04		Tactics	05	
Quality of Text	04				
PRESENTATION (Appearance)	04		**Chair Person Role**		
Gesture	04		Opening Address	02	
Audibility (Clarity)	04		Summarizing	02	
Confidence	04		Leading	02	
OHP/LCD Presentation	04		Command	02	
Reading (Extempore)	05		Control	02	
Time Management	05		Conclusion	05	
Innovative Method	05				
Slides Explanation	05				

Total marks – 100 Marks Obtained:

No. of participants attended the Seminar: Signature of Expert:

(Where the total Marks are 50 the marks in parameter shall be half)

FIRST SEMESTER PAPERS

(All Papers in First Semester are compulsory)

MBA 101 – Principals and Practice of Management

OBJECTIVE

The objective is to provide an understanding of basic concepts, principles of management. The aim is to inculcate the ability to apply multifunctional approach to Organizational objectives.

COURSE CONTENTS

(i) Nature, Scope and Significance of Management, Evolution and Development of Management Thought. Process and Functions of Management. Overview of the Functional Areas of Management.

(ii) Nature, significance and scope of planning, Types of plans, Process and Techniques of Decision Making, MBO,MBE, Planning Strategies and Policies.

(iii) Nature and Significance of Organizing –Organizations Theories, Organization Structure, Departmentation, Line and Staff Relationship, Span of Management, Authority, Accountability, Delegation and Decentralization and Group Functions, Staffing, Appraisal and Development of Managers, Formal and Informal Organizations.

(iv) Nature and Scope of Directions, Issues in Managing Human Resources. Motivation-Concept, Nature, Importance and Theories of Motivation, Leadership Patterns and Styles.

(v) Concept and Significance of Communication, Process, Types and Techniques of Communication, Barriers of Communication.

(vi) Nature and Scope of Co-ordination, Principles, Techniques and Barriers to Co-ordination,

(vii) Management Control- The Elements, Process and Styles of Control, Techniques of Control.

(viii) Emerging Horizons of Management-Challenges before Future Managers in 21st Century.

MBA102 – Business Environment

OBJECTIVE

The object is to educate the students on the role of business in modern society. Emphasis is placed on the significant relationship, which exists between business and the social, legal, political, economic, financial and fiscal environment in India. Analysis of competitive business environment with special reference to India.

Course Contents

(i) Concept, Nature and Significance of Economic, Socio-cultural, Political, Legal, Technological and other Forces Affecting Business Operations and Growth, Emerging Indian and Global Business Environment. Elementary Exposure to Financial Markets.

(ii) Social Responsibilities of Business, New Concept of Stakeholders in Business, Business Ethics and Corporate Social Responsibility, Concept of Corporate Governance.

(iii) Industrial Policy, Trends in Industrial licensing, Big V/S Small Scale Industry and Its Prospects.

(iv) New Economic Policy , Privatization, Liberalization Globalization Their Implication for Indian Business, Impact of Multi National Corporation in Indian Business World,

(v) Fiscal Policy and Monetary Policy.

(vi) Role of Policy and Monetary Policy.

(vii) Export-Import Policy, Regulation of Foreign Trade, Export Promotion and Import Substitution, Emergence of Regional Trade Blocks, EOU's and EPZ's

(viii) Institutional and Legal Aspects of business Environment in India, India and WTO , Flow of Capital, Acquisition, Mergers, Technical Co-operation, Franchise, Venture capital

MBA 103 – Quantitative Analysis for Business Applications

Objectives

The objective is to provide basic knowledge of the concept of quantitative techniques having their application in the field of Business.

Course Contents

(i) Management and Decision Making, Statistics and Managerial Decision Making, Functions – Applications of Functions, Some special Functions A.P. and G.P and their Managerial Applications. Markov chains and their Applications.

(ii) Transportation Problems, Problem Statement, Testing Optimality, Modi Method and Improving the Solution

(iii) Linear Programming, Basic Concepts, Model formulation, Solution Method, Duality.

(iv) Theory of Games, Simulation, Basic Concept of PERT and CPM.

(v) Probability, Definition, Basic Concepts, Marginal Joint Conditional Probabilities, Additive and Multiplicative Rules, Random variables, Probability Distribution, Concept of Fractal, Mean of Random variables, Properties of Mean, Variance of a random Variable.

MBA104 – Financial And Management Accounting

Objectives:

The objective is to provide basic knowledge of the science of Accounting, interpretation of Financial Statements and to develop an understanding of Accounting Tools, techniques and Information and their uses in Managerial Decision making.

Course Contents:

(i) Financial Accounting – Meaning, Need, Objectives, Concepts & Conventions.
Branches of Accounting, Internal and External Users of Accounting, Advantages and Limitations of Financial Accounting, Accounting Standards.

(ii) The Double Entry System – Its meaning and Scope, The Journal, Cash Book, Ledger, Trail Balance, Trading Account, Profit and Loss Account, Balance Sheet, Entries and Adjustments of different heads in different books and Accounts.
Introduction of Company Accounts.

(iii) Managing Accounting – Meaning, Function, Scope, Utility, Limitation and Tools of Management Accounting, Analysis of Financial Statements – Ratios, Comparative and Common size Statements, Cash Flow and Fund Flow Analysis, management Audit and Financial Reporting.

(iv) Cost Accounting – Nature, Objectives, Significance of Cost Accounting, Classification of Cost, Costing of Material, labour, and Overheads.
Marginal Costing, and cost volume profit Analysis – Its Significance, Uses and limitations.

(v) Standard Costing – Its Meaning, Uses and Limitations, Determination of Standard Cost, Variance Analysis – Material, Labour and Overheads.

(vi) Responsibility Accounting – Its Meaning and Significance, Cost, Profit, and Investment Centers.
Accounting for Price level Changes – Concepts, CPP and CCA methods.

(vii) Budget and Budgetary Control - Its Meaning, Uses and Limitations, Budgeting and Profit Planning, Different types of Budget and their Preparations, Sales Budget, Purchase Budget, Production Budget, Cash Budget, Flexible Budget, Master Budget, Zero Based Budgeting.

MBA105 – Managerial Economics:

Objectives:

The Objectives is to provide the knowledge of Economics Theories of and their applications for Managerial Decisions.

Course Contents:

(i) Meaning of Managerial Economics – Scope and its Role in the process of Decision Making.

(ii) Introduction to the Analysis of Market Mechanism, Theory of Demand, Interaction of Demand and Supply, Static and Dynamic Equilibrium, Demand Analysis and Demand Forecasting, Elasticity of demand, Concepts of Revenue.

(iii) Concepts of Cost – Cost Clarification, Fixed and Variable Cost, Total, Average and Marginal Cost, Opportunity Cost, Real Cost, Cost out-put Relationship in Short run and Long run, Cost Analysis in the process of Decision making, Cost and Optimum size of plant, Cost and Multiple Products.

(iv) Productions And Cost Functions – Law of variable Proportions and Returns to Scale, Economics of Scale, Input Output Decision, Cost Curves, Break Even Analysis.

(v) Pricing – Determinants, Price Determination under Perfect Competition, Monopoly and Imperfect Competitions, Oligopoly, Concept of Selling Cost, Non Price Competition.

(vi) Profit management – Profit Theory, Measurements of profits, Profit Policies and Its Objectives, profit planning with Special Reference to Break Even Analysis.

(vii) National Income – Concept and Measurement, GNP & GDP Economic Growth – Meaning, and Determinants, Phases of Business Cycle.
Inflation – Meaning and cause, Investment Decisions, Capital Budgeting, Public Investment Decisions, Economics of Risk and Uncertainty.

MBA 106 – Business Communications:

Objectives:

The objective is to acquaint the students with the knowledge of Communication, written as well as Oral required in the Corporate world in its Day to day Functioning.

Course Contents:

(i) Business Communication – Its nature, role and Importance in Business World, Legal Aspects of Business Communication, Power and Techniques of Negotiations.
(ii) Process of Communication – Barriers and gateways in Business Communications, Non – Verbal Communication. Techniques of Efficient and Effective Communication.
(iii) Letter Writing – principles, Structure and Planning of letter writing. Types of letters in Business Communication, Modern Office Communication techniques.
(iv) Oral Communication – Public Speaking, Body Language, Presentation of Reports, Presentations of Sales Plans. Leading and Participation in Meeting and Conferences.
(v) Comprehensions and Précis Writing, Grammar and its uses in Business Communication.
(vi) Report Writing – Business Reports: Structures, Techniques of Report Writing, and Styles of Repot Writing.

MBA 107 – Computer Applications in Business

Objectives:

The objective to acquaint the students with the knowledge and uses of computers and simple applications of computers in managerial decisions. Also to provide them an orientation about the increasing role of computers in corporate, business world.

Course Contents:

(i) Concept of Computers – Brief History of Computers, Generation and its Evolution, Characteristics of Computers, (Hardware, Software) Criteria for using the Computers, Organizations and Functions of Computers, Advantages and Disadvantages of Computers, Main Areas of Computers and their Applications.

(ii) Types of Computers – Analog, Digital, Hybrid, General Purpose and Special Purpose Computers, Micro Computers, Mini – Computers, Main- frame Computer, and Super Computers.

(iii) Input- Output Devices, Storage Units (Disks, CD-ROM, DVD – ROM and tapes), Memory Types (Cache, RAM, ROM), Memory Units, (SIMM, DIMM, RIMM).

(iv) Data and Information – Data Definition, Data Processing Systems, Data Type, Numeric, Alphabetic, Audio, Graphic, and Video and Their Presentation.

(v) Data Processing – Introduction to Data Processing, Computer as a Tool for Data processing, Data processing Techniques, Data Analysis, Data Input and Outputs, Data processing Management, EDP Controls and Audits, Data Security.

(vi) Introduction to Lab Work (Operating Systems, MS- DOS, MS Windows, and UNIX, MS Office (MS Word, PowerPoint, Excel, Access.

MBA 108 – Seminar and Viva voce

Seminar - 50 Marks

Objective

The objective of Seminars is to help the students in developing their communication skills, especially the presentation before the group. Each student is expected to present a seminar (as Elaborated in the Ordinance) on a topic approved by the Teacher In- charge of the seminars. In this Semester the student being new to the Environment, the topic of seminar will be on general topic of the choice of the student. At least one semester for each student is compulsory during the Semester.

Viva voce - 50 Marks

At the end of Semester Course each student will have to face an interview where he/she is expected to answer questions relating to the course covered during the Semester and on questions of relevant topics concerning Industry, Commerce and trade. The Viva – Voce shall be conducted jointly by the Internal Expert and the External Expert. Since the Viva – voce is to be conducted by the External Expert the Feed back received from the Expert and Suggestions should be used for enrichment of the student in subsequent Semester.

SECOND SEMESTER
(All Papers in this Semester are Compulsory)

MBA 201 – Financial Management:

Objective:

The objective is to provide conceptual knowledge of the tools of financial and Analysis and management and various long term source of finance. It also aims at helping them to develop skills for making financial decision in practical business situations.

Course Contents:

(i) Introduction – traditional and modern Concept of Finance Function, nature, Scope and Importance, function and Financial decisions, Financial Environment.
(ii) Financial Planning – Meaning and Steps in Financial Planning, Capitalization – Over and Under Capitalization, capitalization Theory.
(iii) Leverage – Meaning, Significance and Types.
(iv) Capital Structure and Cost of Capital, Theories of Capital Structure, Designing Optimal Capital Structure, EBIT, and EPS Analysis.
(v) Working Capital Management – Concepts, Needs and Nature of working Capital, Methods of determining Working Capital, Requirement, Financing and Control of Working Capital.
(vi) Management of Earnings, Retained Earnings, and Dividend Policies, Dividend Practice and Dividend Models.
(vii) Management of long term funds, Source of Long term Finance, Financial Institutions and Term Lending
(viii) Lease Financing, mergers and Acquisitions.

MBA 202 – Human Resource Management:

Objectives:

The objective is to develop an understanding of the Management of Human Resource with reference to various aspects of Personnel Management and Industrial Relations.

Course Contents'

(i) Personnel management- Concept, Nature, Scope, and Importance of Human Factor in Managing Modern Organizations; Evolution and growth of Personnel Function in Management: Philosophy of Management of Human Resource Management in India.

(ii) Personnel Department – Organization and Functions: Personnel manager Qualities and Qualifications; Professionalization of Personnel Management in India.

(iii) Procurement – Job Analysis, Planning for Human Resource Recruitment, Selection Placement and Induction. Methods of Man power Search.

(iv) Development – Need, Objectives and Methods of Training; Procedure of Training and its Efficacy. Development of Managers – Principles, Methods, Transfer and Promotions; Performance Appraisal.

(v) Wage and Salary Administration – Wage policy – Concept, Role and Importance; Job evaluation; Fringe Benefits, Incentive Compensation Prerequisites and problems in Indian Context; Personnel Audit and Research.

(vi) The Manager and the Group, Group Dynamics, Morale in work Groups, Discipline and employee turnover.

(vii) Industrial Relations – Concept and Significance of Industrial Relations.
Human Resource System – Concept, Scope and Mechanism.

MBA 203 – Organizational Behaviour:

Objectives:

The objective is to develop an understanding of an individual personality motivational as well their impact on organization. It also aims to develop skills in team building, leadership, managerial effectiveness and conflict resolution.

Course Contents:

(i) Introduction – Concept, types of Organization, Individual and Organizational Objectives, Organizational Behaviour, Understanding Indian Social and Cultural Environment and its Effect on Industrial

(ii) Behaviour.

(iii) Psychological Process in understanding Behaviour, Understanding Attitudes Values and formation of Organization Culture. Perception – Nature and Importance, Perception v/s Sensation Learning – Theories of classical and Operant Conditioning, Learning principles, Reinforcement – Kinds and Administration.

(iv) Personality – Concept and Theories, Personality in Organization, Personality Development and its Determinants.

(v) Directing – Understanding Employees and their needs, Theories of Motivation. Leadership – Meaning, Importance and Styles, Theories of Leadership, Communication and Leadership, Purpose of communication. Inter personnel Behaviour, nature of Inter personnel behaviour, Definition and Characteristics of Group, Their types, and group Dynamics.

(vi) Co-operation and Conflict, Group Cohesiveness Mechanism, Group Co-operation, Power, Authority and Role, Transactional Analysis, Organizational Conflicts.

(vii) Organizational changes and Organizational Development, Causes of Organizational changes, Process of Change, Change Resistance, Plant Organizational change, Concept and techniques of Organizational development, Component and conditions of Success of organizational development, Intervention – an overview, Kinds of Applications.

MBA 204 – Production and Operations Management:

Objective:

The objective is to get the students acquainted with the design aspects of operations and material management and to develop relevant skill.

Course Contents:

(i) Nature and Scope of Production and operations Management, its relationship with other Systems in the organization, factors Affecting System and Concept of Production and Operation management. Facility Location, Types of manufacturing Systems and layouts, Layout Planning and Analysis.

(ii) Functions of Production and material management, Types of production Systems, Productivity Variables, and Productivity Measurement, Production Planning and Control, In Mass Production In Batch production, Job order manufacturing, Production Selection, Product Design, and Development, Process Selection, facilitate Location, facility Layout, Capacity Design, Determination of Material required, Procedure for Purchasing, Stocking and Distribution of Materials.

(iii) Scheduling, Maintenance Management Concepts, Work Study, Method Study, Work Measurement Work Sampling, Work Environment, Industrial Safety, Material management.

(iv) An overview of material management, material Planning and Inventory Control, J I T, Budgeting and Material Planning, Purchase Management, Store Management, Safety Management.

(v) Quality Assurance, Accepting Sampling, Stastical Process Control, Total Quality Management, ISO – 9000. And it's Importance.

MBA 205 – Marketing Management:

Objective

The objective is to develop an understanding of the basic concepts of Marketing, its functions and its relevance for Manager.

Course Contents;

(i) Concept, Nature, Scope and Significance of Marketing Management. Development of Marketing and Marketing Management, Factions of Marketing Management. Strategic Marketing Planning, Marketing Mix.

(ii) Marketing Organization, Designing Appropriate Structure and Influencing Factors, Marketing Environment, Micro and Macro Environment.

(iii) Market Segmentation, Basis of market segmentation and Purpose, Selection of target Market and Positioning Strategies.

(iv) Consumer Behaviour, Nature and Factors Influencing Consumer behaviour, Decision Making process, Organizational Buying Behaviour.

(v) Product Management, Concept of Product, Classification of product, Product Life Cycle, new Product development, Product Positioning, Product Line and Product Mix, Branding Decisions, Pakaging, and labeling.

(vi) Pricing, factors Affecting Price Determination, Price Policies and Strategies, pricing Methods.

(vii) Promotional Mix, Elements of Promotional Mix, Communication Process, Advertising, Personal Selling, Publicity and Public relations, Sales Promotions.

(viii) Distribution Channels, Role and types of Channels, Factors Influencing Channels decision.

(ix) Rural Marketing in India – Its Growth And Importance.Marketing Control, Control Operations, Ethical and Legal Aspects of Marketing.

MBA 206 – Management Information System

Objective

The objective is to provide knowledge about the use of computer for various business information applications. The capabilities and limitations of computers and Introducing the student some of the computer programmes forming the part of the management Information System in corporate World.

Course Contents:

(i) Role of Information and Technology, Business and technology Trends, Definition of MIS, role of MIS in Decision-making, Number Systems, Computer Languages, Computer hardware, Computer Software and operating System.

(ii) Systems Approach, object Oriented design, The value and cost of information, Decision levels, Data capture, Data Quality.

(iii) Database management systems, advantages of Data base approach, Queries, Designing of Database, Database Administration, Commercial database.

(iv) Computer Communication- LAN, Wan, Internet, Peer- to- Peer network, Client – server network.

(v) Data system- Organization of System department, Physical facilities of system requirement Analysis, System Analysis, System design, System Implementation, System maintenance.

(vi) Introduction to management information System, decision making and Its Process, need for information and decision making, Its elements, meaning and objectives.

(vii) Structure of management information System, Successful and Comprehensive Structure, Integration of structure, development of management information System, various MIS reports, making MIS efficient and Effective, Limitations of management information System.

(viii) Familiarity with Software packages – MS Office, MS Windows, LAN, UNIX etc.

MBA 207 – Research Methodology

Objective:

The objective is to acquaint the student with basic concepts on Research Methodology in Social Sciences so that they could develop adequate understanding of the techniques of data collection and its analysis for Business decision-making as well as application of suitable methods and tools for the purpose.

Course Contents:

(i) Nature, Meaning and Scope and Significance of Research Methodology. Problem formulation and statement of research objectives value and cost of information- Bayesian decision theory.

(ii) Organization Structure of research, Research process, Research Designs- Exploratory, Descriptive and Experimental research Designs. Sampling Design, Sampling Fundamentals, Methods of Data collection- Observational and Survey methods, Questionnaire Design.

(iii) Measurement and scaling techniques, Motivational research techniques, Administration of Surveys, Selection of Appropriate statistical Techniques.

(iv) Field work and tabulation of Data, processing and analysis of data, Use of SPSS and other Statistical Software packages.

(v) Advanced techniques for data Analysis, Analysis of Variance and co variance, ANOVA, Discriminate Analysis, Factor Analysis, Conjoint Analysis, Multi dimensional Scaling and Clustering methods, Correlation and Regression Analysis, Time series Analysis, Measures of trend and seasonal Indices. Research Applications.

(vi) Sampling and Sampling Distributions : Probability and Non – Probability Sampling Methods, Sampling and Non- Sampling Errors, Sampling theory, Sampling Distribution, Hypothesis Testing: T, Z and Chi Square (X2) Tests.

MBA 208 – Seminar And Viva – Voce

Seminar - 50 Marks

The Objective of Seminar is to help the Students in Developing their Communication Skills, Specially presentation before the Group. Each Student is expected to present a Seminar (As Elaborated in the Ordinance) On a topic Approved by the Teacher In-charge. In this Semester The topic of the Seminars will be Qualitative and based on the issues Relevant to the Corporate World and Business World.

Viva voce - 50 Marks

At the end of Semester Course each student will have to face an interview where he/she is expected to answer questions relating to the course covered in the Semester and on the questions related to Corporate World And Business world. The Viva – Voce shall be conducted jointly by the Internal Expert and the External Expert. After Viva – voce the feed back of the External experts shall be obtained so as to decide the Modalities of Improvement during Second year of the course.

Summer training:

Each Student is require to under go 45 – 60 days training in any organization immediately after completion of the second semester. Training report on the pattern of approved by the teacher In-charge of training shall be submitted by the student in duplicate to the teacher in – charge. The student shall have to bear all the expenses on training including traveling and daily maintenance and the expenses on preparation of the training report. There will be no vocation after second semester examination and students shall proceed for summer training.

UTTARAKHAND TECHNICAL UNIVERSITY, DEHRADUN

SYLLABUS -THIRD SEMESTER

There are both compulsory and elective papers in this Semester. Papers 301 and 302 are compulsory for all students and for elective papers the students shall have to choose Four papers: - Three from one of the Major specialization group and one from another Minor specialization group mentioned below.

Compulsory Papers

301 - Strategic Management

Objective

The objective is to develop an understanding of the concept of corporate strategy formulation, implementation and its evaluation.

Course Contents

i. Introduction to Business Policy and Strategic Management, Nature, Meaning and Scope, Importance of Business Policy and Strategic Management.
ii. Corporate Planning, Concept of planning, Planning Process, Types of Planning, Strategic Planning, Strategic Decision Making, Mission, Objective and Goals.
iii. Corporate Strategy, Formulation of Strategy, Factors responsible for Shaping the Strategy, Different Types of Strategy, Environmental Analysis, Internal and External Environment of a Firm, Need for Environmental Analysis, Techniques for Environmental Analysis, Environmental Threat and Opportunity Profile (ETOP).
iv. Corporate Appraisal and Its Significance, Assessment of Internal Capabilities, Company Situation Analysis, Strategy and Competitive Advantages, Matching Strategies, Functional Strategy and Operational Strategy.
v. Implementing Strategy, Organization Structure, Culture, Commitment and Leadership, Business Unit Strategy, Portfolio Analysis, BCG and other Portfolio Models.
vi. Strategic Alternatives, Stability, Expansion, Retrenchment, International Strategy variation, Diversification and Mergers, Strategic Alliances. Strategic Choice Process, Control and Evaluation Process.
vii. Strategy in the Global Environment, Implementing Strategic Change- Politics, Power and Conflict.
viii. Case Analysis and Class Room Discussion on Different cases by adopting Group Discussion and Presentation Method.

Suggested Readings

1. Thompson and Strickland - Strategic Management Concept and Stress
2. Ansoff, H Igor - Corporate Strategy
3. Charles W L Hill and G R Jones - Strategic Management Theory
4. Azhar Kazmi - Business Policy

5. Thomos L Wheelen and J D Hunger - Strategic Management
6. Hamel G and Prahalad C K - Competing for the Future

Compulsory Papers

302 – International Business

Objective

The objective is to Impart knowledge and skill of analysis of operational processes of business between two or more nations.

Course Contents

i. International Business- an Overview, Types of International Business- The External Environment, The Economic & Political Environment, The Human culture Environment, Influence on Trade and Invest Patterns.
ii. Recent World Trade and Foreign Investment trends, Balance of Payments Accounts and Macroeconomic Management Theories and Institutions, approaches to international business.
iii. Trade & Investment Determination of Trading Partners Independence, Interdependence and Dependence.
iv. World Financial Environment, Cross-National Cooperation and Agreements, Tariff and Non-Tariff Barriers, WTO, Regional Blocks, International Marketing Decisions- Mode of Entry, Marketing Mix Decision for International Business.
v. Foreign Exchange Market, Offshore Financial Centers, International Banks, Non Banking Financial Service Firms, Stock Markets. Foreign exchange regulation.
vi. Global Competitiveness, Export Management, Licensing Joint Venture Technology and Global Competition, Quality Control and Pre-Shipment Inspection, Role of Clearing and Forwarding Agents, Shipment of Export Cargo, Excise and Customer Clearance, Shipping System and Freight Structure.
vii. Quality control and pre shipment inspection, role of clearing and forwarding agents, shipment of export cargo, excise and custom clearance, shipping system and freight structure.
viii. Export and Import Documents, Export Incentives, Export Promotion Schemes with special reference to India. And Challenges in International Business. Export Trading Companies- Topology of ETC's, The Service Life Cycle, Structure, Process. Export Finance Facilities, Procedures for Export Finance, Foreign Exchange regulations and Formalities, Bank Documents, Letter of Credit, Role and Schemes of EUGC and Commercial Banks, Foreign Exchange Regulations.

Suggested Readings

Chales W.L Hill - International Business
John, F - International Business Strategy and Administration
Lal Snajay - Multinationals, Technology and Exports
Robinson D Richard - International Business Management
Bhalla V.K.& Sivramu - International Business Environment and Business
Govindrajan - Mastering Global Business
K Ashwathapa - International Business Environment
Devil and sundram – International Business

Major Specialization Groups- A, B, C, D, E, F (Three papers from one of the Major Specialization Group and one paper from another Minor Specialization Group mentioned below)

Marketing Management Group

303-M-1 Consumer Behavior

Course Contents

i. Introduction-Nature and Scope of Consumer Behavior, Importance of Study of Consumer Behavior, types of Buying Behavior, Consumer Behavior Research.
ii. Macro-Social Factors- Social and Cultural Environment of Consumer-Economic, Demographic, Cultural, Sub-Cultural and Cross Cultural Influences, Social Class and Social Stratification, Segmentation and its Validity.
iii. Micro-Social Factors- Social Groups and Norms, Reference Groups, Organizations and Family Influences, Family Buying Behavior.
iv. Psychological Factors- Personality, Self Concept, Attitude, Change in Attitude and its Measurement.
v. Information Processing- Perception, Learning, Communication Information Processing, Diffusion of Innovation, Cognitive Process of Decision Making and Choice.
vi. Consumer Satisfaction- mechanism of Consumer Satisfaction and Dissatisfaction, Repeated Buying, brand and Shifting Loyalty, Opinion Leadership, Complaint Behavior.
vii. The Process of Consumer Decision Making, Factors Affecting Consumer Behavior, Models of Consumer Behavior- Introduction and their need, Howard and Sheth Model, Engel, Kollat and Blackwell Model, Kerby model, Nicosia Model.
viii. Institutional Buying Behavior.
ix. Changing retail landscape and its effect on consumer behaviour.

Suggested Readings

1. Zaltam and Wallendrof - Consumer Behaviour
2. Engel, Blackwell Edition - Consumer Behaviour
3. Mellout, Douglas W.Tr - Consumer Behaviour
4. London and Della Bitta - Consumer Behaviour
5. Schiffman and Kanuk - Consumer Behaviour
6. Blackwell , miniard , enjul – Consumer Behaviour

303-M-2-Marketing Research

Course Contents

i. Market Research- Introduction, Definition, Importance, Scope and Limitations of Market Research, Objectives, Types of Research, Planning and Designing Research.
ii. Secondary and Primary Data Collection- Introduction to Secondary Data Source and their Types, Methods of Data Collection, Data Preparation- Validation, Editing, Coding, Tabulation and Cross Tabulation of Data, Data Analysis and Interpretation, Hypothesis Testing, Univariate and Bivariate Data Analysis. Multivariate Data Analysis.
iii. Sampling and Questionnaire Design and Construction- Introduction to Sampling, Sampling Process, Sampling Designs, Sample Size, Application of Sampling, Steps involved in Questionnaire Construction, Questionnaire Designs, Attitude Measurement, Types of Scales for Attitude Measurement.
iv. Application of Marketing Research, Product Research, Utility of Market Research to Brand Positioning and Market Segmentation Analysis, Distribution Research, Advertising and sales Promotion Research, Sales Control Research, Financial Research and Strategic Planning.
v. Presentation and Follow- Through- Role of the Report, Type of Reports, Contents of the reports, Personal Presentation of the Report, Follow-through.
vi. Organization of Marketing Research Department, marketing Research Agencies, Types and Functions of Marketing Research Agencies, Ethical Issues of Marketing Research.

Suggested Readings

1. Agrawal - Marketing Research
2. Boyd West Fall - Marketing Research- Text and Cases
3. D A Aader and G S Dey - Marketing Research
4. Weiers - Marketing Research
5. Malhotra - Marketing Research
6. Chrchill - Marketing Research- Methodological foundation – Thomson Pub.
7. Tull and Hawkins - Marketing Research

303-M-3-Marketing of Services

Course Contents

i. The Nature of Services Marketing- Introduction, Definition and Characteristics of Services, Classification of Services, Evolution of Services marketing, Importance of Services Marketing in Indian Economy.
ii. The Services Marketing Mix- Importance of 7 Ps in Services Marketing.
iii. The Service Marketing- The People Component, Services and the Importance of the People Component, Using People to Differentiate Services, Internal Marketing, Employee Motivation and Implication for Service Delivery.
iv. Physical Evidence and Services Process- Essential and Peripheral Physical Evidence, Nature of the Service Process, Customer Participation in Service Process, managing Evidence and Process.
v. Consumer Behaviour for Services.
vi. Services Market Segmentation, Competitive Differentiation of Services, Positioning of Services.
vii. Services Pricing Decisions- Approaches to Pricing Services- Cost Based, Competition Based, Demand Based, Factors Affection Pricing.
viii. Distribution of Services Decisions- Distribution Channels, Channel Design Decision, Factors Affecting Channel Decisions.
ix. Service Promotion Decisions- Importance of Promotion in Services, Advertising, Personal Selling, Publicity and Sales Promotion.
x. Managing Services Quality- Dimensions of Service Quality, Tools for Achieving Service Quality, Consumer Perception of Service Quality.

Suggested Readings

1. Philip Kotler and Paul N Bloom - Marketing Professional Services
2. Lovelock - Service Marketing
3. Adrian Payne - The Essence of Service Marketing
4. Rathmell - Marketing in Service Sector

B- Human Resource Management Group

303-H-1 Industrial Relation

Course Contents

(i) Meaning scope and importance of Industrial relation. Major participants in Industrial relations; Characteristics of Industrial relation system in India.
(ii) Trade Union Management in India- Growth Problem, Recent Trends, and Future of trade Unionism in India.
(iii) Trade Union in India- Concept , Objectives, Structure and Function. Trade Union Act 1926. Major Problems and Issues- Employers Organization in India.
(iv) Worker Participation in Management- Meaning and Objective of WPM and Factor influencing in WPM. Workers Participation in Management in India – An overview.
(v) Industrial Disputes- Nature and Causes, Machinery provided for investigation, prevention and settlement of Industrial Disputes. Industrial Disputes Act 1947. Review and Appraisal.
(vi) Collective Bargaining- Concept Features, Types and Process, Pre requisites for success of collective bargaining. Status of Collective Bargaining in India.
(vii) Grievance Handling and Employees Discipline – Approaches, Procedures National Commission on Labour and Its Recommendation on Various Aspects of Industrial Relation In India.

Suggested Readings:

1. Singh B.P Chhabra, T.N., Tanneja P.L. - Personal Management and Industrial Relation
2. Abrham H. Maslow - Motivation and Personality
3. Agnihotri V - Industrial Relation in India.
4. Prasad Lallan - Personal Management and Industrial Relation
5. Dvar Rustam S - Personal Management and Industrial Relation

303-H-2-Counseling Skills for Managers

Objective

The objective of the course is to develop basic skills among students to interpedently handle a wide range of Employees Counselling and Performance Counselling.

Course Contents

i. Emergence and growth of Counselling Services. Counselling Process and Application of Counselling to Organization and Personal Situation with focus on Performance Counselling. Approaches to Counselling.
ii. Counsellors- Client Relationship. Understanding Client's Behaviour. Developing and termination a Counselling Relationship and Follow Up. Assessing Client's Problem. Special Problems in Counselling.
iii. Counsellor's Attitudes. Skills of Counselling. Counselling Strategies. Counselling Strategies. Counselling Therapies- Insight Oriented Therapy. Behaviour Therapy and Group Theory.
iv. Communication and Persuasion. Communication Strategies and Reference Group and their Role in Understanding Client's Problem.
v. Motivation and Inventive Requirement of Productivity. Role of Counselling in Understanding of Low Productivity of Indian Workers. Need of Counselling Cell in the Organization. Application of Counselling to Organizational Situations with a focus on Performance Counselling.

Suggested Readings

1. Corner L S, Guide Hackney H - The Professional Counsellor's Process to Helping
2. McLennan, Nigel - Counselling for Managers
3. Moursund J - The Process of Counselling and Theory
4. Flippo, Edwin B - Principles of Personnel Management
5. Janase - Interpersonal Skills in Business
6. Munra C A - Counselling- A Skills Approach
7. Lussiar - Human Relations in Organization
8. Corner L S et.el - The Professional Counsellor Guide to Helping
9. Patterson – The counselling Process

303-H-3-Social Security and Labour Welfare

Course Contents

i. Social Security- Concept and Philosophy, Abolition of Bonded and Child Labour, Government Policy for Social Security and Social Insurance, ILO, Its Role, Functioning and Contributions.
ii. Workmen's Compensation Act, 1923.
iii. Employee's State Insurance Act, 1848
iv. Payment of Gratuity Act, 1972
v. Minimum Wages Act
vi. Payment of Bonus Act
vii. Payment of Wages Act

Suggested Readings

1. Mullick - Labour Laws
2. Mimoria, C B and Memoris, S - Industrial Labour, Social Security and Industrial Peace in India
3. Sinha, G P - Industrial Relation and Labour Legislation in India
4. Zahiruddin - Labour Welfare Laws
5. Saharay H K - Industrial and Labour Laws of India
6. Srivastava S C - Industrial Relations and Labour Laws

C- Financial Management Group

305-F-1-Security Analysis and Portfolio Management

Course Contents

i. Principles of Investment- Investment Objectives and Constraints, Fixed and Variable Return, Securities- Shares, Debentures, Government Securities, Derivatives, Commercial Papers, Different Modes of Investment and Investment Consideration.
ii. Security Evaluation- Security Evaluation Model, Fundamental Analysis- Economic, Company and Industry Analysis, Technical Analysis and Random Walk Hypothesis, Efficient Market Hypothesis Forms and Tests.
iii. The Risk- Return Framework, Types of Risk, Risk Evaluation, Hedging and Speculation Calculation of Return, Valuation of Fixed Income Investments and Equity shares.
iv. Meaning and Importance of Stock Exchanges- Important Provisions Relating to Functioning of Stock Exchanges under Securities Regulation and Control Act. Latest Development in Securities Market, Control and SEBI Guidelines.
v. Concept of Portfolio- Need, Types of Diversification, Elements of Portfolio Management, Determining the Expected Risk and Return on Portfolio, Sharpe Model- Significance of B in Portfolio, Capital Asset Pricing Model, Arbitrage Pricing Theory, Portfolio Investment Strategy, Risk Management Strategy, Determining Optical Portfolio, Performance Evaluation, Portfolio Revision Techniques, Bond, Equity Portfolio Insurance.
vi. International Diversification, Risk in International Investment, International Investment Strategy, Return Forecasts, Portfolio Management Services, SEBI Guidelines for Portfolio Managers.

Suggested Readings

1. Apte, PG - International Financial Management
2. Haugen Robert H - Modern Investment Theory
3. Fisher, DM, Jordon, RJ - Security Analysis and Portfolio Management
4. Sharpe William - Investments
5. Bhalla, V K - Investment Management
6. Frank reilly & K C Brown – Investment analysis and portfolio management.
7. Dr. S M Tariq Zaffer – Strategic Finance

305-F-2-Financial Institutions and Markets

Course Contents

i. Financial System- Introduction, Components, Structure, Features of Indian Financial System, Deficiencies and Recent Developments.
ii. Major Indian Financial Institutions- IDBI, IFCI, ICICI, IRCI, SGC's and SIDC's- Management, Working, Operations and Performance and Recent Developments.
iii. Investment Bankers- UTI, LIC, GIC and Mutual Funds and Their Role, Investment Policy, Performance and Recent Developments.
iv. Non-Banking Financial Companies- Objectives, Functioning, Regulations, and Recent Developments.
v. Role of Commercial banks in Industrial Finance. Co-operative Banks and Regional Rural Banks.
vi. Financial Markets-Concepts, Nature, Features, Functions, Structure Types, Role of Financial Markets in Economic Development
vii. New Issue Markets- Nature, Features, Functions, Methods of New Issues, Underwriting, Arrangements and recent Developments, SEBI Guidelines.
viii. Secondary Markets- Nature, Features Functions, Role of Stock Markets, Stock Exchanges, OTCEI, NSE, Recent Development and SEBI Guidelines.

Suggested Readings

1. Khan M Y - Indian Financial Theory and Practice
2. Goldsmith, R W - Financial Institutions
3. Srivastava, R M - Management of Indian Financial Institutions
4. Harbert, Dougall E and Jack Gaumnitz- Capital Markets and Institutions
5. Avadhani V A -Marketing of Financial Services
6. Desai Vasant -The Indian Financial System and Development

305-F-3-Working Capital Management

Course Contents

i. Working Capital- Nature, Components, Types, Function, Determinants and Significance, Including Product Life Cycle and Operating Cycle Method.
ii. Working Capital Policies.
iii. Management of Cash, Motives for Holding Cash, Significance, Cash Planning and Budgeting, Management of Cash Collection, Disbursement of Cash, Cash Management Models.
iv. Management of Marketable Securities, Purpose of Holding Securities, Determinants.
v. Receivable Management- Nature, Significance, Credit Standards, Evaluating the Credit Worthiness of a Customer.
vi. Management of Inventory- Purpose for Holding Inventory, Components, Cost-Benefits Analysis, Inventory Management Techniques.
vii. Management of Current Liabilities- Sundry Creditors, Bills Payable, Contingencies.
viii. Financing of Working Capital- Short- Term Sources, Long-Term Sources, Inflation and Working Capital, Mechanics Of Working Capital Financing in India, Bank Lending, Control of Working Capital.

Suggested Readings

1. Smith, K V - Management of Working Capital
2. Agarwal , J D - Working Capital Management
3. Mehta, D R and Englewood Cliffs N J - Working Capital Management
4. Scherr - Modern Working Capital Management-Text
5. Dr. S M Tariq Zaffer – Strategic Finance

D- Information Technology Group

306-IT-1- Data Base Management System

Unit -1

An overview of Database Management System, Database System Vs File System, Database system concepts and architecture, data models schema and instances, data independence and data base language and interfaces, Data definitions language, DML, Overall Database Structure.

Unit -2

ER model concepts, notation for ER diagram, mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagrams to tables, extended ER model, relationships of higher degree.

Unit -3

Components of DBMS Data Models in Databases, Relational Data Base Management System Relational Algebra, Data Models based on Implementation, Traditional Set Operators, Union, Special Relational Operators, election, Relational Database model, Integrity constraints: entity integrity, referential integrity, Keys constraints, Domain constraints, relational algebra, relational calculus, tuple and domain calculus.

Unit -4

Introduction to SQL: Characteristics of SQL, Advantages of SQL, SQL data types and literals, Types of SQL commands, SQL operators and their procedure, Tables, views and indexes, Queries and sub queries, Aggregate functions, Insert, update and delete operations, Joins, Unions, Intersection, Minus, Cursors in SQL.

Unit -5

Data Base Design & Normalization: Functional dependencies, normal forms, first, second, third normal forms. Role of Database Administrator, Transactions, Database Recovery.

SUGGESTED READINGS :

1) Bipin D Desai – An introduction to Database System
2) C J Date - Introduction to Database System
3) Korth and Sillberschatz – Database System Concepts
4) Pratt – Concept of Database Management

306-IT-2-Computer Architecture and Operating System

Unit -1

Overview of Computer Architecture, Introduction to Parallel computing; Parallelism in Uniprocessor Systems, Parallel computer structures, Architectural Classification schemes, parallel processing applications.

Unit -2

RISC and CISC Architecture, Need of Operating System, Types of Operating System.

Unit -3

Process concept, Process scheduling, Cooperating processes

Unit -4

Memory Management-Logical and Physical Address Space, Swapping, Contiguous Allocation and Non-Continuous Allocation.

Unit -5

File Management - File systems, secondary Storage Structure, File concept, access methods, directory implementation, Efficiency and performance, recovery

SUGGESTED READINGS :

1) Galvin – Operating System Concepts
2) MilenKovic – Operating System
3) Parthosarthy – Advanced computer Architecture
4) Hwang & Briggs – Computer Architecture and Parallel Processing

305-IT-5-Visual Basic

Unit -1

Introduction to VB, Environment of VB, properties, Managing data, working with controls : textboxes, buttons, labels etc., variables, controlling program flow.

Unit -2

Control Constructs : if-else, while, select cases etc. Inbuilt functions, User defined functions, arrays, Files, procedures.

Unit -3

Advanced System Defined Controls : Timer, Frame, Status Bar, Picture, Image List, Progress Bar etc.

Unit -4

Design UI Applications : Showing and Hiding forms, Basic form events, Menu creation, Handling MDI parent/child forms, navigation through forms, connectivity with Database.

Unit -5

Project Development.

SUGGESTED READINGS :

1) Teach yourself Visual Basic -6 in 21 days
2) Brain Seler and Jeff Spolts – Using Visual Basic 6
3) Mostasavi – Visual Basic 2005 by Practice

E- International Business Group

307-IB-1-International Marketing Management

Course Contents

i. The Marketing Concept and Its Extension to International Marketing, International Marketing Tasks, Nature of International Marketing.
ii. Selection of Foreign Markets, The Concept of International Marketing Mix, Implementation of Marketing Strategies and Seven Ps, Organization and Control for International Marketing.
iii. Analysis of International Marketing Environment and Identifying Foreign Markets- Political Considerations and Governmental Influences, Cultural and Social Dynamics, Economic Development and Geographical Conditions, Dynamics of Competitive Environment, Legal, Regulatory and Financial Influences.
iv. International Market Segmentation, Market Entry and Operation Strategies- Export, Joint Ventures, Direct Investment, Strategic Alliances, Multinational Operations.
v. International Product Policies, Strategic Considerations in Making Product Decisions, Alternative Strategies in Multi-National Product Planning, Methodology in Making Product Decision for International Markets.
vi. International Pricing Decisions, Price Escalation, International Transfer Pricing, Factors Influencing the Pricing decisions for International Markets, Export pricing and Differential pricing.
vii. International Distribution System and Logistics, International Marketing Channel Decisions, Importance and Scope of Channel decisions, Nature of International Distribution Channels, Factors Influencing Channel Decisions.

Suggested Readings

1. Leighton - International Marketing
2. Scravanavel P - International Marketing
3. Kotler, Armstrong - Principles of Marketing
4. Keegan - Managing Global Marketing
5. Franklin R Root - International Marketing
6. Foss and Caleore - International Marketing

307-IB-2-International Trade Procedures Documentation

Course Contents

i. Export Documentation, Information, Export Contract, Foreign exchange Regulations, Quality Control and Pre-Shipment Inspection.
ii. Export Trade Control, Cargo Insurance, Commercial Practice, Central Excise Clearance, Customs Clearance of Export Cargo, Export by Post Parcel and By Air.
iii. Roll of Clearing and Forwarding Agents, Shipment of Export Cargo, Export Credit, Export Credit Guarantee and Policies, Exchange Rates and Forwarding Exchange Cover, Finance of Export on Deferred Payment Term, Duty Draw back.
iv. Import Licensing Policy, Actual User Licensing, Replenishment Licensing, Cash Assistance, Advance and Impart Licensing, Import/Export Pass Book, Capital Goods Licensing.
v. Trading Houses, Central Sales Tax Exemption on Exports, Canalization, GSP Certificate of Origin, Customs Clearance of Import Cargo, Documents prescribed by Importing Countries, Standard Export Documents.

Suggested Readings

1. A C Mittal - Export Management in India
2. M I Mahajan - Export Procedures and Documentation
3. Anita Kumari - Export Incentives
4. Hanbook Bublished on Imoort Export Procedures By Min. Of Commerce

307-IB-5-International Marketing Logistics

Course Contents

i. Marketing Logistics System, Concept, Objectives and Scope, System elements, Importance and relevance to Export Marketing Management, General Structure for Shipping Industry, Liner Operations and Tramp Operations, World Sea Borne Trade and World Shipping.
ii. The Conference System, Freight Structure and Practice, Co-ordination, Role of Intermediaries, Forwarding and Clearing Agents, Freight Brokers Stevedores, Shipping Agents.
iii. All India Shipper Council, Shippers Association and FIB and Carious Standing Committees Set Up for Resolving Shippers Problems.
iv. UN Convention on Code of Conduct for Liner Shipping Conferences, Chartering Principles and Practices, Containerization Concept, Operation of the System, Container Freighting, Inland Container Depot.
v. Ports and Overseas Marketing Logistics, Role of Ports, Warehousing, International Air Transport and PDN Approach to Export Distribution.
vi. Carriage of Goods- Legal Aspects, Evaluation and Use of Various Transportation System, Port System and Sub-System, Analysis of Typical Bottlenecks in The Logistic System.

Suggested Readings

1. T A S Balagopal - Export management
2. Kapoor ND - Commercial Law

309(i)-Summer Training Report - 50 marks

After Completion of the compulsory training in designated organization each student shall prepare a training report on the pattern finalized in consultation with the Teacher in-charge of the training. A copy of the report shall be submitted to the Teacher concerned, which shall be evaluated by the teacher concerned.

309(ii)-Seminar based on Summer Training Report - 50 marks

Each Student shall present a seminar, which shall be based on the training and the training report. The objective is to understand the benefits and gains to the student due to compulsory training and enable the student to express his understanding about the functioning of out side world especially as to what extent the concept of management taught him were relevant and are helpful in the real world in the real situation.

310-Viva-Voce -100 marks

At the end of the semester each student will have to face an interview wherein his of her knowledge and skill acquired during the course shall b e examined. The Internal Expert and the External Expert shall conduct the viva-voce jointly. Feedback from the External Expert about the students shall be obtained from the point of vies of preparing students for placement Interviews.

UTTARAKHAND TECHNICAL UNIVERSITY, DEHRADUN

FOURTH SEMESTER

THER ARE COMPULSORY AND ELECTIVE PAPERS IN THIS SEMESTER, PAPERS 401,402,403 ARE COMPULSORY AND UNDER ELECTIVE PAPERS THE STUDENTS SHALL HAVE TO CHOOSE THREE PAPERS FROM ALREADY SELECTED GROUP – TWO FROM, THE SELECTED MAJOR SPECIALIZATION GROUP AND ONE FROM SELECTED MINOR SPECIALIZATION GROUP.

Compulsory Papers

401- Corporate Legal Environment.

Objective: The objective is to provide knowledge about important business laws relevant to Business and Corporate World.

Course Contents

i) Meaning and Importance of Business Laws. Laws and business managers. Government and business relationships in India.
ii) Indian contract Act, 1872- Definitions. Characteristics, Essentials of Valid Contract- Detailed Exposure to the Provisions. Discharge of Performance of contact. Consequences of Breach of Contract.
iii) Types of Contract –Indemnity , Guarantee, contingent, Bailment, Pledge, Agency.
iv) Negotiable Instrument Act-Meaning and Types of Different Negotiable Instrument and the Provision Applicable to them.
v) Sales of Goods Act.
vi) Indian Arbitration Act.
vii) Indian Partnership Act.
viii) Indian Companies Act, 1956-Definitions, characteristics ,Types and Formation of a Company. Shares Debentures, Borrowing Powers, Provision Relating to Company Liquidation.
ix) Company Management-Directors, Managing Director, Their Appointment, Qualification, duties Rights, Liabilities, Position, Remuneration, and Removal. Company Meetings and Proceedings. Prevention of Oppression and Mismanagement.

Suggested Readings

1) Kuchal M C -Mercantile Law
2) Kapoor N D -Mercantile Law
3) Singh Avatar -Company Law
4) Jain J D -Indian contract Act.

402- Project Management and Entrepreneurship

Objective

The objective is to provide adequate knowledge to the students for setting up of projects and their successful implementation.

Course Contents

i) Project Management – Nature, Scope, Process Elements, Significance and Emergence of Projects. Project Planning, Developing Project Models through Simulation.

ii) Ii) Location of Project Site, Working Conditions Development Plans of the Government and the Local Bodies, Elements and Factors Affecting Locational Decisions. Analysis of Infrastructure, Labour, Raw Material, Transport and Other Factors.

iii) Selection of the Product or Service, Market Research, Product Appraisal, Product Design, Factors Affecting the Selection Decision, Packaging and Other considerations, Choice of Technology, Choice of Process, Feasibility, Effects on Environment, Pollution control, government and Local Bodies Regulation. Economic Analysis of the Projects, Regional an Social Implications.

iv) Project financing , Sources of finance , Raising Capital from Market, Financial Institutions, Raising Foreign Exchange, Government Regulation. Cost of Capital, Cost Benefit Analysis , Cash flow Analysis. Project Scheduling , Monitoring and contract Management, Project Appraisal, Contract Project Review.

v) Entrepreneurship – Definition , Classification , Nature and Importance of Entrepreneurship and Entrepreneurs. Concept of Entrepreneurship, Entrepreneurial Environment , Growth of Entrepreneurs. Entrepreneur VS Professional Managers , Entrepreneurial Development, Development of Women Entrepreneurs.

vi) Role of Government and financial Institution in Entrepreneurship Development., Sources of finance, Institutionalize finance to Entrepreneurs, role of Technical Consultancy Organisation in Developing Entrepreneurs.

vii) Governmental Policies Governing Entrepreneurship, Problems of Entrepreneurship.

Suggested Reading

1) Bhavesh M Patel - Project Management
2) SS Khanka - Enterpreneurship Development
3) Prasana Chandra - Project Management
4) P C K Rao - Project Management and Control

403-Project Report Dissertation

Objective to give a first hand exposure to the students on management related problems and to enable them to develop problem solving skill with the help of problem solving techniques and by using primary and secondary information.

Each students is expected to carry out a small but original study under the supervision of a designated internal faculty member on a real management problem with respect to the issue related to trade , business , commerce, industry and finance, corporate governance and the incidental or allied areas connected thereto.

On completion of the study the student shall submit a project report in the form of dissertation to their supervisor who shall certify the dissertation and one copy of dissertation in tern shall be forwarded to the university addressed to the registrar for evaluation purpose. the project report dissertation shall be evaluated by the external expert appointed by the university on the same line as the examiner and [paper setter are appointed.

404 (M1)-Marketing Communication and Advertising

Course Contents:

(i) Communication Process- Nature of Communication Process and its Different Elements , Obstacle in Communication Process, Role of xCommuncation Process in perception, Learning and Attitude Change.
(ii) Communication process in Marketing- Importance and Application of Communication process relevant to them, Communication process in corporate image building , Advertising and Consumer psychology.
(iii) Planning for market communication- strategic analysis for market communication, communication objectives, market segmentation, target group and target person, brand positioning.
(iv) Advertisement and their types, Importance of advertising in modern marketing, different types of advertising , Advertising decision.
(v) Message and Copy, Message strategy, Message design, Elements of Advertising copy, Developing effective Advertising copy, Creative and Visualization in Advertising, Method of creative Development.
(vi) Media Planning- Comparative study of different advertising media, media choice, media scheduling and budgeting for advertising, Evaluation of advertising effectiveness, Pre Testing and ost testing Techniques.
(vii) Regulation of Advertising- Advertising Department and its Organisation, Advertising Agencies and Their Organisation s and Functions.

Suggested Readings:

1. Wright , Winter and Zeiglas - Advertising Management
2. Dunn and Barban - Advertising -its Role in Modern Marketing
3. Mahendra Mohan - Advertisng Management
4. Aaker Myers and Batra - Advertsiijg Management
5. Kenneth F Runyen - Advertising

404-M-2 Sales and Distribution Management

Course Contents:
(i) Basic Concept -* Selling Function, Types of Selling and Emerging Dimensions, Direct Selling, Institution selling, TeleMarketing, Sampling , Follow the customer and other concepts.
(ii)Theories of Selling- Canned Approach AIDA Model, Right Set of circumstance Theory, Buying Formula Theory, Behavioural equation theory,
(iii) Process of Effective selling, Prospecting, Preapproach Presentation and demonstration, Handling Objections, Closing the sales, Post sales activities, Quality of successful sales person.
(iv) Sales Management- Importance, scope, and function of sales management, organising for sales, sales planning, market potential analysis, sales forecasting, Fixing sales objectives, Territory Allocation, Sales Quota, Participative Sales Planning and Behavioural Consideration.
(v) Sales Force Management, - Sales Force Planning , Recruitment and Selection, Training and Development, Placement of sales person, Compensation and incentive to sales person, Motivation and leadership for sales, Evaluation of sales performance.
(vi) Sales Control- MIS for sales , Report and Document used in sales management, Budgetary Control in sales, Sales variance analysis, Sales Expanses Control.
(vii) Distribution network- Various distribution channel and their comparative studies, channel design decision, channel management - Selection and Motivation. evaluation control of channel member, channel conflict management.
(viii) Physical distribution management- Importance and Decision areas, Logistic and Inner Distribution Management

Suggested Reading

1. Russel Beachand Brukirf - Selling
2. Still, Cundiff and Govani - Sales Management
3. K Patel - Sales Management
4. JOhnson , Kirtz and Schueing Confierd - Sales Management
- Salesmanship- Practice and Problems

B- Human Resource Management group

405-H-1 Human Resource Planning and Development

Course Contents

(i) Human Resource Planning overview- Role of Human Resource Planning in the context of Human Resource Management, Definition, Objective, Framework, Components of Human resource planning , Organisation Philosophy as related to the Human Resource Planning.
(ii) Manpower forecasting- Necessity, Problems, Management of Cadre Structuring an organization Stock and Flow model, Push and Pull Model, Markov Chain Model, Correlation Model, Benefit of forecasting, Downsizing and its implication.
(iii) Job Analysis, Job Description and Job specification- Concept , need and Importance, Method of Job Analysis Functional Job Analysis, Job elements Methods, Flieshman Job Analysis System, Positional Analysis Job Description and Job Specification.
(iv) Recruitment and Selection of Human resource- Recruitment Selection Vacancy characteristics and effect on job choice non compensatory and compensatory decision process in job choice, Factor influencing job recruitment effort, effect of personal policies in recruitment sources, different methods of recruitment, selection method and standards, type of selection methods steps in selection process.
(v) Performance Appraisal- definition and Uses, Objectives, Appraisal System- Features and Limitations, Uses and abuses Performance Appraisal Methods, Self Appraisal Peer Appraisal, frequency of appraisal, Performance, Counselling and Feedback, Potential Appraisal, Monitoring and Review of Appraisal System, Linkage with other systems.
(vi) Employee Development- work role of employee Manager and Executives, Organisation characteristics Influencing employees development, Approach to employee development, current issues in employee development, managing workforce diversity, success planning.
(vii) career Management - concept, necessity, career development Model, Career Planning System and its components, career counselling, career path role of employees Manager and Company in career planning, career pleating, Duel Career Paths, Balancing Work and Family, Coping with Job Loss Retirement.

Suggested Readings

1. David A Cenzo and Stephen P Robin - Personal Human Resource Management
2. Liod L Byar and Leslie W Rue - Human Resource Management
3. R.K. Malhotra - Huiman Resource Managemetn

405-H2 - Organisational Change and Intervention Strategies

Course Contents

(i) Concept of Managing change- the practice of organisational change- Factors influencing organisational change, organisational culture and change, Managing resistance to change, effective implementation of change.

(ii) Diagnosis and Intervention- Organisational Diagnosis- An Overview, diagnosis methods, intervention in organisation change, evaluation of organisation change programme.

(iii) Model of Organisational change- some model of change, causes of failure of changes, organisation changes and process consultation, Manager and the change, Internal and external agent of change.

(iv) Introduction to organisation development- overview of organisational development , definition , values, assumption and benefits of organisational development.

(v) Theory and Management of organisational Development - Foundation of organisational development , Managing organisational development process.

(vi) Organisational Interventions- An overview, Team intervention, Inter group and third party Peace Making intervention, comprehensive intervention, training Experiences.

(vii) Key consideration and Issues- Ethical standard in organisational development, the future of organisational development.

Suggested Readings:

1. Uma Sekran - Organisational Behaviour
2. French And Bell - Organisation development
3.Stephen Robbin - Organisational Behaviour
4. Abad Ahmed at el - Developing effective Organisations.
5. Husesy - How to make Organisation change
6. French WH and Bell - Organisational Development Theory Proactive and Research choice,

C- Financial Management Group

(406 F-1) Cost Accounting

Course Content:

i) Introduction – Cost, Costing, cost Accounting, Relationship of Financial accounting and Cost Accounting.

ii) Classification of Cost, different Concepts relating to cost and cost accounting, Element of cost, material, purchases, store route, labour remuneration and incentives.

iii) Unit or output Costing- Meaning, objectives and Importance and methods of determination of unit cost, cost sheet, statement of cost & profit and production account. Job or contract Costing- Meaning objectives and Importance, preparation of contract account. Difference between unit costing and job costing.

iv) Process costing – meaning, objectives and Importance, preparation of Process account, operating costing-meaning, objective and Importance, calculation of operating cost.

v) Standard Costing-Meaning, objective and Importance, types of standards, limitation of standard costing, variance analysis, material labour and overhead variance. Marginal costing-meaning, objectives and Importance, limitation of marginal costing, contribution, break even analysis/V ratio, margin of safety, key factor. Marginal costing and decision making.

vi) Budgetary control –Meaning and characteristic of budgetary control, advantages and limitation of budgetary control budget.

Suggested readings

1) RR Gupta - Advance accounting
2) C T Horngren - Cost Accounting
3) M N Arora - Cost Accounting
4) J C Katyal - cost Accounting
5) Chalos - Managing cost in today's Mfg. Env.

406 F-2 International financial Management:

COURSE CONTENT:

i) INTRODUCTION- OBJECTIVE, FUNCTIONS OF INTERNATIONAL FINANCIAL MANAGEMENT, DECISION VARIABLES- CURRENCY EXCHANGE RATES, BALANCE OF PAYMENTS, INTERNATIONAL RESTRUCTURING AND POLITICAL RISK, INTERNATIONAL MONETARY SYSTEM, THE FOREIGN EXCHANGE MARKET.

ii) LONG TERM INTERNATIONAL INVESTMENT DECISIONS- MOTIVES STRATEGIES AND BEHAVIOURAL CONSIDERATION FOR LONG TERM INVESTMENT DECISION. JUSTIFICATION OF DIRECT FOREIGN INVESTMENT, PHASES OF PUNCTUATING FOREIGN MARKETS, PRODUCT CYCLE THEORY, INTERNATIONAL DIVERSIFICATION.

iii) ISSUES IN FOREIGN INVESTMENT ANALYSIS, CHOICE OF FRAMEWORK FOR ANALYSIS, EVALUATION OF INTERNATIONAL INVESTMENT PROPOSALS- DISCOUNTED CASH FLOW ANALYSIS, THE ADJUSTED PRESENT VALUE APPROACH, POLITICAL RISK ANALYSIS. EXTERNAL INVESTMENT DECISION- MEASURING TOTAL RETURN FROM FOREIGN INVESTMENT, BENEFITS OF FOREIGN EQUITY, BOND INVESTMENT, OPTIMAL INTERNATIONAL ASSET ALLOCATION.

iv) SHORT TERM INVESTMENT DECISIONS- DOMESTIC VS INTERNATIONAL WORKING CAPITAL MANAGEMENT, INTERNATIONAL CASH MANAGEMENT, CASH POSITIONING, CASH MOBILIZATION, HEDGING STRATEGY, INTRA CORPORATE TRANSFER OF FUNDS, TRANSFER PRICING, MANAGEMENT, INTERNATIONAL RECEIVABLES MANAGEMENT, INTERNATIONAL INVENTORY MANAGEMENT.

v) INTERNATIONAL FINANCING DECISIONS, EUROMONEY AND EURO BOND MARKETS.

vi) GROWTH OF THE EURODOLLAR MARKET, INSTRUMENTS IN INTERNATIONAL MARKETS, INTERNATIONAL EQUITY MARKETS, NEW FINANCIAL INSTRUMENTS.

vii) INTERNATIONAL RISKS AND THE COST OF CAPITAL –NATURE OF EXPOSURE AND RISK, EXCHANGE RATES, INTEREST RATES, INFLATION RATES AND EXPOSURE, FINANCIAL RISK AND THE COST OF CAPITAL. POLITICAL RISK AND THE COST OF CAPITAL, BALANCE OF PAYMENTS. FINANCIAL SWAPS.

SUGGESTED READINGS:

1) APTE P G - INTERNATIONAL FINANCIAL MANAGEMENT
2) KEITH PILBEAM - INTERNATIONAL FINANCE
3) LLEVI M D - INTERNATIONAL FINANCE
4) Singh p - investment management

D- Information Technology Group

407 -IT-1 Internet Applications

Course content:

Unit -1

Introduction to Internet Programming : Client-Server model, browsers, Protocols, Creating World Wide web pages : HTML, headers, Body, html tags, tables, test graphics, sounds, building forms, text field and value, size, html buttons, radio, checkboxes, selection list etc.

Unit -2

HTML programming using VBScript, variables, arrays, procedures, conditions, Looping. HTML programming with Java Script, variables, procedures, validations, animations, JavaScript objects.

Unit -3

Introduction to Java, Characteristics of Java, Java application programming, classes and objects. Packages, Java Libraries, Inheritance, Interface.

Unit -4

Web programming with Java :Applets, Applet parameter passing, class variables, methods, Events and Event model, Basic I/O, Exception Handling, Database connectivity.

Unit -5

Project Development.

SUGGESTED READINGS :

1) Java Complete Ref 2.0
2) Core Java -1
3) Ivan Baros- Advanced concepts in Java
4) Holzner.S. – HTML Black Book

407 IT-2 System Analysis and Design

Course content:

Unit -1

The System Concept, Characteristics of Systems , Physical and abstract System, Open and closed System, Business Systems Concepts, Categories and elements of Information Systems, Using Systems approach for problem solving and information systems design Determining the scope and structure of a system.

Unit -2

System Life Cycle Development: Interviewing and Questionnaires, observation, Recognition of need-Feasibility Study, Analysis, Design, Implementation. Models of System Development Life Cycle. Role of System Analyst- Academic and Personal Qualifications Structured system Analysis.

Unit -3

System Planning and Initial Investigation :Information Gathering, Tools for Structured Analysis (DFDs, Data Dictionary, Decision Tree and Structured English), Feasibility Study, Cost/Benefit Analysis.

Unit -4

Structured System Design: Process and stages of system design, Logical and physical Design, Major Development Activities, Processing controls and data validation, Studies of design tools, Application Architecture and Modelling, Database Design, Output Design and Prototyping, Input Design and Prototyping, User Interface Design.

Unit -5

Case studies for SDLC implementation. (Min 2 case studies)

SUGGESTED READINGS :

1) Satringer – System Analysis and Design
2) Shelly : system Analysis and Design
3) Jalota, Pankaj – An integrated approach to Software Engg.
4) Pressman – Software Engineering

E International Business Group

408 IB-1 Multinational financial Management

Course Content:

i) Nature and Scope of International financial Management, Finance function in International Business, environment for decision making Developments in International financial System, Monetary system Management of foreign Exchange risk.

ii) Multinational Corporations- Its Rationale , Goal and Constraint, Project Financing, including International borrowing, international fund remittances,

iii) Multinational capital budgeting- Foreign Investment Decision, International Diversification, Political risk management, cost of capital and capital structure, working capital management and foreign trade, tax planning.

iv) International dimension of accounting and financial reporting practices, International accounting standards and practices and its position in India, Translation of foreign currency into account, accounting for the international / multinational corporation.

v) International financing decision, EURO money and EURO bond market.

Suggested Readings

1. Eiterman D.K. and Stone Hill AI - Multinational Business Finance
2. Hanning Pigott and Scott - International Financial Management
3. Gerhard G, Mueller - International Accounting

408-IB-2- Import –Export Management

Course Contents

(i) Import Management in a developing economy, Objectives of Import Policy, Types of Import Licenses, Foreign Exchange Budgeting, Global Procurement, Conceptual Framework, Methods of Import Procurement, and Import Procurement planning at corporate level, identifying sources of supply, supplier identification, selection and evaluation.

(ii) Import Financing Purchase price analysis-, canalisation of import, and import under counter trade, market research for import procurement monitoring and follow-up of contracts.

(iii) Buying of technology , import procedure in India, custom clearance of imported cargo, custom valuation of imported cargo, import documentation, material management for projects , procurement under World Bank Project.

(iv) Export Management- Concept and Scope , Form of Organisation, Export Marketing Environment, Export Planning, Organising for Export, Organisation chart, Building a team, Executive Action, and Management Control.

(v) Barriers and Bottleneck in export with specific reference to India

Suggested Readings:

1. TAS Balagopal - Export Managemetn
2. B.S. Rathore - Export Marketinjg
3. P. Kumar and AK Gosh - Export Management
4. Ronald R. - Intrernational Purchasing

410- Viva-voce

100-marks

At the end of the Semester each student will have to face an Interview wherein his or her knowledge and skill acquired during the course shall be examined. The viva voce shall be conducted jointly by the Internal Expert and the External Expert. The Viva-voce shall on the pattern of professional Interviews so as to gear up the students for facing the placement Interviews. The feed back of the External Expert shall be utilized for short listing of the candidates to be sponsored to different Organizations for Placement Interviews. In this Semester, therefore, the External Expert shall be such persons having Industry of Corporate World Back Ground.

U.A. TECHNICAL UNIVERSITY, DEHRADUN

STUDY AND EVALUATION SCHEME

MCA (Master of Computer Application)

(Effective from session: 2006-07)

MCA **YEAR – I, SEMESTER – I**

S. No.	COURSE CODE	SUBJECT	PERIODS			EVALUATION SCHEME				
						SESSIONAL EXAM			ESE	Subject Total
			L	T	P	CT	TA	Total		
1	MCA-1.1	Mathematical Foundation of Computer Science	3	1	0	30	20	50	100	150
2	MCA-1.2	Accounting and Financial Management	3	1	0	30	20	50	100	150
3	MCA-1.3	Computer Organization	3	1	0	30	20	50	100	150
4	MCA-1.4	Computer and 'C' Programming	3	1	0	30	20	50	100	150
5	MCA-1.5	Paradigms of Programming	3	1	0	30	20	50	100	150
6	MCA-1.6	UNIX & Shell Programming	3	1	0	30	20	50	100	150
Practicals										
7	MCA-1.7	Programming Lab	0	0	3	30	20	50	50	100
8	MCA-1.8	Organization Lab	0	0	2	15	10	25	25	50
9.	MCA-1.9	Unix / Linux & Shell Programming Lab	0	0	3	30	20	50	50	100
10.	GP-1	General Proficiency	0	0	0	-	-	50	-	50
		Total	**18**	**6**	**8**					**1200**

MCA II **YEAR – I, SEMESTER –**

S. No.	COURSE CODE	SUBJECT	PERIODS			EVALUATION SCHEME				
						SESSIONAL EXAM			ESE	Subject Total
			L	T	P	CT	TA	Total		
1	MCA-2.1	Organizational Structure and Personnel Management	3	1	0	30	20	50	100	150
2	MCA-2.2	Data and File Structure Using 'C'	3	1	0	30	20	50	100	150
3	MCA-2.3	Object Oriented Systems in C++	3	1	0	30	20	50	100	150

4	MCA-2.4	Computer Based Numerical & Statistical Techniques	3	1	0	30	20	50	100	150
5	MCA-2.5	Combinatorics & Graph theory	3	1	0	30	20	50	100	150
6	MCA-2.6	Computer Architecture & Microprocessor	3	1	0	30	20	50	100	150
PRACTICALS										
7	MCA-2.7	Data Structure Lab	0	0	3	30	20	50	100	150
8	MCA-2.8	C++ Lab	0	0	3	30	20	50	50	100
9	MCA-2.9	Microprocessor Lab	0	0	2	15	10	25	25	50
10	GP-2	General Proficiency	0	0	0	-	-	50	-	50
		Total	**18**	**6**	**8**					**1200**

TA – Teacher Assessment CT – Cumulative Test ESE – End Semester Examination

Note: Duration of ESE shall be 3 (Three) hours

U.A.TECHNICAL UNIVERSITY, DEHRADUN

STUDY AND EVALUATION SCHEME

MCA (Master of Computer Application)

MCA **YEAR II, SEMESTER –III**

S. No.	COURSE CODE	SUBJECT	PERIODS			EVALUATION SCHEME				
						SESSIONAL EXAM			ESE	Subject Total
			L	T	P	CT	TA	Total		
1.	MCA-3.1	Computer Networks	3	1	0	30	20	50	100	150
2.	MCA-3.2	Design & Analysis of Algorithm	3	1	0	30	20	50	100	150
3.	MCA-3.3	Operating System	3	1	0	30	20	50	100	150
4.	MCA-3.4	Data Base Management System	3	1	0	30	20	50	100	150
5.	MCA-3.5	Internet & JAVA Programming	3	1	0	30	20	50	50	100
6.	MCA-3.6	System Programming	3	1	0	30	20	50	50	100
PARCTICALS										
7.	MCA-3.7	DBMS Lab	0	0	3	30	20	50	100	150
8.	MCA-3.8	JAVA Lab	0	0	3	30	20	50	100	150
9.	MCA-3.9	DAA Lab	0	0	2	15	10	25	25	50
10.	GP-3	General Proficiency	0	0	0	-	-	50	-	50
		Total	**18**	**6**	**8**					**1200**

YEAR – II, SEMESTER – IV

S. No.	COURSE CODE	SUBJECT	PERIODS			EVALUATION SCHEME				
						SESSIONAL EXAM			ESE	Subject Total
			L	T	P	CT	TA	Total		
1	MCA-4.1	Visual Basic	3	1	0	30	20	50	100	150
2	MCA-4.2	Modeling and Simulation	3	1	0	30	20	50	100	150
3	MCA-4.3	Software Engineering	3	1	0	30	20	50	100	150
4	**Elective-I** (any one of the following) *MCA 4.4/(1)/(2)/(3)/(4)/(5) (6)		3	1	0	30	20	50	100	150
5	MCA-4.5	Foundation of E-Commerce	3	1	0	30	20	50	100	150
6	MCA-4.6	Computer Graphics & Animation	3	1	0	30	20	50	100	150
PRACTICALS										
7	MCA-4.7	Software Engineering Lab	0	0	2	15	10	25	25	50
8	MCA-4.8	Computer Graphics Lab	0	0	3	30	20	50	50	100
9	MCA-4.9	Visual Basic Lab	0	0	3	30	20	50	50	100
10	GP-4	General Proficiency	0	0	0	-	-	50	-	50

Total	**18**	**6**	**8**					**1200**

TA – Teacher Assessment CT – Cumulative Test ESE – End Semester Examination

Note: Duration of ESE shall be 3 (Three) hourse.

U.A.TECHNICAL UNIVERSITY, DEHRADUN

STUDY AND EVALUATION SCHEME

MCA (Master of Computer Application)

MCA **YEAR III, SEMESTER – V**

S. No.	COURSE CODE	SUBJECT	PERIODS			EVALUATION SCHEME				
						SESSIONAL EXAM			ESE	Subject Total
			L	T	P	CT	TA	Total		
1.	MCA-5.1	WEB Technology	3	1	0	30	20	50	100	150
2.	Elective-II (any one of the following) *MCA-5.2 /(7)/(8)/(9)/(10)/(11)		3	1	0	30	20	50	100	150
3.	MCA-5.3	Net Frame Work & C#	3	1	0	30	20	50	100	150
4.	MCA-5.4	ERP System	3	1	0	30	20	50	100	150
5.	**Elective-III** (any one of the following) *MCA-5.5/(12)/(13)(14)/(15)/(16)(17)		3	1	0	30	20	50	100	150
6	MCA-5.6	Management Information System	3	1	0	30	20	50	100	150
PARCTICALS										
7.	MCA-5.7	WEB Technology Lab	0	0	3	30	20	50	50	100
8.	MCA-5.8	Net Frame Work & C# Lab	0	0	3	30	20	50	50	100
9.	MCA-5.9	Colloquium	0	0	3	0	100	100	-	100
10.		General Proficiency								
		Total	**15**	**5**	**12**					**1200**

YEAR –III, SEMESTER – VI

S. No.	COURSE CODE	SUBJECT	PERIODS			EVALUATION SCHEME				
						SESSIONAL EXAM			ESE	Subject Total
			L	T	P	CT	TA	Total		
1	MCA-6.1	Industrial Project	0	0	0	-	200	200	300	500
									Total	**500**

TA – Teacher Assessment CT – Cumulative Test ESE – End Semester Examination

Note: Duration of ESE shall be 3 (Three) hourse

ELECTIVE SUBJECTS

Elective-I (Any one of the following)

MCA 4.4 (1) Compiler Design
MCA 4.4 (2) Cryptography & Network Security
MCA 4.4 (3) Data Compression
MCA 4.4 (4) Client Server Computing
MCA 4.4 (5) Data Mining & Data Warehousing
MCA 4.4 (6) Parallel Processing

Elective-II (any one of the following)
MCA 5.2 (1) Multimedia System
MCA 5.2 (2) Distributed Database System
MCA 5.2 (3) Object Database
MCA 5.2 (4) Advanced Concepts in Database System
MCA 5.2 (5) Artificial Intelligence

Elective-III (any one of the following)
MCA 5.5 (1) Advanced Computer Networks
MCA 5.5 (2) Real Time Systems
MCA 5.5 (3) Principles of User Interface Design
MCA 5.5 (4) Mobile Computing
MCA 5.5 (5) Neural Networks
MCA 5.5 (6) Digital Image Processing

MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE

MCA 1.1

L T P
3 1 0

Unit-I

Relation: Type and compositions of relations, Pictorial representation of relations, Closures of relations, Equivalence relations, Partial ordering relation.
Function: Types, Composition of function, Recursively defined function
Mathematical Induction: Piano's axioms, Mathematical Induction
Discrete Numeric Functions and Generating functions
Simple Recurrence relation with constant coefficients, Linear recurrence relation without constant coefficients, Asymptotic Behavior of functions
Algebraic Structures: Properties, Semi group, Monoid, Group, Abelian group, properties of group, Subgroup, Cyclic group, Cosets, Permutation groups, Homomorphism, Isomorphism and Automorphism of groups.

Unit –II

Propositional Logic: Preposition, First order logic, Basic logical operations, Tautologies, Contradictions, Algebra of Proposition, Logical implication, Logical equivalence, Normal forms, Inference Theory, Predicates and quantifiers, Posets, Hasse Diagram, **Lattices:** Introduction, Ordered set, Hasse diagram of partially ordered set, Consistent enumeration, Isomorphic ordered set, Well ordered set, Lattices, Properties of lattices, Bounded lattices, Distributive lattices, and Complemented lattices.

Unit-III

Introduction to defining language, Kleene Closure, Arithmetic expressions, Chomsky Hierarchy, Regular expressions, Generalized Transition graph.

Unit-IV

Conversion of regular expression to Finite Automata, NFA, DFA, Conversion of NFA to DFA, Optimizing DFA, FA with output: Moore machine, Mealy machine, Conversions.

Unit-V

Non-regular language: Pumping Lemma, Myhill Nerode Theorem, Pushdown Automata, and Introduction to Turing Machine and its elementary applications to recognition of a language and computation of functions.

References

1. Liptschutz, Seymour, "Discrete Mathematics", TMH
2. Trembley, J.P & R. Manohar, "Discrete Mathematical Structure with Application to Computer Science", TMH
3. Kenneth H. Rosen, " Discrete Mathematics and its applications", TMH
4. Doerr Alan & Levasseur Kenneth, "Applied Discrete Structures for Computer Science", Galgotia Pub. Pvt. Ltd
5. Gersting,"Mathematical Structure for Computer Science",WH Freeman & Macmillan
6. Kumar Rajendra, "Theory of Automata: Languages and Computation", PPM
7. Hopcroft J.E, Ullman J.D., "Introduction to Automata theory, Languages and Computation", Narosa Publishing House, New Delhi
8. C.L.Liu, "Elements of Discrete Mathematics", McGraw Hill"
9. Peter Grossman, "Discrete Mathematics for Computer", Palgrave Macmillan

ACCOUNTING AND FINANCIAL MANAGEMENT

MCA 1.2

L T P
3 1 0

Unit-1

Accounting: Principles, concepts and conventions, double entry system of accounting, Ledger posting and Trial balance.
Final accounts: Trading, profit and loss accounts and balance sheet of sole proprietary concern with normal closing entries. Introduction to manufacturing account, final account of partnership firms, limited company.

Unit-II

Financial Management: Meaning, role and scope of financial management.
Basic Financial concepts: Time value of Money, present value, future value of a series of cash flows, annuity. Practical applications of compounding and present value techniques.
Long-term sources of finance: Introduction to shares, debentures, preference shares.

Unit-III

Capital Budgeting: Meaning, importance, difficulties. Introduction to evaluation techniques – Traditional techniques (ARR Payback method). Discounting cash flow techniques(Present value, NPV, IRR)

Ratio Analysis: Meaning, advantages, limitations of ratio analysis, Types of ratios and their usefulness.

Unit-IV

Costing: Nature, importance and types of cost

Marginal costing: Nature, scope and importance of marginal costing, Break-even analysis, its uses and limitations, construction of break-even charts. Practical applications of marginal costing.

Inventory control system: The need, cost of inventory, methods of inventory costing.

Unit-V

Introduction to Computerized Accounting System: Coding logic and codes required, master files, transaction files, introduction to documents used for data collection. Processing of different files and outputs obtained.

References:

1. S.N. Maheswari & S. K. Maheswari, "Introduction to Financial Accountancy", Vikas Publication.
2. S.N. Maheswari & S. K. Maheswari, "Advanced Accountancy", Vikas Publication.
3. S.N. Maheswari & S. K. Maheswari, "Financial Management", Viaks Publication.
4. Jawahar Lal, "Financial Accounting", Wheeler Publishing.
5. Khan & Jain, "Management Accounting", Tata McGraw Hill Publication.
6. K.S. Sastry & Nand Dhamesa, "The Practices of Management Accounting", Wheeler Publishing.
7. I.M. Pandey, "Financial Management", Vikas Publications.
8. J Khan & Jain," Financial Management", Tata McGraw Hill Publication.
9. Geoffrey Knott, " Financial management", Palgrave Macmillan.

COMPUTER ORGANIZATION

MCA-1.3

L T P
3 1 0

Unit-I (Representation of Information and Basic Building Blocks)

Introduction to Computer, Computer hardware generation, Number System: Binary, Octal, Hexadecimal, Character Codes (BCD, ASCII, EBCDIC), Logic gates, Boolean Algebra, K-map simplification, Half Adder, Full Adder, Subtractor, Decoder, Encoders, Multiplexer, Demultiplexer, Carry lookahead adder, Combinational logic Design, Flip-Flops, Registers, Counters (synchronous & asynchronous), ALU, Micro-Operation.

ALU- chip, Faster Algorithm and Implementation (multiplication & Division)

Unit-II (Basic Organization)

Von Neumann Machine (IAS Computer), Operational flow chart (Fetch, Execute), Instruction Cycle, Organization of Central Processing Unit, Hardwired & micro programmed control unit, Single Organization, General Register Organization, Stack Organization, Addressing modes, Instruction formats, data transfer & Manipulation, I/O Organization, Bus Architecture, Programming Registers

Unit-III (Memory Organization)

Memory Hierarchy, Main memory (RAM/ROM chips), Auxiliary memory, Associative memory, Cache memory, Virtual Memory, Memory Management Hardware, hit/miss ratio, magnetic disk and its performance, magnetic Tape etc.

Unit-IV (I/O Organization)

Peripheral devices, I/O interface, Modes of Transfer, Priority Interrupt, Direct Memory Access, Input-Output Processor, and Serial Communication.

I/O Controllers, Asynchronous data transfer, Strobe Control, Handshaking.

Unit-V (Process Organization)

Basic Concept of 8-bit micro Processor (8085) and 16-bit Micro Processor (8086), Assembly Instruction Set, Assembly language program of (8085): Addition of two numbers, Subtraction, Block Transfer, find greatest number, Table search, Numeric Manipulation, Introductory Concept of pipeline, Flynn's and Feng's Classification, Parallel Architectural classification.

References:

1. William Stalling, "Computer Organization & Architecture", Pearson education Asia
2. Mano Morris, "Computer System Architecture", PHI
3. Zaky & Hamacher, "Computer Organization", McGraw Hill
4. B. Ram, "Computer Fundamental Architecture & Organization", New Age.

5. Tannenbaum, " Structured Computer Organization", PHI.

COMPUTER & C PROGRAMMING

MCA-1.4

L T P
3 1 0

Unit – I

Introduction To Computers: Computer hardware Components, Disk Storage, memory, keyboard, mouse, printers, monitors, CD etc., and their functions, Comparison Based analysis of various hardware components.

Unit – II

Basic operating System Concepts: MS-DOS, WINDOWS, Functional Knowledge of these operating systems. Introduction to Basic Commands of DOS, Managing File and Directories in various operating Systems, Introduction to Internet, Basic terms related with Internet, TCP/IP.

Unit – III

Programming in C: History, Introduction to C Programming Languages, Structure of C programs, compilation and execution of C programs, Debugging Techniques, Data Types and Sizes, Declaration of variables, Modifiers, Identifiers and keywords, Symbolic constants, Storage classes (automatic, external, register and static), Enumerations, command line parameters, Macros, The C Preprocessor.

Unit – IV

Operators: Unary operators, Arithmetic & logical operators, Bit wise operators, Assignment operators and expressions, Conditional expressions, Precedence and order of evaluation.
Control statements: if-else, switch, break, continue, the comma operator, goto statement.
Loops: for, while, do-while.
Functions: built-in and user-defined, function declaration, definition and function call, parameter passing: call by value, call by reference, recursive functions, multifile programs.
Arrays: linear arrays, multidimensional arrays, Passing arrays to functions, Arrays and strings.

Unit – V

Structure and Union: definition and differences, self-referential structure.
Pointers: value at (*) and address of (&) operator, pointer to pointer, Dynamic Memory Allocation, calloc and malloc functions, array of pointers, function of pointers, structures and pointers.
File Handling in C: opening and closing a data file, creating a data file, read and write functions, unformatted data files.

References:

1. V. Rajaraman, "Fundamentals of Computers", PHI
2. Peter Norton's, "Introduction to Computers", TMH
3. Hahn, "The Internet complete reference", TMH
4. Peter Norton's, "DOS Guide", Prentice Hall of India
5. Gottfried, "Programming in C", Schaum's Series, Tata McGraw Hill
6. Kernighan, Ritchie, "The C Programming Language", PHI
7. Yashwant Kanitkar, "Working with C", BPB
8. Yashwant Kanitkar, "Pointer in C", BPB
9. Yashwant Kanitkar, "Let us C", BPB
10. Bajpai, Kushwaha, Yadav, "Computers & C Programming", New Age
11. E. Balagurusamy, "Programming in ANSI C", TMH

PARADIGMS OF PROGRAMMING

MCA 1.5

L T P
3 1 0

Unit 1:

Introduction: Characteristics of programming Languages, Factors influencing the evolution of programming language, Development in programming methodologies, desirable features and design issues.

Programming Language processors: Structures and operations of translators, software simulated computer, syntax, semantics, structure, virtual computers, binding and binding time

Unit II:

Elementary and structured data type: Data object variables, constants, data type, elementary data types, declaration, assignments and initialization, enumeration, characters strings.

Structured data type and objects: Specification of data structured types, vectors and arrays, records, variable size data structure, pointers and programmer constructed data structure, Set files.

Imperative Languages: Block structure, Scope rules, Parameter Passing, Construct like co-routines, Tasks etc.

Unit III:

Object Oriented languages: The class notion- Information hinding and data abstraction using classes, derived classes and inheritance– Polymorphism – Parameterized types.

Unit IV:

Functional languages: Functional programming concepts – Referential transparency – Types – Type systems - Names, bindings, environment and scope – Recursive functions – Polymorphic functions – Type variables – High order functions – Curried functions – Lists and programming with lists – Definition of new user defined types in ML – Abstract data types – Evaluation methods.

Unit V:

Logic languages: Review of predicate logic – Clause-form logic – Logic as a programming language- Unification algorithm - Abstract interpreter for logic programs – Theory of logic programs – SLD resolution – Negation as failure extension.

References:

1. Terrance W Pratt, “Programming Languages: Design and Implementation”, PHI.
2. Sethi, “Programming Language”, Addison Wesley.
3. E Horowitz, “Fundamental of Programming Languages”, Galgotia.
4. Pratt, Zolkowitz, “Programming Languages Design Implementation”, Pearson Edition.
5. Tucker Noonan, “Programming languages: Principles and Paradigms”, TMH
6. D. A. Watt, “Programming Languages and Paradigms”, PHI
7. J. Lloyd, “Foundation of Logic Programming”, Springer verlag
8. M. Hennessey, “The Semantics of Programming Languages”, John Wiley
9. C. Reade, “Elements of Functional Programming”, AW
10. L.C. Paulson, “ML for Working programmer”, Cambridge university press
11. B. Stroustrup, “The C++ Programming language”, AW

UNIX AND SHELL PROGRAMMING

MCA-1.6

Unit-1 Introduction

Introduction to Unix, Unix system organization (the kernel and the shell), Files and directories, Library functions and system calls, Editors (vi and ed).

Unit-2 Unix Shell programming

Types of Shells, Shell Metacharacters, Shell variables, Shell scripts, Shell commands, the environment, Integer arithmetic and string Manipulation, Special command line characters, Decision making and Loop control, controlling terminal input, trapping signals, arrays.

Unit-3 Portability With C

Command line Argument, Background processes, process synchronization, Sharing of data, user-id, group-id, pipes, fifos, message queues, semaphores, shared variables, Introduction to socket programming.

Unit-4 Unix System Administration

File System, mounting and unmounting file system, System booting, shutting down, handling user account, backup, recovery, security, creating files, storage of Files, Disk related commands.

Unit-5 Different tools and Debugger

System development tools: lint, make, SCCS (source code control system), Language development tools: YACC, LEX, M4, Text formatting tools: nroff, troff, tbl, eqn, pic, Debugger tools: Dbx, Adb, Sdb, Strip and Ctrace.

References

1. Parata, "Advanced Unix programming guide", BPB
2. Yashwant Kanitkar, "Unix Shell Programming", BPB
3. Meeta Gandhi, Tilak Shetty, Rajiv Shah, "The 'C' Odyssey Unix – the open boundless C", BPB
4. Sumitabh Das, "Unix Concepts and applications", TMH
5. Mike Joy, Stephen Jarvis, Michael Luck, "Introducing Unix and Linux", Palgrave Macmillan.
6. Rachel Morgan, Henry McGilton, "Introducing Unix System V", TMH

ORGANIZATIONAL STRUCTURE AND PERSONNEL MANAGEMENT

MCA - 2.1

L T P
3 1 0

Unit –I

Organization Structure: Classical theories of Management: Scientific management theory, Fayol's 14 principles of Management, Webar's bureaucratic theory. Definition of organization and organization Structure.

Some concepts regarding Organization Structure: Line and Staff authority, Centralization and Decentralization, Span of control, Formal and Informal Organization.

Forms of organization structure and features: Function based, Product based, Geography based, Project based (Matrix)

Organization Design: Mechanistic and Organic Structure, Virtual and Network organization Structure

Unit-II

Motivation: Definition of Motivation, Importance of Motivation, Motivation and behavior, Theories of Motivation – Maslows need Hierarchy, Two- Factor Theory, McClelland 's Need Theory, Theory X and Theory Y.

Unit- III

Nature and Scope of Human resource Management: Scope of HRM, HRM– functions and objectives, HRM model.

Personnel Function: Personnel polices and principles, duties and responsibilities of personnel manager, differences between HRM and PM Emerging trends of personnel management in India

Unit-IV

Human Resource Planning: Meaning, definition and importance of HRP.

Job analysis: Meaning and definition, process of job analysis.

Recruitment: Meaning and definition, importance, sources of recruitment. Indian scenario

Selection: Meaning and definition, selection process, types of interview

Unit-V

Training and Development: Nature of training and Development, Inputs in training and Development, importance of training and Development, training process, training of International assignment

Reference Books:

1. L. M. Prasad, "Organizational Behavior", S. Chand.
2. V. S. P. Rao, P. S. Narayana, "Organizational Theory and Behavior", Konark Publishers Pvt. Ltd.
3. Tripathi, Reddy, "Principles of Management", TMH
4. Koontz, Weihrich, "Essentials of Management", TMH
5. Fred Luthans, "Organizational Behaviour", McGraw Hill
6. K. Aswathappa, "Human Resource and Personnel Management", TMH
7. L. M. Prasad, "Human Recourse Management", S. Chand

DATA AND FILE STRUCTURE USING 'C'

L T P
3 1 0

MCA 2.2

Unit -I

Introduction: Basic Terminology, Elementary Data Organization, Data Structure operations, Algorithm Complexity and Time-Space trade-off

Arrays: Array Definition, Representation and Analysis, Single and Multidimensional Arrays, address calculation, application of arrays, Character String in C, Character string operation, Array as Parameters, Ordered List, Sparse Matrices, and Vectors.

Stacks: Array Representation and Implementation of stack, Operations on Stacks: Push & Pop, Array Representation of Stack, Linked Representation of Stack, Operations Associated with Stacks, Application of stack: Conversion of Infix to Prefix and Postfix Expressions, Evaluation of postfix expression using stack.

Recursion: Recursive definition and processes, recursion in C, example of recursion, Tower of Hanoi Problem, simulating recursion. Backtracking, recursive algorithms, principles of recursion, tail recursion, removal of recursion.

Unit - II

Queues: Array and linked representation and implementation of queues, Operations on Queue: Create, Add, Delete, Full and Empty. Circular queue, Deque, and Priority Queue**.**

Linked list: Representation and Implementation of Singly Linked Lists, Two-way Header List, Traversing and Searching of Linked List, Overflow and Underflow, Insertion and deletion to/from Linked Lists,

Insertion and deletion Algorithms, Doubly linked list, Linked List in Array, Polynomial representation and addition, Generalized linked list, Garbage Collection and Compaction.

Unit - III

Trees: Basic terminology, Binary Trees, Binary tree representation, algebraic Expressions, Complete Binary Tree. Extended Binary Trees, Array and Linked Representation of Binary trees, Traversing Binary trees, Threaded Binary trees. Traversing Threaded Binary trees, Huffman algorithm**.**

Searching and Hashing: Sequential search, binary search, comparison and analysis, Hash Table, Hash Functions, Collision Resolution Strategies, Hash Table Implementation.

Unit - IV

Sorting: *Insertion Sort, Bubble Sorting, Quick Sort, Two Way Merge Sort, Heap Sort, Sorting on Different Keys, Practical consideration for Internal Sorting***.**

Binary Search Trees: Binary Search Tree (BST), Insertion and Deletion in BST, Complexity of Search Algorithm, Path Length, AVL Trees, B-trees.

Unit - V

Graphs: **Terminology & Representations, Graphs & Multi-graphs, Directed Graphs, Sequential Representations of Graphs, Adjacency Matrices, Traversal, Connected Component and Spanning Trees, Minimum Cost Spanning Trees.**

File Structures: Physical Storage Media File Organization, Organization of records into Blocks, Sequential Files, Indexing and Hashing, Primary indices, Secondary indices, B+ Tree index Files, B Tree index Files, Indexing and Hashing Comparisons

References

1. Horowitz and Sahani, "Fundamentals of data Structures", Galgotia
2. R. Kruse etal, "Data Structures and Program Design in C" Pearson Education
3. A M Tenenbaum etal, "Data Structures using C & C++", PHI
4. Lipschutz, "Data Structure", TMH
5. K Loudon, "Mastering Algorithms With C", Shroff Publisher & Distributors
6. Bruno R Preiss, "Data Structures and Algorithms with Object Oriented Design Pattern in C++", Jhon Wiley & Sons, Inc.
7. Adam Drozdek, "Data Structures and Algorithms in C++", Thomson Asia
8. Pal G. Sorenson, "An Introduction to Data Structures with Application", TMH.

OBJECT ORIENTED SYSTEMS AND C++

L T P

MCA 2.3 **3 1 0**

Unit-I

Object Modeling

Object & classes, Links and Associations, Generalization and Inheritance, Aggregation, Abstract classes, A sample object model, Multiple Inheritance, Meta data, candidate keys, constraints.

Unit-II

Dynamic Modeling

Events and States, Operations and Methods, Nested state Diagrams, Concurrency, Relation of Object and Dynamic Models, advanced dynamic model concepts, a sample dynamic model.

Unit-III

Functional Modeling

Functional Models, Data flow Diagrams, Specifying Operations, Constraints, a sample functional model.

Unit-IV

Programming in C++

Classes and objects in C++, Functions, Constructors, Destructors, Inheritance, Functions overloading, Operator Overloading, I/O Operations.

Real life applications, Extended Classes, Pointer, Virtual functions, Polymorphisms, Working with files, Class templates, Function templates.

Unit-V

Translating object oriented design into an implementation, OMT Methodologies, examples and case studies to demonstrate methodology, comparison of Methodology, SA/SD, and JSD.

References

1. Rambaugh James etal, "Object Oriented Design and Modeling", PHI-1997
2. Bjarne Stroustrup, "C++ Programming Language", Addison Wesley
3. Balagurusamy E, "Object Oriented Programming with C++", TMH, 2001
4. Booch Grady, "Object Oriented Analysis and Design with application 3/e", Pearson
5. Lipman, Stanley B, Jonsce Lajole, " C++ Primer Reading", AWL, 1999
6. Dillon and Lee, "Object Oriented Conceptual Modeling", New Delhi PHI-1993
7. Stephen R. Shah, "Introduction to Object Oriented Analysis and Design", TMH
8. Berzin Joseph, "Data Abstraction: the object oriented approach using C++", McGraw Hill
9. Mercer, "Computing Fundamental with C++", Palgrave Macmillan

COMPUTER BASED NUMERICAL AND STATISTICAL TECHNIQUES

MCA-2.4

L T P
3 1 0

Unit-I

Floating point Arithmetic: Representation of floating point numbers, Operations, Normalization, Pitfalls of floating point representation, Errors in numerical computation

Iterative Methods: Zeros of a single transcendental equation and zeros of polynomial using Bisection Method, Iteration Method, Regula-Falsi method, Newton Raphson method, Secant method, Rate of convergence of iterative methods.

Unit-II

Simultaneous Linear Equations: Solutions of system of Linear equations, Gauss Elimination direct method and pivoting, Ill Conditioned system of equations, Refinement of solution. Gauss Seidal iterative method, Rate of Convergence

Interpolation and approximation: Finite Differences, Difference tables

Polynomial Interpolation**:** Newton's forward and backward formula

Central Difference Formulae: Gauss forward and backward formula, Stirling's, Bessel's, Everett's formula.

Interpolation with unequal intervals: Langrange's Interpolation, Newton Divided difference formula, Hermite's Interpolation

Approximation of function by Taylor's series and Chebyshev polynomial

Unit-III

Numerical Differentiation and Integration: Introduction, Numerical Differentiation, Numerical Integration, Trapezoidal rule, Simpson's rules, Boole's Rule, Weddle's Rule Euler- Maclaurin Formula

Solution of differential equations: Picard's Method, Euler's Method, Taylor's Method,

Runge-Kutta methods, Predictor-corrector method, Automatic error monitoring, stability of solution.

Unit-IV

Curve fitting, Cubic Spline and Approximation: Method of least squares, fitting of straight lines, polynomials, exponential curves etc

Frequency Chart: Different frequency chart like Histogram, Frequency curve, Pi-chart.

Regression analysis: Linear and Non-linear regression, Multiple regression

Unit-V

Time series and forcasting: Moving averages, smoothening of curves, forecasting models and methods. Statistical Quality Controls methods

Testing of Hypothesis: Test of significance, Chi-square test, t-test, ANOVA, F-Test

Application to medicine, agriculture etc.

References:

1. Rajaraman V., "Computer Oriented Numerical Methods", PHI
2. Gerald & Wheatley, "Applied Numerical Analyses", AW
3. Jain, Iyengar and Jain, "Numerical Methods for Scientific and Engineering Computations", New Age Int.
4. Grewal B. S., "Numerical methods in Engineering and Science", Khanna Publishers, Delhi
5. T. Veerarajan, T Ramachandran, "Theory and Problems in Numerical Methods", TMH
6. Pradip Niyogi, "Numerical Analysis and Algorithms", TMH
7. Francis Scheld, "Numerical Analysis", TMH
9. Gupta S. P., "Statistical Methods", Sultan and Sons

COMBINATORICS & GRAPH THEORY

MCA-2.5

L T P
3 1 0

Unit 1

Rules of sum and products, Permutation, Combination, Permutation groups and application, Probability, Ramsey theory, Discrete numeric function and generating function, Combinatorial problems, Difference equation.

Unit II

Recurrence Relation-Introduction, Linear recurrence relation with constant coefficient, Homogeneous solution, Particular solution, Total solution, Solution by the method of generating function.

Unit III

Graphs, sub-graphs, some basic properties, Walks, Path & circuits, Connected graphs, Disconnected graphs and component, Eular and Hamiltonian graphs, Various operation on graphs, Tree and fundamental circuits, Distance diameters, Radius and pendent vertices, Rooted and binary trees, Counting trees, Spanning trees, Finding all spanning trees of a graph and a weighted graph.

Unit IV

Cut-sets and cut vertices, some properties, All cut sets in a graph, Fundamental circuit and cut sets, Connectivity and seperatability, Network flows, mincut theorem, Planar graphs, Combinatorial and geometric dual, Kuratowski to graph detection of planarity, Geometric dual, Some more criterion of planarity, Thickness and Crossings, Vector space of a graph and vectors, basis vectors, cut set vector, circuit vector, circuit and cut set verses sub spaces, orthogonal vector and sub space.

Incidence matrix of graphs, sub matrices of A(G), circuit matrix, cut set matrix, path matrix and relationship among A_f, B_f, C_f, fundamental circuit matrix and range of B_f adjacency matrix, rank nullity theorem.

Unit V

Coloring and covering partitioning of graph, Chromatic number, Chromatic partitioning, Chromatic polynomials, Matching, covering, Four color problem, Directed graph, Types of directed graphs, Directed paths and connectedness, Euler digraph, Trees with directed edges, Fundamental circuit in digraph, Matrices A, B, C of digraph adjacency matrix of digraph, Enumeration and its types, Counting of labeled and unlabeled trees, Polya's theorem, Graph enumeration with polyas theorem, Graph theoretic algorithm.

References

1. Deo Narsing, "Graph Theory with applications to engineering & computer science", PHI
2. Tremblay & Manohar, " Discrete mathematical structures with applications to computer Science", TMH
3. Joshi K. D., "Fundamental of discrete mathematics", New Age International
4. John Truss, "Discrete mathematics for computer scientist"
5. C. L. Liu, "Discrete mathematics"

COMPUTER ARCHITECTURE & MICROPROCESSOR

L T P
3 1 0

MCA 2.6

Unit-I

Introduction to Parallel computing; Parallelism in Uniprocessor Systems, Parallel computer structures, Architectural Classification schemes, parallel processing applications. Pipelining Processing: An overlapped parallelism, Instruction and Arithmetic pipelines,

Unit-II

Principles of designing pipelined processors, Internal forwarding and register tagging, Hazard detection and resolution, Job sequencing and collision prevention, Characteristics of Vector processing, Multiple vector task dispatching, SIMD array processors, Masking and Data routing

Unit-III

SIMD Interconnection network: Static, Dynamic networks, Cube interconnection network, Shuffle exchange and Omega Network, SIMD matrix multiplication. Multiprocessor Architecture: Tightly and loosely coupled multiprocessors.

Unit -IV

Multiprocessor scheduling strategies and deterministic scheduling models, Introduction to Data Flow computing and data flow Graph. Introduction to 8 Bit and 16 Bit Intel Microprocessor Architecture and Register set.

Unit-V

Assembly language programming based on Intel 8085; Instructions: Data Transfer, Arithmetic, Logic, Branch operations, Looping Counting, Indexing, Programming Techniques, Counters and Time Delays, Stacks and Subroutines, Conditional call and Return Instructions, Advanced Subroutine Instructions.

References:

1. Hwang and Briggs, "Computer Architecture and parallel processing", McGraw Hill
2. R.S Goankar, "Microprocessor architecture, programming and application with the 8085", Pen Ram International.
3. Peterson & Heresy, "Quantitative approach to computer architecture", Morgan Kaufman
4. Hwang, "Advanced Computing Architecture", McGraw Hill
5. Quin, "Parallel Computing, Theory and Practices", McGraw Hill
6. Daniel Tabak, "Advanced Microprocessor", McGraw Hill
7. Hall D.V., "Microprocessor and Interfacing, Program and hardware", TMH

COMPUTER NETWORKS

MCA 3.1

L T P
3 1 0

Unit-I

Introductory Concepts: Goals and Applications of Networks, Network structure and architecture, the OSI reference model, services, networks topology, Physical Layer- transmission, switching methods, Integrated services digital networks, terminal handling.

Unit-II

Medium access sub layer: Channel allocations, LAN protocols, ALOHA Protocols- Pure ALOHA, slotted ALOHA, Carrier Sense Multiple Access Protocols, CSMA with Collision Detection, Collision free Protocols, IEEE standards, FDDI, Data Link Layer- elementary data link protocols, sliding windows protocols, error handling, High Level Data Link Control

Unit-III

Network Layer: Point-to Point networks, routing algorithms, congestion control algorithms, internetworking, TCP/IP packet, IP addresses, IPv6.

Unit-IV

Transport Layer: Design issues, connection management, TCP window Management, User Datagram Protocol, Transmission Control Protocol.

Unit-V

Application Layer: Network Security, DES, RSA algorithms, Domain Name System, Simple Network Management Protocol, Electronic mail, File Transfer Protocol, Hyper Text Transfer Protocol, Cryptography and compression Techniques.

References

1. A. S Tanenbaum, "Computer Networks, 3rd Edition", PHI
2. W. Stallings, "Data and Computer Communication", Macmillan Press
3. Comer, "Computer Networks & Internet", PHI.
4. Comer, "Internetworking with TCP/IP", PHI
5. Forouzan, "Data Communication and Networking", TMH

DESIGN AND ANALYSIS OF ALGORITHM

MCA 3.2

L T P
3 1 0

Unit-I

Introduction:

Algorithms, Analysis of Algorithms, Design of Algorithms, and Complexity of Algorithms, Asymptotic Notations, Growth of function, Recurrences

Sorting in polynomial Time: Insertion sort, Merge sort, Heap sort, and Quick sort

Sorting in Linear Time: Counting sort, Radix Sort, Bucket Sort

Medians and order statistics

Unit-II

Elementary Data Structure: Stacks, Queues, Linked list, Binary Search Tree, Hash Table

Advanced Data Structure: Red Black Trees, Splay Trees, Augmenting Data Structure Binomial Heap, B-Tree, Fibonacci Heap, and Data Structure for Disjoint Sets

Union-find Algorithm, Dictionaries and priority Queues, mergeable heaps, concatenable queues

Unit-III

Advanced Design and Analysis Techniques: Dynamic programming, Greedy Algorithm, Backtracking, Branch-and-Bound, Amortized Analysis

Unit-IV

Graph Algorithms: Elementary Graph Algorithms, Breadth First Search, Depth First Search, Minimum Spanning Tree, Kruskal's Algorithms, Prim's Algorithms, Single Source Shortest Path, All pair Shortest Path, Maximum flow and Traveling Salesman Problem

Unit –V

Randomized Algorithms, String Matching, NP-Hard and NP-Completeness

Approximation Algorithms, Sorting Network, Matrix Operations, Polynomials & the FFT, Number Theoretic Algorithms, Computational Geometry

References

1. Horowitz Sahani, " Fundamentals of Computer Algorithms", Golgotia

2. Coremen Leiserson etal, " Introduction to Algorithms", PHI
3. Brassard Bratley, "Fundamental of Algorithms", PHI
4. M T Goodrich etal, "Algorithms Design", John Wiley
5. A V Aho etal, "The Design and analysis of Algorithms", Pearson Education

OPERATING SYSTEM

L T P
3 1 0

MCA 3.3

Unit-I

Introduction: Definition and types of operating systems, Batch Systems, multi programming, time–sharing parallel, distributed and real-time systems, Operating system structure, Operating system components and services, System calls, system programs, Virtual machines.

Unit-II

Process Management: Process concept, Process scheduling, Cooperating processes, Threads, Interprocess communication, CPU scheduling criteria, Scheduling algorithms, Multiple-processor scheduling, Real-time scheduling and Algorithm evaluation.

Unit-III

Process Synchronization and Deadlocks: The Critical-Section problem, synchronization hardware, Semaphores, Classical problems of synchronization, Critical regions, Monitors, Deadlocks-System model, Characterization, Deadlock prevention, Avoidance and Detection, Recovery from deadlock, Combined approach to deadlock handling.

Unit-IV

Storage management: Memory Management-Logical and Physical Address Space, Swapping, Contiguous Allocation, Paging, Segmentation with paging in MULTICS and Intel 386, Virtual Memory, Demand paging and its performance, Page replacement algorithms, Allocation of frames, Thrasing, Page Size and other considerations, Demand segmentation, File systems, secondary Storage Structure, File concept, access methods, directory implementation, Efficiency and performance, recovery, Disk structure, Disk scheduling methods, Disk management, Recovery, Disk structure, disk scheduling methods, Disk management, Swap-Space management, Disk reliability.

Unit-V

Security & Case Study: Protection and Security-Goals of protection, Domain of protection, Access matrix, Implementation of access Matrix, Revocation of Access Rights, language based protection, The Security problem, Authentication, One Time passwords, Program threats, System threats, Threat Monitoring, Encryption.

Windows NT-Design principles, System components, Environmental subsystems, File system, Networking and program interface, Linux system-design principles, Kernel Modules, Process Management, Scheduling, Memory management, File Systems, Input and Output, Interprocess communication, Network structure, security

References

1. Abraham Siberschatz and Peter Baer Galvin, "Operating System Concepts", Fifth Edition, Addision-Wesley
2. Milan Milankovic, "Operating Systems, Concepts and Design", McGraw-Hill.
3. Harvey M Deital, "Operating Systems", Addison Wesley
4. Richard Peterson, "Linux: The Complete Reference", Osborne McGraw-Hill.

DATABASE MANAGEMENT SYSTEM

MCA 3.4 **L T P**
3 1 0

Unit- I

Introduction: An overview of database management system, Database System Vs File System, Database system concepts and architecture, data models schema and instances, data independence and data base language and interfaces, Data definitions language, DML, Overall Database Structure.

Data Modeling using the Entity Relationship Model: ER model concepts, notation for ER diagram, mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagrams to tables, extended ER model, relationships of higher degree.

Unit- II

Relational data Model and Language: Relational data model concepts, integrity constraints: entity integrity, referential integrity, Keys constraints, Domain constraints, relational algebra, relational calculus, tuple and domain calculus.

Introduction to SQL: Characteristics of SQL, Advantages of SQL, SQL data types and literals, Types of SQL commands, SQL operators and their procedure, Tables, views and indexes, Queries and sub queries, Aggregate functions, Insert, update and delete operations, Joins, Unions, Intersection, Minus, Cursors in SQL.

PL/SQL, Triggers and clusters.

Unit- III

Data Base Design & Normalization: Functional dependencies, normal forms, first, second, third normal forms, BCNF, inclusion dependencies, loss less join decompositions, normalization using FD, MVD, and JDs, alternative approaches to database design.

Unit- IV

TRANSACTION PROCESSING CONCEPTS: TRANSACTION SYSTEM, TESTING OF SERIALIZABILITY, SERIALIZABILITY OF SCHEDULES, CONFLICT & VIEW SERIALIZABLE SCHEDULE, RECOVERABILITY, RECOVERY FROM TRANSACTION FAILURES, LOG BASED RECOVERY, CHECKPOINTS, DEADLOCK HANDLING.

Unit- V

Concurrency Control Techniques: Concurrency control, locking Techniques for concurrency control, Time stamping protocols for concurrency control, validation based protocol, multiple granularity, Multi-version schemes, Recovery with concurrent transaction. Transaction Processing in Distributed system, data fragmentation. Replication and allocation techniques for distributed system, overview of concurrency control and recovery in distrusted database.

REFERENCES

1 Date C J, "An Introduction To Database System", Addision Wesley

2 Korth, Silbertz, Sudarshan, "Database Concepts", McGraw Hill

3 Elmasri, Navathe, "Fundamentals Of Database Systems", Addision Wesley

4 Paul Beynon Davies, "Database Systems", Palgrave Macmillan

5 BIPIN C. DESAI, "AN INTRODUCTION TO DATABASE SYSTEMS", GALGOTIA PUBLICATION

6 MAJUMDAR & BHATTACHARYA, "DATABASE MANAGEMENT SYSTEM", TMH

7 Ramakrishnan, Gehrke, "Database Management System", McGraw Hill

8 Bharti P.K, "An introduction to Database Systems", JPNP

INTERNET & JAVA PROGRAMMING

L T P
3 1 0

MCA 3.5

Unit-1

Internet: Internet, Connecting to Internet: Telephone, Cable, Satellite connection, Choosing an ISP, Introduction to Internet services, E-Mail concepts, Sending and Receiving secure E-Mail, Voice and Video Conferencing.

Unit- II

Core Java: Introduction, Operator, Data type, Variable, Arrays, Control Statements, Methods & Classes, Inheritance, Package and Interface, Exception Handling, Multithread programming, I/O, Java Applet, String handling, Networking, Event handling, Introduction to AWT, AWT controls, Layout managers, Menus, Images, Graphics.

Unit-III

Java Swing: Creating a Swing Applet and Application, Programming using Panes, Pluggable Look and feel, Labels, Text fields, Buttons, Toggle buttons, Checkboxes, Radio Buttons, View ports, Scroll Panes, Scroll Bars, Lists, Combo box, Progress Bar, Menus and Toolbars, Layered Panes, Tabbed Panes, Split Panes, Layouts, Windows, Dialog Boxes, Inner frame.

JDBC: The connectivity Model, JDBC/ODBC Bridge, java.sql package, connectivity to remote database, navigating through multiple rows retrieved from a database.

Unit-IV

Java Beans: Application Builder tools, The bean developer kit(BDK), JAR files, Introspection, Developing a simple bean, using Bound properties, The Java Beans API, Session Beans, Entity Beans, Introduction to Enterprise Java beans (EJB), **Introduction to RMI (Remote Method Invocation):** A simple client-server application using RMI.

Unit-V

Java Servlets: Servlet basics, Servlet API basic, Life cycle of a Servlet, Running Servlet, Debugging Servlets, Thread-safe Servlets, HTTP Redirects, Cookies, Introduction to Java Server pages (JSP).

References:

1. Margaret Levine Young, "The Complete Reference Internet", TMH
2. Naughton, Schildt, "The Complete Reference JAVA2", TMH
3. Balagurusamy E, "Programming in JAVA", TMH
4. Dustin R. Callway, "Inside Servlets", Addison Wesley
5. Mark Wutica, "Java Enterprise Edition", QUE
6. Steven Holzner, "Java2 Black book", dreamtech

SYSTEM PROGRAMMING
MCA 3.6

L T P
3 1 0

- Introduction to system software definition, feature of system programming, system programming vs. application programming, type of system programmes.
- Machine language: basic concepts of machine structure (8086), feature of machine language, machine language of 8086.
- Assembly language: features, various of statements, data types, assembly language of 8086.
- Assembler; single pass assembler, two-pass assembler, and general design procedure of an assembler.
- Macro processor: macro language and its features, macro instructions, features of macro facility, implementation, one pass macro processor, two pass macro processor, macro assembler.
- Compliers : overview of compilation process, lexical analysis, syntax analysis, semantic analysis and intermediate code generation and code optimization techniques, compiler vs. interpreter.
- Linkers and loaders : simple linker vs loaders, and design and implementation of direct linking loader, subroutine linkage & other loader schemes.
- Introduction to device drivers, functions and structure of text editor.

References :

1. Donovan, "System Programming", (McGgraw-Hill), 1991.
2. Aho and Ulman, "Principles of Compilers", Narosa Publishing House, 1986.

VISUAL PROGRAMMING
MCA 4.1

Introduction : Introduction to Visual Language. Features of visual language. Environment and application area of Visual language. Introduction to Project, Form, Objects, Properties, Methods, Events. Overview to main screen. Title Bar. Tool Box. Customize the form (Command button, text box, check box, option button, label OLE, data control etc.)

Program Elements: Data types, Variables, Constants, Statements, Writing Codes behind visual objects. Use of Procedures and functions, (In Built / User Defined). Decision making, Looping, Branching, Switching, Arrays, Modules.

Visual Programming: Creating forms, add object to form, writing code behind the objects, compile & run the program. Convert to EXE form. Use the menu bar with form. Developing MDI forms in project.

Data Base Programming: Use of data Source object to link forms with table. Attach database objects with tables. Append, deletion, editing, searching, querying operation of data base. Use SQL.

OOPs with VB: Making OOPs With Visual basic. Understanding user defined types. Making objects from classes. Creating a class in VB. Adding properties to class. Creating an object from a class making Active X DLL. Working with components.

Active X controls: Creating an Active X control. Understanding user control object, adding user control to a form, adding functionality to an Active X control, compiling custom Active X control.

References :

Visual Basic 6.0	Gray Cornell	TMH
Using Visual Basic 6.0	Siller and Spott	PHI
Mastering Visual Basic 6	Evangelos Petroutsos	BPB
The Complete Reference VC++	Chris H. Pappus & William H. Murray	TMH

MODELING AND SIMULATION

MCA 4.2

L T P
3 1 0

Unit-I

System definition and components, stochastic activities, continuous and discrete Systems, System modeling, types of models, static and dynamic physical models, Static and dynamic mathematical models, Full corporate model, types of system study.

Unit-II

System simulation, Why to simulate and when to simulate, Basic nature of simulation, technique of simulation, comparison of simulation and analytical methods, types of system simulation, real time simulation, hybrid simulation, simulation of pure-pursuit problem single-server queuing system and an inventory problem, Monte Carlo simulation, Distributed Lag models, Cobweb model.

Unit-III

Simulation of continuous systems, analog vs. digital simulation, simulation of water reservoir system, simulation of a servo system, simulation of an autopilot

Discrete system Simulation, Fixed time-step vs. event-to-event model, generation of random numbers, Test for randomness, Generalization of non-uniformly distributed random numbers, Monte-Carlo computation vs. stochastic simulation.

Unit-IV

System dynamics, exponential growth models, exponential decay models, modified exponential growth models, logistic curves, generalization of growth models, System Dynamics diagrams, Feedback in Socio-Economic systems, world model.

Unit-V

Simulation of PERT networks, Critical path computation, uncertaintities in Activity duration, Resource allocation and consideration.

Simulation software, Simulation languages, continuous and discrete simulation languages, Expression based languages, object-oriented simulation, general-purpose vs. application-oriented simulation packages, CSMP-III, MODSIM-III.

References

1. Geoftrey Gordon," System Simulation", PHI
2. Narsingh Deo, " System Simulation with digital computer", PHI
3. Averill M. Law, W. David Kelton, "Simulation Modeling and Analysis", TMH

SOFTWARE ENGINEERING

MCA 4.3

L T P
3 1 0

Unit-I Introduction: Introduction to software engineering, Importance of software, The evolving role of software, Software Characteristics, Software Components, Software Applications, Software Crisis, Software engineering problems, Software Development Life Cycle, Software Process.

Unit-II Software Requirement Specification: Analysis Principles, Water Fall Model, The Incremental Model, Prototyping, Spiral Model, Role of management in software development, Role of matrices and Measurement, Problem Analysis, Requirement specification, Monitoring and Control.

Software-Design: Design principles, problem partitioning, abstraction, top down and bottom up-design, Structured approach, functional versus object oriented approach, design specifications and verification, Monitoring and control, Cohesiveness, coupling, Forth generation techniques, Functional independence, Software Architecture, Transaction and Transform Mapping, Component – level Design, Forth Generation Techniques

Unit-III Coding: Top-Down and Bottom –Up programming, structured programming, information hiding, programming style and internal documentation.

Testing: Testing principles, Levels of testing, functional testing, structural testing, test plane, test case specification, reliability assessment, software testing strategies, Verification & validation, Unit testing, Integration Testing, Alpha & Beta testing, system testing and debugging.

Unit-IV Software Project Management: The Management spectrum- (The people, the product, the process, the project), cost estimation, project scheduling, staffing, software configuration management, Structured Vs. Unstructured maintenance, quality assurance, project monitoring, risk management.

Unit-V Software Reliability & Quality Assurance: Reliability issues, Reliability metrics, Reliability growth modeling, Software quality, ISO 9000 certification for software industry, SEI capability maturity model, comparison between ISO & SEI CMM.

CASE (Computer Aided Software Engineering): CASE and its Scope, CASE support in software life cycle, documentation, project management, internal interface, Reverse Software Engineering, Architecture of CASE environment.

References

1. Pressman, Roger S., "Software Engineering: A Practitioner's Approach Ed. Boston: McGraw Hill, 2001
2. Jalote, Pankaj, "Software Engineering Ed.2", New Delhi: Narosa 2002
3. Schaum's Series, "Software Engineering", TMH
4. Ghezzi, Carlo and Others, "Fundamentals of Software Engineering", PHI
5. Alexis, Leon and Mathews Leon, "Fundamental of Software Engineering", Vikas
6. Sommerville, Ian, "Software Engineering", AWL, 2000
7. Fairly, "Software Engineering", New Delhi: TMH
8. Pfleerger, S, "Software Engineering", Macmillan, 1987

COMPILER DESIGN

L T P
3 1 0

MCA 404/(1)

Unit-1

Compiler Structure: Compilers and Translators, Various Phases of Compiler,
Pass Structure of Compiler, Bootstrapping of Compiler

Programming Languages: High level languages, The lexical and syntactic structure of a language, Data elements, Data Structure, Operations, Assignments, Program unit, Data Environments, Parameter Transmission.

Lexical Analysis: The role of Lexical Analyzer, A simple approach to the design of
Lexical Analyzer, Regular Expressions , Transition Diagrams, Finite state Machines, Implementation of Lexical Analyzer, Lexical Analyzer Generator: LEX, Capabilities of Lexical Analyzer

Unit-II

The Syntactic Specification of Programming Languages: CFG, Derivation and Parse tree, Ambiguity, Capabilities of CFG.

Basic Parsing Techniques: Top-Down parsers with backtracking, Recursive Descent Parsers, Predictive Parsers, Bottom–up Parsers, Shift-Reduce Parsing, Operator Precedence Parsers, LR parsers (SLR, Canonical LR, LALR)
Syntax Analyzer Generator: YACC

Unit-III

Intermediate Code Generation: Different Intermediate forms: three address code, Quadruples & Triples. Syntax Directed translation mechanism and attributed definition.
Translation of Declaration, Assignment, Control flow, Boolean expression, Array References in arithmetic expressions, procedure calls, case statements, postfix translation.

Unit-IV

Run Time Memory Management: Static and Dynamic storage allocation, stack based memory allocation schemes, Symbol Table management

Error Detection and Recovery: Lexical phase errors, Syntactic phase errors, Semantic errors.

Unit-V

Code Optimization and Code Generation: Local optimization, Loop optimization, Peephole optimization, Basic blocks and flow graphs, DAG, Data flow analyzer, Machine Model, Order of evaluation, Register allocation and code selection

References:

1. Alfred V Aho , Jeffrey D. Ullman, "Principles of Compiler Design", Narosa
2. A.V. Aho, R. Sethi and J.D Ullman, "Compiler: principle, Techniques and Tools", AW
3. H.C. Holub "Compiler Design in C", Prentice Hall Inc.
4. Apple, "Modern Computer Implementation in C: Basic Design", Cambridge press

CRYPTOGRAPHY AND NETWORK SECURITY

L T P
3 1 0

MCA 404/(2)

Unit-I

Introduction to Cryptography: ***Introduction To Security: Attacks, Services & Mechanisms, Security, Attacks, Security Services. Conventional Encryption: Classical Techniques, Conventional Encryption Model, And Steganography, Classical Encryption Techniques. Modern Techniques: Simplified DES, Block Cipher Principles, DES Standard, DES Strength, Differential & Linear Cryptanalysis, Block Cipher Design Principles, Block Cipher Modes Of Operation.***

Unit-II

Conventional Encryption Algorithms: ***Triples DES, Blowfish, International Data Encryption Algorithm, RCS, CAST-128, RC2 Placement & Encryption Function, Key Distribution, Random Number Generation, Placement Of Encryption Function.***

Unit-III

Public Key Encryption: ***Public-Key Cryptography: Principles Of Public-Key Cryptosystems, RSA Algorithm, Key Management, Fermat's & Euler's Theorm, Primality, The Chinese Remainder Theorem.***

Unit-IV

Hash Functions: ***Message Authentication & Hash Functions: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Birthday Attacks, Security Of Hash Function & MACS, MD5 Message Digest Algorithm, Secure Hash Algorithm (SHA), Digital Signatures: Digital Signatures, Authentication Protocol, Digital Signature Standard (DSS), Proof Of Digital Signature Algorithm.***

Unit-V

Network & System Security: Authentication Applications: Kerberos X.509, Directory Authentication Service, Electronic Mail Security, Pretty Good Privacy (PGP), S / Mime, Security: Architecture, Authentication Header, Encapsulating Security Payloads, Combining Security Associations, Key Management, Web Security: Secure Socket Layer & Transport Layer Security, Secure Electronic Transaction (Set), System Security: Intruders, Viruses, Firewall Design Principles, Trusted Systems.

Text Book:

1. William Stallings, "Cryptography and Network Security: Principles and Practice", Prentice Hall, New Jersey.

Reference Books:

1. Johannes A. Buchmann, "Introduction to cryptography", Springer- Verlag.
2. Atul Kahate, "Cryptography and Network Security", TMH

DATA COMPRESSION

MCA 404/(3)

L T P
3 1 0

Unit-I

Introduction: Compression Techniques: Loss less compression, Lossy compression, Measures of performance, Modeling and coding.

Mathematical Preliminaries for Lossless compression: ***A brief introduction to information theory: - Models: -Physical models, Probability models, Markov models, composite source model, Coding? -Uniquely decodable codes, Prefix codes.***

Unit-II

Huffman coding: ***The Huffman coding algorithm, minimum variance Huffman codes, length of Huffman codes, extended Huffman codes, non binary Huffman codes, Adaptive Huffman***

codes: Update procedure, Encoding procedure, decoding procedure, Golomb codes, Rice codes, Tunstall codes, Applications: loss less image compression, Text compression and Audio compression.

Unit-III

Arithmetic coding: ***Coding a sequence, generating a binary code, Comparison of Huffman and Arithmetic coding, Application: Bi –level image compression -The JBIG standard, JBIG2 Image compression, Dictionary Techniques:-Introduction, Static Dictionary: Diagram Coding, Adaptive dictionary: The LZ77 Approach, The LZ78 approach, Applications: File Compression-UNIX compress, Image compression: - The Graphics interchange Format (GIF), Predictive Coding: - Prediction with partial match (PPM): The basic algorithms, The ESCAPE SYMBOL, length of context, The Exclusion Principle, The Burrows-Wheeler Transform: Move-to-front coding, CALIC, JPEG-LS, Multiresolution Approaches, facsimile Encoding, Dynamic Markov Compression.***

Unit-IV

Mathematical Preliminaries for Lossy Coding: -Distortion criteria, Models. Scalar Quantization, the Quantization problem, Uniform Quantization, adaptive Quantization, Non uniform Quantization.

Unit-V

Vector Quantization: Advantages of Vector Quantization over Scalar Quantization, The linde-Buzo-Gray algorithm, Tree stuctured Vector quantzers, Structured Vector Quantizers.

Text Book:

1. Khalid Sayood, "Introduction to Data Compression", Morgan Kaufmann Publications.

Reference Book:

1. Ralf Steinmetx and Klara Nahrstedt, "Multimedia Computing and communication and applications", Prentice Hall

Client Server Computing
MCA 404(4)

L T P
3 1 0

Unit I

Client/Server Computing: DBMS concept and architecture, Single system image, Client Server architecture, mainframe-centric client server computing, downsizing and client server computing, preserving mainframe applications investment through porting, client server development tools, advantages of client server computing.

Unit II

Components of Client/Server application: The client: services, request for services, RPC, windows services, fax, print services, remote boot services, other remote services, Utility Services & Other Services, Dynamic Data Exchange (DDE), Object Linking and Embedding (OLE), Common Object Request Broker Architecture (CORBA). The server: Detailed server functionality, the network operating system, available platforms, the network operating system, available platform, the server operating system.

Unit III

Client/Server Network: connectivity, communication interface technology, Interposes communication, wide area network technologies, network topologies (Token Ring, Ethernet, FDDI, CDDI) network management, Client-server system development: Software, Client–Server System Hardware: Network Acquisition, PC-level processing unit, Macintosh, notebooks, pen, UNIX workstation, x-terminals, server hardware.

Unit IV

Data Storage: magnetic disk, magnetic tape, CD-ROM, WORM, Optical disk, mirrored disk, fault tolerance, RAID, RAID-Disk network interface cards.
Network protection devices, Power Protection Devices, UPS, Surge protectors.
Client Server Systems Development: Services and Support, system administration, Availability, Reliability, Serviceability, Software Distribution, Performance, Network management, Help Disk, Remote Systems Management Security, LAN and Network Management issues.

Unit V

Client/Server System Development: Training, Training advantages of GUI Application, System Administrator training, Database Administrator training, End-user training.
The future of client server Computing Enabling Technologies, The transformational system.

References:

1. Patrick Smith & Steave Guengerich, "Client / Server Computing", PHI
2. Dawna Travis Dewire, "Client/Server Computing", TMH
3. Majumdar & Bhattacharya, "Database management System", TMH
4. Korth, Silberchatz, Sudarshan, "Database Concepts", McGraw Hill
5. Elmasri, Navathe, S.B, "Fundamentals of Data Base System", Addison Wesley

DATA MINING & WAREHOUSING

L T P
3 1 0

MCA 404(5)

Unit – I

Dss-Uses, definition, Operational Database. Introduction to DATA Warehousing. Data-Mart, Concept of Data-Warehousing, Multi Dimensional Database Structures. Client/Server Computing Model & Data Warehousing. Parallel Processors & Cluster Systems. Distributed DBMS implementations.

Unit – II

DATA Warehousing. Data Warehousing Components. Building a Data Warehouse. Warehouse Database. Mapping the Data Warehouse to a Multiprocessor Architecture. DBMS Schemas for Decision Support. Data Extraction, Cleanup & Transformation Tools. Metadata.

Unit – III

Business Analysis. Reporting & Query Tools & Applications. On line Analytical Processing(OLAP). Patterns & Models. Statistics. Artificial Intelligence.

Unit – IV

Knowledge Discovery, Data Mining. Introduction to Data-Mining. Techniques of Data-Mining. Decision Trees. Neural Networks. Nearest Neighbor & Clustering. Genetic Algorithms. Rule Introduction. Selecting & Using the Right Technique.

Unit – V

Multimedia Data-Mining, Multimedia-Databases, Mining Multimedia Data, Data-Mining and the World Wide Web, Web Data-Mining, Mining and Meta-Data. Data Visualization & Overall Perspective. Data Visualization. Applications of Data-Mining.

References:

1. Berson, "Data Warehousing, Data-Mining & OLAP", TMH
2. Mallach, "Decision Support and Data Warehousing System", TMH
3. Bhavani Thura-is-ingham, "Data-Mining Technologies, Techniques Tools & Trends", CRC Press
4. Navathe, "Fundamental of Database System", Pearson Education
5. Margaret H. Dunham, "Data-Mining. Introductory & Advanced Topics", Pearson Education
6. Pieter Adriaans, Dolf Zantinge, "Data-Mining", Pearson Education

PARALLEL PROCESSING
MCA – 4.4 (6)

Introduction: Parallel processing concepts, parallelism in uni-processor system, data & control parallelism, arithmetic and instruction pipeline.

PRAM Algorithms: The PRAM model of parallel computing, prefix sums, list ranking, preorder tree traversal, merging of two sorted list, graph coloring.

Array Processor: Mesh n/w, binary tree networks, butter fly n/w, hyper-cube n/w, cube-connected cycles n/w, shuttle-exchange n/w, flynn's taxonomy, CM-200.

Parallel Algorithm Reduction: Hyper-cube SIMD, shuttle-exchange SIMD, 2D-mesh SIMD, broadcast, matrix multiplication on 2D-mesh SIMD and hyper-cube SIMD Model.

Sorting: Enumeration sort, Odd-even transposition sort, Biotonic merge sort on the shuttle-exchange.

References :

Parallel Computing: Theory and Practice:- M.J. Duinn 2nd Edition TMH
Parallel Processing and Computer Architecture:- Kwang and Briggs TMH

Computer Organisation and Architecture :- J.P. Hyes McGraw International

FOUNDATION OF E-COMMERCE

L T P
3 1 0 **4.5**

Unit 1

Introduction: Electronic Commerce - Technology and Prospects, Definition of E- Commerce, Economic potential of electronic commerce, Incentives for engaging in electronic commerce, forces behind E-Commerce, Advantages and Disadvantages, Architectural framework, Impact of E-commerce on business.

Network Infrastructure for E- Commerce: Internet and Intranet based E-commerce- Issues, problems and prospects, Network Infrastructure, Network Access Equipments, Broadband telecommunication (ATM, ISDN, FRAME RELAY).

Unit II

Mobile Commerce: Introduction, Wireless Application Protocol, WAP technology, Mobile Information device, Mobile Computing Applications.

Unit III

Web Security: Security Issues on web, Importance of Firewall, components of Firewall, Transaction security, Emerging client server, Security Threats, Network Security, Factors to consider in Firewall design, Limitation of Firewalls.

Unit IV

Encryption: Encryption techniques, Symmetric Encryption- Keys and data encryption standard, Triple encryption, Asymmetric encryption- Secret key encryption, public and private pair key encryption, Digital Signatures, Virtual Private Network.

Unit V

Electronic Payments: Overview, The SET protocol, Payment Gateway, certificate, digital Tokens, Smart card, credit card, magnetic strip card, E-Checks, Credit/Debit card based EPS, online Banking.

EDI Application in business, E- Commerce Law, Forms of Agreement, Govt. policies and Agenda.

References

1. Ravi Kalakota, Andrew Winston, "Frontiers of Electronic Commerce", Addison Wesley.
2. Bajaj and Nag, "E-Commerce the cutting edge of Business", TMH
3. P. Loshin, John Vacca, "Electronic commerce", Firewall Media, New Delhi

COMPUTER GRAPHICS AND ANIMATION

MCA 4.6

L T P
3 1 0

Unit I

Graphics Primitives: ***Display Devices: Refresh Cathode Ray Tube, Raster Scan Display, Plasma display, Liquid Crystal display, Plotters, Printers.***

Input Devices: ***Keyboard, Trackball, Joystick, Mouse, Light Pen, Tablet, and Digitizing Camera.***

Input Techniques: ***Positioning techniques, Positioning Constraints, Scales & Guidelines, Rubber-Band techniques, Dragging, Dimensioning techniques and Graphical Potentiometers, Pointing and Selection: the use of selection points, defining a boundary rectangle, multiple selections, Menu selection.***

Unit II

Mathematics for Computer Graphics: ***Point representation, Vector representation, Matrices and operations related to matrices, Vector addition and vector multiplication, Scalar product of two vectors, Vector product of two vectors.***

Line Drawing Algorithms: ***DDA algorithms, Bresenham's Line algorithm.***

Segment & Display files: ***Segments, Functions for segmenting the display file, Posting and unposting a segment, segment naming schemes, Default error conditions, Appending to segments, Refresh concurrent with reconstruction, Free storage allocation, Display file Structure.***

Graphics Operations: ***Clipping: Point Clipping, Line Clipping. Polygon Clipping.***

Filling: ***Inside Tests, Flood fill algorithm, Boundary-Fill Algorithm and scan-line polygon fill algorithm.***

Unit III

Conics, Curves and Surfaces: ***Quadric surfaces: Sphere, Ellipsoid, and Torus. Superquadrics: Superellipse, superellipsoid. Spline & Bezier Representations: Interpolation and approximation splines, parametric continuity conditions, Geometric Continuity Conditions, Spline specifications. Bezier curves and surfaces.***

Unit IV

Transformation: ***2D transformation, Basic Transformations, Composite transformations: Reflection, Shearing, Transformation between coordinate systems.***

3 D Graphics: 3 D Display Methods, 3 D modeling, 3 D transformations, Parallel projection, Perspective projection, Visible lines and surfaces identification, Hidden surface removal

Unit V

Animation : Introduction to Animation, Principles of Animation, Types of Animation, Types of Animation Systems : Scripting, Procedural, Representational, Stochastic, etc.

Animation Tools : Hardware –SGI, PC's, Amiga etc.

Software : Adobe Photoshop, Animation studio, Wave front etc.

Gif Animator : Microsoft GIF Animation, GIF Construction, GIFmation etc.

GKS: GKS Standards, GKS Primitives – Polyline, Polymarker, and Fill area, Text, GKS Workstation and Metafiles.

References:

1. Donald Hearn and M. Pauline Baker, "Computer Graphics", PHI
2. Steven Harrington, "Computer Graphics: A Programming Approach", TMH
3. Prajapati A. K, "Computer Graphics", PPM Ed 2
4. Foley James D, "Computer Graphics", AW Ed 2
5. Newman and Sproul, "Principle of to Interactive Computer Graphics", McGraw Hill
6. Rogers, "Procedural Elements of Computer Graphics", McGraw Hill
7. Rogers and Adams, "Mathematical Elements of Computer Graphics", McGraw Hill

MCA 5.1

L T P
3 1 0

Unit-I

History of the web, Growth of the Web, Protocols governing the web, Introduction to Cyber Laws in India, Introduction to International Cyber laws, Web project, Web Team, Team dynamics.

Unit-II

Communication Issues, the Client, Multi-departmental & Large scale Websites, Quality Assurance and testing, Technological advances and Impact on Web Teams.

Unit-III

HTML: Formatting Tags, Links, List, Tables, Frames, forms, Comments in HTML, DHTML.

JavaScript: Introduction, Documents, Documents, forms, Statements, functions, objects in JavaScript, Events and Event Handling, Arrays, FORMS, Buttons, Checkboxes, Text fields and Text areas.

Unit IV

XML: Introduction, Displaying an XML Document, Data Interchange with an XML document, Document type definitions, Parsers using XML, Client-side usage, Server Side usage.

Unit V

Common Gateway Interface (CGI), PERL, RMI, COM/DCOM, VBScript, Active Server Pages (ASP).

Text Book:

1. Burdman, "Collaborative Web Development", Addison Wesley.
2. Sharma &Sharma, "Developing E-Commerce Sites", Addison Wesley
3. Ivan Bayross, "Web Technologies Part II", BPB Publications.

References:

1. Shishir Gundavarma, "CGI Programming on the World Wide Web", O'Reilly & Associate.
2. DON Box, "Essential COM", Addison Wesley.
3. Greg Buczek, "ASP Developer's Guide", TMH.

MULTIMEDIA SYSTEM

L T P
3 1 0

MCA 5.2(1)

Unit I

Evolution of Multimedia and its objects, Scope of multimedia in business & work, Production and planning of Multimedia applications.

Multimedia hardware, Memory & Storage Devices, Communication Devices, Multimedia Software, Presentation and object generation tools, Video, sound, Image capturing, Authoring Tools, Card & Page Based Authoring Tools.

Unit II

Production and Planning of Multimedia building blocks, Text, sound (MIDI), Digital Audio, Audio File Formats, MIDI under Windows environment, Audio & Video Capture.

Unit III

Macromedia products, Basic drawing techniques, Advance animation techniques, Creating multi layer combining interactivity and multiple scenes, Creating transparency effects using text in Flash, Flash animation.

Unit IV

Digital Audio Concepts, Sampling variables, Loss Less compression of sound, Lossy compression & Silence compression.

Unit V

Multimedia monitor bitmaps, Vector drawing, Lossy graphic compression, Image file formatic animations Image standards, J P E G compression, Zig Zag coding,

Video representation, colors, video compression, MPEG standards, MHEG standard, recent development in multimedia.

Multimedia Application Planning, Costing, Proposal preparation, and Financing-Case study of a typical industry.

References:

1. Andreas Halzinger, "Multimedia Basics", Vol-I to Vol-III, Firewall Media, New Delhi.
2. Tay Vaughan, "Multimedia Making It work", Tata McGraw Hill.
3. Buford, "Multimedia Systems", Addison Wesley.
4. Agarwal and Tiwari, "Multimedia Systems", Excel.
5. Rosch, "Multimedia Bible", Sams Publishing
6. Sleinreitz, "Multimedia Systems", Addison Wesley
7. Ken Milburn, John Croteau, "Flash 4 web special Effects, Animation & Design Handbook", Dreamtech Press.

8. John Villamil–Casanova & Louis Molina, "Multimedia-Production, Planning & Delivery", PHI

DISTRIBUTED DATABASE SYSTEM

MCA 5.2(2)

Unit-1

Introduction to Distributed Data system, Distributed Database Architecture, Distributed Data base Design, Transaction processing Concurrency Control techniques, Security.

Unit-2

Types of Data Fragmentations, Fragmentation and allocation of fragments, Distribution transparency, access primitives, integrity constraints.

Unit-3

Grouping and aggregate function, Query processing , Equivalence transformation of queries.

Unit-4

Evaluation, parametric queries, Query optimization, Join and general queries.

Unit-5

Management of Distributed transaction and concurrency control: Distributed Date base Administration, Catalouge Management Authorisation, Security and protection. Examples of distributed database systems. Cost Analysis

References:

1. Ceri & Palgathi, "Distributed Database System", McGraw Hill.
2. Raghu Rama Krishnan and Johannes Gechrib, "Database Management Systems", Mc Graw Hill.
3. Date C. J, "An Introduction to Database System, Vol1 & II", Addition Wesley.
4. Korth, Silbertz, Sudarshan , "Database Concepts", McGraw Hill.
5. Elmasari , Navathe, "Fundamentals of Data Base Systems", Addition Wesley.
6. Data C. J , "An Introduction to Database System" , Addition Wesley
7. RamaKrishnan , Gehke, "Database Management System", McGraw Hill

ADVANCED CONCEPTS IN DATABASE SYSTEMS

MCA 5.2(4)

L T P
3 1 0

Unit-I

Query Processing, Optimization & Database Tuning:

Algorithms For Executing Query Operations. Heuristics For Query Optimizations, Estimations of query Processing Cost, Join Strategies For Parallel Processors, Database Workloads, Tuning Decisions, DBMS Benchmarks, Clustering & Indexing, Multiple Attribute Search Keys, Query Evaluation Plans, Pipelined Evaluations, System Catalogue In RDBMS.

Unit-II

Extended Relational Model & Object Oriented Database System:

New Data Types, User Defined Abstract Data Types, Structured Types, Object Identity, Containment, Class Hierarchy, Logic Based Data Model, Data Log, Nested Relational Model And Expert Database System.

Unit-III

Distributed Database System:

Structure Of Distributed Database, Data Fragmentation, Data Model, Query Processing, Semi Join, Parallel & Pipeline Join, Distributed Query Processing In R * System, Concurrency Control In Distributed Database System, Recovery In Distributed Database System, Distributed Deadlock Detection And Resolution, Commit Protocols.

Unit –IV

Enhanced Data Model For Advanced Applications:

Database Operating System, Introduction To Temporal Database Concepts, Spatial And Multimedia Databases, Data Mining, Active Database System, Deductive Databases, Database Machines, Web Databases, Advanced Transaction Models, Issues In Real Time Database Design.

Unit-V

Introduction To Expert Database And Fuzzy Database System:

Expert DataBases: Use of Rules of Deduction in Databases, Recursive Rules.

Fuzzy DataBases: Fuzzy Set & Fuzzy Logic, Use Of Fuzzy Techniques to Define Inexact and Incomplete DataBases.

References

1. Majumdar & Bhattacharya, "Database Management System", TMH.
2. Korth, Silbertz, Sudarshan, " Database Concepts", McGraw Hill.
3. Elmasri, Navathe, "Fundamentals Of Database Systems", Addison Wesley.
4. Data C J," An Introduction To Database System", Addison Wesley.
5. Ramakrishnan, Gehrke, "Database Management System", McGraw Hill.
6. Bernstein, Hadzilacous, Goodman, " Concurrency Control & Recovery", Addison Wesley.
7. Ceri & Palgatti, "Distributed Databases", McGraw Hill.

ARTIFICIAL INTELLIGENCE
MCA- 5.2 (5)

Introduction: Basic definition and concept of artificial intelligence, example of some AI problem, AI techniques, criteria for success.

Problem and Problem Spaces: Defining the problem as a state space search, production systems, control strategies, Heuristic search, problem characteristics eg. Ignorable, Recoverable, Irrecoverable etc. Production System characteristics and role of knowledge.

Basic Problem Solving Methods: Forward versus Backward reasoning problem, Trees versus Problem graphs, matching, indexing, Heuristic functions, Breadth-First search, Best-First Search, the A* algorithms, AO* algorithms, analysis of search algorithms.

Knowledge Representation: Introduction to representation, representing simple facts in logic, augmenting the representation with computable function and predicates.

Resolution: Resolution in prepositional logic, Resolution in predicate logic, Question Answering.

Natural Language Understanding: Basic concept of understanding, understanding words, understanding sentences-syntax, semantics, Pragmatics Syntactic analysis – Parsing, Top down versus Bottom-UP parsing, Formal definition of grammars and & Languages, Augmented transition network concepts.

Introduction to Expert System: Definition, analysis of expert problem solving, role of knowledge in expert system, analysis of knowledge.

Reference:

Elaine Rich : Artificial Intelligence TMH

NET FRAMEWORK AND C#
MCA 5.3

L T P
3 1 0

Unit-I

The .NET framework: Introduction, Common Language Runtime, Common Type System, Common Language Specification, The Base Class Library, The .NET class library Intermediate language, Just-in-Time compilation, garbage collection, Application installation & Assemblies, Web Services, Unified classes.

Unit-II

C# Basics: Introduction, Data Types, Identifiers, variables & constants, C# statements, Object Oriented Concept, Object and Classes, Arrays and Strings, System Collections, Delegates and Events, Indexes Attributes, versioning.

Unit-III

C# Using Libraries: Namespace-System, Input Output, Multi-Threading, Networking and Sockets, Data Handling, Windows Forms, C# in Web application, Error Handling.

Unit-IV

Advanced Features Using C#: Web Services, Windows services, messaging, Reflection, COM and C#, Localization.

Unit-V

Advanced Features Using C#: Distributed Application in C#, XML and C#, Unsafe Mode, Graphical Device Interface with C#, Case Study (Messenger Application)

Text Books

1. Shibi Panikkar and Kumar Sanjeev, "C# with .NET Frame Work", Firewall Media.
2. Shildt, "C#: The Complete Reference", TMH

Reference Books

1. Jeffrey Richter, "Applied Microsoft .Net Framework Programming", (Microsoft)
2. Fergal Grimes, "Microsoft .Net for Programmers", (SPD)
3. TonyBaer, Jan D. Narkiewicz, Kent Tegels, Chandu Thota, Neil Whitlow, "Understanding the .Net Framework", (SPD)
4. Balagurusamy, "Programming with C#", TMH

ERP SYSTEMS
MCA 5.4

L T P
3 1 0

Unit-I

Enterprise wide information system, Custom built and packaged approaches, Needs and Evolution of ERP Systems, Common myths and evolving realities, ERP and Related Technologies, Business Process Reengineering and Information Technology, Supply Chain Management, Relevance to Data Warehousing, Data Mining and OLAP, ERP Drivers, Decision support system.

Unit-II

ERP Domain, ERP Benefits classification, Present global and Indian market scenario, milestones and pitfalls, Forecast, Market players and profiles, Evaluation criterion for ERP product, ERP Life Cycle: Adoption decision, Acquisition, Implementation, Use & Maintenance, Evolution and Retirement phases, ERP Modules.

Unit- III

Framework for evaluating ERP acquisition, Analytical Hierarchy Processes (AHP), Applications of AHP in evaluating ERP, Selection of Weights, Role of consultants, vendors and users in ERP implementation; Implementation vendors evaluation criterion, ERP Implementation approaches and methodology, ERP implementation strategies, ERP Customization, ERP-A manufacturing Perspective.

Unit- IV

Critical success and failure factors for implementation, Model for improving ERP effectiveness, ROI of ERP implementation, Hidden costs, ERP success inhibitors and accelerators, Management concern for ERP success, Strategic Grid: Useful guidelines for ERP Implementations.

Unit- V

Technologies in ERP Systems and Extended ERP, Case Studies Development and Analysis of ERP Implementations in focusing the various issues discussed in above units through Soft System approaches or qualitative Analysis tools, Learning and Emerging Issues, ERP and E-Commerce.

References

1. A. Lexis Leon, "Enterprise Resource Planning", TMH
2. Brady, Manu, Wegner, " Enterprise Resource Planning", TMH

ADVANCED COMPUTER NETWORKS

MCA 5.5(1)

L T P
3 1 0

Unit 1:

Introduction: Overview of computer network, seven-layer architecture, TCP/IP suite of protocol, etc. Mac protocols for high-speed LANS, MANs & WIRELESS LANs. (For example, FDDI, DQDB, HIPPI, Gigabit Ethernet, Wireless Ethernet etc.)

Fast access technologies. (For example, ADSL, Cable Modem, etc.)

Unit 2:

IPv6: why IPv6, basic protocol, extension & option, support for QoS, security, etc, neighbor discovery, auto-configuration, routing. Change to other protocols. Application programming interface for IPv6. 6bone.

Unit 3:

Mobility in network. Mobile. Security related issues.

IP Multicasting. Multicasting routing protocols, address assignments, session discovery, etc.

Unit 4:

TCP extensions for high-speed networks, transaction-oriented application, other new option in TCP.

Unit 5:

Network security at various layers. Secure-HTTP, SSL, ESP, Authentication header, Key distribution protocols. Digital signatures, digital certificates.

References:

1. W. R. Stevens, "TCP/IP illustrated, Volume 1: The protocols", Addison Wesley 1994.
2. G. R. Wright. "TCP/IP illustrated, Volume 2: The implementation", Addison Wesley 1995

REAL TIME SYSTEM

L T P
3 1 0

MCA 5.5(2)

Unit-I

Introduction to Real Time Systems, Prioritites, Embedded Systems, Task, Classification & Requirements, Deadlines, Soft, Hard.

Unit-II

Firm Real Time Systems, Introduction to Real Time Operating Systems, Task Management, Inter Process Communication, Case Studies of Maruti II, HART OS, VRTX etc.

Unit-III

Characterizing Real Time Systems and Task, Task Assignment & Scheduling Theory, Fixed and Dynamic Priority Scheduling

Uniprocessor (RM and EDF), Multiprocessor (Utilization Balancing, Next-fit for RM & Bin-Packing Assignment for EDF) Scheduling

Unit-IV

Programming Languages and Tools, Real Time Databases

Real Time Communication, FDDI, Specification and Verification using Duration Calculus, Flow Control, Protocols for Real Time (VTCSMA, Window, IEEE 802.3, IEEE 802.4, IEEE 802.5, Stop and Go Protocol, Media Access Protocol),

Unit-V

Fault, Fault Classes, Fault Tolerant Real Time System, Clocks, Clock Synchronization, Issues in Real Time Software Design.

References

1. Krishna, C.M, "Real Time Systems", McGraw Hill
2. Jane W.S. Liu, "Real Time Systems", Pearson Education Asia
3. Levi and Agarwal, "Real Time Systems", McGraw Hill
4. Mathi & Joseph, "Real Time System: Specification, Validation & Analysis", PHI

PRINCIPLES OF USER INTERFACE DESIGN

MCA 5.5(3)

L T P
3 1 0

Unit I User-Interface: Goals of User-Interface Design, Human factors in user interface design, Theories, Principles, and Guidelines, Goals of Systems Engineering, Accommodation of Human Diversity, Goals for Our Profession, High Level Theories, Object-Action Interface model, Principle 1:Recognize the Diversity, Principle 2: Use the Eight Golden Rules of Interface Design, Principle 3: Prevent Errors, Guidelines for Data Display, Guidelines for Data Entry, Balance of automation and Human Control, Practitioner's Summary, Researcher's Agenda.

Management Issues: Introduction, Organizational; Design to Support Usability, The three Pillars of Design, Development Methodologies, Ethnographic Observation, Participatory Design, Scenario Development, Social Impact Statement for Early Design Review, Legal issues, Expert Reviews, Usability, testing and Laboratories, Surveys, Acceptance tests, Evaluation During Active Use, Controlled Psychologically Oriented Experiments, Practitioner's Summary, Researcher's agenda.

Unit II Tools Environment, and Menus: Introduction, Specification Methods; Interface-Building Tools, Evaluation and critiquing Tools. Direct Manipulation and virtual Environments: Introduction, Examples of Direct manipulation systems, Explanations of Direct manipulation, Visual Thinking and Icons, Direct Manipulation Programming, Home Automation, Remote Direct manipulation, Virtual Environments Menus: Task-Related Organization, Item Presentation Sequence, Response Time and Display Rate, Fasty Movement through Menus, Menu Layout, From Fillin, Dialog boxes, Command-Organization strategies, The Benefits of Structure, Naming and Abbreviations, Command Menus, Natural Language in Computing, Practitioners Summary, Researcher's Agenda.

Unit III Interaction Devices, Response Times, Styles and Manuals: Interaction Devices, Introduction, Keyboards and Function Keys, Pointing Devices, speech Recognition, Digitization, and Generation, Image and Video displays, Printers. Response Time and Display Rate: Theoretical; Foundations, Exceptions and attitudes, User Productivity, variability, Presentation Styles and Manuals: Introduction, Error messages, Nonanthopomorphic Design, Color of Manuals, Help: Reading From paper Versus from Displays, Preparation of Printed manuals, Preparation of Online Facilities, Practitioner's Summary, Researcher's Agend.

Unit IV Multiple-Windows, Computer-Supported Cooperative work, Information's search and www Multiple-Windows Strategies: Introduction, Individual-Window Design, Multiple-window Design, Coordination by Tightly-Coupled Windows, Image Browsing and Tightly-Coupled Windows, Personal Role Management and Elastic Windows Computer-Supported Cooperative Work; Introduction, Goals of Cooperation, Asynchronous Interactions: Different Time, Different Place, Synchronous Distributed: Different Place, Same Time, Face to Face: Same Place, Same Time, Applying CSCW to Education.

Unit V Information Search and Visualization: Introduction, Database Query And Phrase Search in Textual Documents, Multimedia Document Searches, Information Visualization, Advanced Filtering. Hypermedia and the World wide Web: Introduction, Hypertext and Hypermedia, World Wide Web, Genres and Goals and Designers, Users and Their Tasks, Object Action Interface Model for Web Site Design, Practitioner's summary, Researcher's Agenda.

References:

1. Ben Shneiderman, "Designing the User Interface", Addison-Wesley
2. Alan J Dix et al, "Human-Computer Interaction", PHI
3. Eberts, "User Interface Design", PHI
4. Wilber O Galitx, "An Introduction to GUI Design Principles and Techniques", John-Wiley

MOBILE COMPUTING

MCA 5.5(4)

L T P
3 1 0

Issues in Mobile Computing, Wireless Telephony, Digital Cellular Standards, Bluetooth Technology, Wireless Multiple Access Protocols, Channel Allocation in Cellular Systems.

Unit II

Data Management Issues: Mobility, Wireless Communication and Portability, Data Replication and Replication Schemes, Basic Concept of Multihopping, Adaptive Clustering for Mobile Network, Multicluster Architecture.

Unit III

Location Management, Location Based Services, Automatically Locating Mobile Uses, Locating and Organizing Services, Issues and Future Directions, Mobile IP, Comparison of TCP and Wireless.

Unit IV

Transaction Management, Data Dissemination, Cache Consistency, Mobile Transaction Processing, Mobile Database Research Directions, Security Fault Tolerance for Mobile N/W.

Unit V

What is Ad-hoc Network? , Problems with Message Routing in Wireless Ad-hoc Mobile Networks, Routing scheme based on signal strength, Dynamic State Routing (DSR), Route Maintenance and Routing error, Fisheye Routing (FSR), Ad-hoc on Demand Distance Vector (ADDV)

Text Books & References:

1. Shambhu Upadhyaya, Abhijeet Chaudhary, Kevin Kwiat, Mark Weises, "Mobile Computing", Kluwer Academic Publishers
2. UWE Hansmann, Lothar Merk, Martin-S-Nickious, Thomas Stohe, "Principles of Mobile Computing", Springer International Edition

NEURAL NETWORK

MCA 5.5(5)

L T P
3 1 0

Unit – I

Introduction: Neural network, Human brain, biological and artificial Neurons, model of Neuron Knowledge representation, Artificial intelligence and Neural network, Network architecture, Basic Approach of the working of ANN – training, Learning and generalization.

Unit – II

Supervised learning: Single- layer networks, perception-linear separability, limitations of multi layer network architecture, back propagation algorithm (BPA) and other training algorithms, applications of adaptive multi-layer network architecture, recurrent network, feed-forword networks, radial- basis-function (RBF) networks.

Unit – III

Unsupervised learning: Winner-takes-all networks, Hamming networks, maxnet, simple competitive learning vector-quantization, counter-propagation network, adaptive resonance theory, Kohonen's self organizing maps, principal component analysis.

Unit – IV

Associated models: Hopfield networks, brain-in-a-box network, Boltzman machine.

Unit - V

Optimization methods: Hopfield networks for-TSP, solution of simultaneous linear equations, Iterated radiant descent, simulated annealing, fenetic algorithm.

Text Books:

1. Simon Haykin, "Neural Networks – A Comprehensive Foundation", Macmillan Publishing Co., New York, 1994.
2. K. Mahrotra, C.K. Mohan and Sanjay Ranka, "Elements of Artificial Neural Networks", MIT Press, 1997 – Indian Reprint Penram International Publishing (India), 1997

Reference Books:

1. A Cichocki and R. Unbehauen, "Neural Networks for optimization and Signal processing", John Wiley and Sons, 1993.
2. J.M. Zurada, "Introduction to Artificial Neural networks", (Indian edition) Jaico Publishers, Mumbai, 1997.
3. Limin Fu. "Neural Networks in Computer Intelligence", TMH.

DIGITAL IMAGE PROCESSING
MCA – 5.5 (6)

Introduction : Importance and use of I. P.

Image Characterization : Storage and display – human visual perception, sampling and quantization, Image model, Camera video & photogrammetric systems, Image storage and file formats, Display and hard copy devices, Imaging system.

Image Geometry : Zooming, Rotation, Cut and Paste & Warping.

Image representation : Neighbours, Connectivity, Distance Transform, Component labeling, Skeletonising, etc.

Histogram Techniques : Computing Histogram, Graylevel scaling, Equalization, Specialization and thresholding.

Colour : Colour model and chromaticity, Pseudo and false colour, Colour display and palletes.

Spatial Filters : Convolution masks, Edge Detection filters, Mean and Median filters, Enhancement filters.

Morphological Filtering : Dilation and erosion, Opening and closing, Hit & miss transforms, Outlining and Skeletonising, Spatial frequency filtering: Discrete Fourier transforms and FFT, Other transform, Wiener filtering.

Adaptive Filters : Order statistics, Minimum mean square error filter, Double window modified trimmed mean filter, Window edge detection filter, Signal adaptive median filter and related topics.

MANAGEMENT INFORMATION SYSTEM

L T P

MCA 5.6 **3 1 0**

Unit 1: Foundation of Information Systems: Introduction to information system in business, fundamentals of information systems, Solving business problems with information systems, Types of information systems, Effectiveness and efficiency criteria in information system.

Unit 2: An overview of Management Information Systems: Definition of a management information system, MIS versus Data processing, MIS & Decision Support Systems, MIS & Information Resources Management, End user computing, Concept of an MIS, Structure of a Management information system.

Unit 3: Concepts of planning & control: Concept of organizational planning, The Planning Process, Computational support for planning, Characteristics of control process, The nature of control in an organization.

Unit 4: Business applications of information technology: Internet & electronic commerce, Intranet, Extranet & Enterprise Solutions, Information System for Business Operations, Information System for Managerial Decision Support, Information System for Strategic Advantage.

Unit 5: Managing Information Technology: Enterprise & global management, Security & Ethical challenges, Planning & Implementing changes.

Advanced Concepts in Information Systems: Enterprise Resource Planning, Supply Chain Management, Customer Relationship Management, and Procurement Management.

Text Books

1. O Brian, "Management Information System", TMH
2. Gordon B. Davis & Margrethe H. Olson, "Management Information System", TMH.

References

1. O Brian, "Introduction to Information System", MCGRAW HILL.
2. Murdick, "Information System for Modern Management", PHI.
3. Jawadekar, " Management Information System", TMH.
4. Jain Sarika, "Information System", PPM
5. Davis, "Information System", Palgrave Macmillan

PROGRAMMING LAB

L T P
0 0 3

MCA 1.7

- Write C program to find largest of three integers.
- Write C program to check whether the given string is palindrome or not.
- Write C program to find whether the given integer is
  (i) a prime number
  (ii) an Armstrong number.
- Write C program for Pascal triangle.
- Write C program to find sum and average of n integer using linear array.
- Write C program to perform addition, multiplication, transpose on matrices.
- Write C program to find fibbonacci series of iterative method using user-defined function.
- Write C program to find factorial of n by recursion using user-defined functions.
- Write C program to perform following operations by using user defined functions:
  (i) Concatenation
  (ii) Reverse
  (iii) String Matching
- Write C program to find sum of n terms of series:
  n – n*2/2! + n*3/3! - n*4/4! + ...
- Write C program to interchange two values using
  (ii) Call by value.
  (ii) Call by reference.
- Write C program to sort the list of integers using dynamic memory allocation.
- Write C program to display the mark sheet of a student using structure.
- Write C program to perform following operations on data files:
  (i) read from data file.
  (ii) write to data file.
- Write C program to copy the content of one file to another file using command line argument.

ORGANIZATION LAB

MCA 1.8

L T P
0 0 3

- Study and Bread Board Realization of Logic Gates. K-Map, Flip-Flop equation, realization of characteristic and excitation table of various Flip Flops.
- Implementation of Half Adder, Full Adder and Subtractor.
- Implementation of Ripple Counters and Registers.
- Implementation of Decoder and Encoder circuits.
- Implementation of Multiplexer and D-Multiplexer circuits.

NUMERICAL TECHNIQUES LAB
MCA – 1.7

L T P
0 0 2

Write programs in C

- To implement floating point arithmetic operations i.e., addition, subtraction, multiplication and division.
- To deduce errors involved in polynomial interpolation.
  Algebraic and trancedental equations using Bisection, Newton Raphson, Iterative, method of false position, rate of conversions of roots in tabular form for each of these methods.
- To implement formulae by Bessels, Newton, Stirling, Langranges etc.
- To implement method of least square curve fitting.
- Implement numerical differentiation.
- Implement numerical integration using Simpson's 1/3 and 3/8 rules, trapezoidal rule.
- To show frequency chart, regression analysis, Linear square fit, and polynomial fit.

NOTE- Institutions are required to add four more experiments as per available expertise with them

DATA STRUCTURE LAB
MCA – 2.7

L T P
0 0 3

Write Program in C or C++ for following:

- Sorting programs: Bubble sort, Merge sort, Insertion sort, Selection sort, and Quick sort.
- Searching programs: Linear Search, Binary Search.
- Array implementation of Stack, Queue, Circular Queue, Linked List.
- Implementation of Stack, Queue, Circular Queue, Linked List using dynamic memory allocation.
- Implementation of Binary tree.
- Program for Tree Traversals (preorder, inorder, postorder).
- Program for graph traversal (BFS, DFS).
- Program for minimum cost spanning tree, shortest path.

UNIX/LINUX LAB

L T P
0 0 3

MCA – 1.9

- Write Shell Script for UNIX environment.
- Understanding of basic commands of UNIX administration, user authorization, grant of users right and privileges, backup and recovery.
- Source Code Control System understanding Lex and Yacc, debugger tools (Lint, make etc.)
- Write program in C for Process Creation, Parent/Child process relationship, forking of process. Inter Process Communication and socket programming implementation of exec system call, pipe, semaphore and message queue.

MICROPROCESSOR LAB
MCA – 2.9

L T P
0 0 2

- Study of 8085 and 8086/8088 Kit.
- Assembly Language Programs for 8088 kit
  (i) address and data transfer.
  (ii) addition, subtraction.

(iii) block transfer.
(iv) find greatest numbers.
(v) find r's and (r-1)'s complements of signed and unsigned number

- Assembly Language Programs for 8086/8088
  (i) Multiplication of two decimal/binary/hexadecimal/octal numbers.
  (ii) Division of two decimal/binary/hexadecimal/octal numbers.
  (iii) Conversion of lower case to upper case character.
- Test the performance of Booth's Algorithm for
  (i) Signed numbers.
  (ii) Unsigned numbers.

MIS LAB
MCA-4.7

L T P
0 0 3

- Use of designer tools like for making DFD/ERDs using process analyst tool or any other tool etc
- Laboratory experiments in use of interactive SQL and other 4 GLs.
- Designing and implementing fully functional information system by suing any language.
- Develop software for implementation of information system by using any language.
- Develop the software module for the testing of the software routines.

Note: Students are advised to use **Oracle 91, JAVA2, and Visual Basic6.** However depending upon the availability of software's, Mini project may also be planned & carried out through out the semester to understand the important concepts of database and testing until the end of semester.

JAVA PROGRAMMING LAB
MCA-3.8

L T P
0 0 3

1. Write a program in java for illustrating, overloading, over riding and various forms of inheritance.
2. Write programs to create packages and multiple threads in Java.
3. Write programs in Java for event handling Mouse and Keyboard events.
4. Using Layout Manager create different applications.
5. Write programs in Java to create and manipulate Text Area, Convas, Scroll Bars, Frames and Menus using swing /AWT.
6. Using Java create Applets.
7. Use Java Language for Client Server Interaction with stream socket connections.
8. Write a program in java to read data from disk file.

COMPUTER GRAPHICS LAB
MCA- 4.7

L T P
0 0 2

Write program in any suitable language

1. Write a program to draw a line using DDA algorithm.
2. Write a program for implementing Bresenham's algorithm for line generation
3. Write a program for generation of circle.
4. Write a program to demonstrate Cohen- Sutherland line clipping method.
5. Write a program to implement Sutherland- Hodgeman polygon clipping algorithm.

6. Write a program to rotate a triangle. (By asking the user to input the coordinates of the Triangle and the angle of rotation)
7. Write a program to perform one point perspective projection of an object.
8. Write a program to implement Depth- Buffer method to display the visible surfaces of a given polyhedron.
9. Write a program to implement 3-D rotation of an object.
10. Write a program to draw ployline using any algorithm.
11. Write a program to draw a Bezier curve and surface.

Note: Students are advised to use C, C++ language for writing program; Use of open GL is desirable.

WEB TECHNOLOGY LAB
MCA- 5.7

L T P
0 0 3

1. Design a HTML page to display your CV
2. Design a HTML form to reserve a railway ticket.
3. Write a Java Script program that finds the greatest common divisor of two numbers.
4. In the form mentioned in problem 2 to reserve a railway ticket add the following validations using java Script.
    - From city and to city are two different cities.
    - Age of passengers should not be greater than 150.
    - Name of the passenger should be a string of a maximum length 20.
5. Write a program for illustrating client/server side scripting with help of ASP.
6. Write a piece of code in XML for creating DTD, which specifies set of rules.
7. Create style sheet in CSS/XSL and display the document in Internet Explorer.
8. **Mini Project:** Develop a web portal for your college.

NET FRAME WORK & C ++ LAB
MCA- 5.8

L T P
0 0 3

Write programs in C# illustrating

1. The use of sequence, conditional and iteration construct.
2. Various operators like logical, arithmetical, relational etc.
3. Overloading of various operators.
4. Use of Fried, Inline and Static Member functions, default arguments.
5. Use of destructor and various types of constructor.
6. Various forms of Inheritance.
7. Use of virtual functions, virtual Base Class, delegates.
8. File operation.
9. Simple web application using ASP Net.
10. Use of Active X controls.

Note: Students are advised to develop a small project illustrating the handling of database and screens in order to fully understand the C#.

SOFTWARE ENGINEERING LAB
MCA- 4.9

L T P
0 0 3

1. Program for Configuration Management.
2. Perform SA/SD for the following software
    - Hotel Automation System

- Book Shop Automation Software
- Word Processing Software
- Software Component Cataloguing Software

3. Design and development of test cases for testing.
4. Writing program in Java for Computing Cyclomatic complexity.
5. Development of Software tool for Halstead Analysis.
6. Perform Cost/Benefit analysis.
7. Illustration of various activities of Software development using MS Project 2000.
8. Lab exercise involving development of various practical applications using software like VJ++ VB, SYBASE, JDK.

Students are to be given a major assignment to be completed using one or more of these tools. Student's exposure to any CASE tool is desirable.

9. Case Studies: Payroll System, Banking System, Purchase Order System, Library Management System, Railway Reservation System, Bill Tracking System, College Admission System, Sales Management System.

- **Academic Calendar**:

Academic Calendar of UIM

Academic Calendar of Uttaranchal Institute of Management, Dehradun for session 2007-08.

1	Orientation Program	17.08.2007
2	Commencement of Classes	21.08.07
3	First term Internal Test	3rd or 4th week of September
4	Second term Internal Test	1st week of November
5	Third term Internal Test	1st week of December

Note: Submission of examination form for Semester End Examination – 10 Nov. 2007

- **Academic Time Table**: Enclosed