

Code: IM – 101

Principles and Practices of Management

Course Objectives

Objectives of this course are to help the students gain understanding of the functions and responsibilities of the manager, provide them tools and techniques to be used in the performance of managerial job, and enable them to analyze and understand the environment of the organization.

Course Contents

1. Concept of Management: Functions and Responsibilities of Managers, Fayol's Principles of Management, Management Thought; the Classical School, the Human Relations School, Systems theory, Contingency Management, Developing Excellent Managers.
2. Planning: Nature and Purpose of Planning, the Planning Process, Principles of Planning, Types of Planning, Advantages and Limitations of Planning.
3. Concept and Nature of Objectives: Types of Objectives, Importance of Objectives, Setting objectives, Management by Objectives (MBO) Benefits and weaknesses of MBO.
4. Strategies and Policies: Concept of Corporate Strategy, formulation of Strategy, Types of Strategies, the Strategic Planning Process, the TOWS Matrix, the Portfolio Matrix, Three Generic Competitive strategies by Porter, Effective Implementation of Strategies, Types of Policies, Principles of formulation of Policies, Decision Making Process, individual Decision Making Models.

5. Organizing: Nature and Purpose of Organizing, Bases of Departmentation, Span of Management, Determinants of Span of Management, Line and Staff Relationship, Line-Staff Conflict, Bases of Delegation, Kinds of Delegation, Delegation and Decentralization, Methods of Decentralization.

6. Controlling: Concept and Process of Control, Control Techniques, Human Aspects of Control, Control as a feedback system, Feedforward Control, Preventive Control, Profit and Loss Control, Control through Return on investment, the Use of Computer for Controlling and Decision Making, the Challenges created by IT as a Control Tool.

Text Readings

1. Harold Koontz, O'Donnell and HeinzWeihrich, "Essentials of Management", New Delhi, Tata McGraw Hill, 1992.
2. R. D. Agrawal, "Organization and Management", New Delhi, Tata McGraw Hill, 1995.

Suggested Readings

1. Harold Koontz, HeinzWeihrich, "Management: A Global Perspective", New Delhi, McGraw Hill, 10th Ed., 1994.
2. Robert Kriettner, "Management", Houghton Mifflin Co., 7th Ed., 1999.

Code: IM 102
Financial Accounting

COURSE SUMMARY & OBJECTIVES: Objective of the subject is to acquaint students with concepts of accounting and help them acquire the ability to develop and use the accounting data as an aid to decision making.

1. FUNDAMENTALS OF FINANCIAL ACCOUNTING: Meaning and definition of accounting, Need and functions of accounting, users of accounting information, importance and limitations of accounting, Relationship of accounting with other disciplines, Accounting Principles- Concepts and Conventions, An introduction to Accounting Standards and US GAAPs
2. DOUBLE ENTRY SYSTEM OF ACCOUNTING: Concept and definition, Process of Accounting, various stages of DES accounting: Journal, Ledger, Trial Balance, Preparation of Final Accounts, Adjustments in Final A/cs., Preparation of Final a/cs. With adjustments, Numerical Problems
3. An Introduction to Subsidiary Books, Cash Book and its types, Preparation of various types of Cash Books.
4. Errors and Their Rectification: Concept and Types of Errors, Procedure for Rectification of Errors, Impact of Errors and their Rectification on Final Accounts, Numerical Problems.
5. Bank Reconciliation Statement: Concept, Causes and Need, Reconciliation Process, Numerical Problems.
6. Depreciation Accounting.

Text Readings :

1. Principles of Accounting by R.L. Gupta and V.K. Gupta
2. Principles of Accounting by T.S. Grewal
3. Financial Accounting by S.N. Maheshwari

Code: IM – 103
Business Mathematics

Course objective: To acquaint the students with basic mathematical tools used in management.

Course Syllabus – Session Descriptions

1. **Sets** – Relation and functions sets, types of sets, algebra of sets, union, intersection, difference, Cartesian products, applications.

2. Relations, binary relations, types, equivalence relation, mapping types, one-one-out maps.

3. Law of indices, Exponential among logarithmic functions, graphical representation.

4. Natural and common logarithm characteristic and mantissa, tables of logarithms, Antilogarithm.

5. **Trigonometric Function**

Definition, graphical representation of trigonometric functions, trigonometrical ratios, sum, difference and product formula. Fundamental relationship in trigonometrical ratios, ratios of certain specific angles, Examples.

6. Solution of linear equation in two variables, Examples

7. **Calculus:**

Limit and continuity of functions Derivatives, geometrical meaning, Methods of differentiation, standard forms, product and quotient functions, Examples. Differentiation of function of a function, logarithmic differentiation, Examples. Maxima and minima of single variable, applications.

8. **Integration**

Meaning,

integration as reverse process of differentiation, standard forms, method of integration, integration by parts, method of substitution, Examples.

9. **Averages**, ratios and proportions, applications, percentage

10. **Commission**, discount, profit & loss, applications.

11. **Progressions**: A.P, G.P. and H.P. applications

12. **Simple Interest**

Meaning, calculation of interest by using logarithm, common multiplier, interest on provident fund scheme, calculation of simple interest by third – tenth and tenth rule, applications

13. **Compound Interest**

Meaning, difference between simple and compound interest, methods of calculation, interest compounded monthly, quarterly etc. effective rates nominal rates, depreciation, applications.

14. **Matrix**

Meaning notations, types of matrices, matrix algebra, transport and adjoint, inverse of matrix, solution of linear system by matrix methods.

Text Readings :

1. R. Jayprakash Reddy and Y. Mallikarynna Reddy, “**A Text book of Business Mathematics**”, New Delhi, Ashish Publishing House, 2002
2. K. B. Dutta, “**Matrix and Linear Algebra**”, New Delhi, Printice Hall of India 1999.

Code: IM-104
Computer Application

Objectives:

The objective of this course is to introduce the students to the basic concepts of computer. Special emphasis will be laid on helping students to acquire a high degree of proficiency in Windows based applications in various functional areas of management.

Course Contents:

1. Introduction to computer.

- Definition of the computer
- Characteristics of the computer
- Components of the computer
- Functions and Applications of computer.

2. Classification of computer

- Microcomputers
- Minicomputers
- Mainframes
- Supercomputers

3. Anatomy of Digital Computer:

- Central Processing Unit (CPU)
- Control Unit
- Arithmetic –Logic Unit
- Memory

4. Computer Architecture

- Block Diagram of the Computer
- I/O Interface
- Techniques to transfer data.

5. Number Systems:

- Decimal Number system.
- Binary Number System
 - Binary-decimal conversion
 - Decimal-binary conversion
 - Binary Addition
 - Binary Subtraction
- Octal Number System
- Hexadecimal Number System

6. Memory Units:

- Introduction
- RAM Dynamic RAM
 Static RAM
- ROM
 - PROM
 - EPROM
 - EEPROM

7. Auxiliary Storage Device:

- Magnetic tape

- Magnetic Disk
- Optical Disk
- Magneto-Optical Disk

8. Input Devices

- Keyboard, Mouse, Scanner.
- Digital Camera.
- Magnetic Ink Character Recognition (MICR).
- Optical character Recognition (OCR)
- Optical Mark Recognition (OMR)
- Bar code Reader.

9. Output Devices

- Monitor, Printers, Plotter

10. Computer Software

- System Software
- Application Software

11. Computer Languages

- Introduction
- Machine Language
- Assembly language
- High-level languages
- Compiler and Interpreter

12. Operating Systems:

- Types of Operating System
 - Batch Operating System
 - Spooling
 - Multiprogramming
 - Real time System

13. MS-DOS

- DOS Features
- External and Internal Commands.
- Working with files
- Working with Directories

14. A.MS –Word (Word Processing):

- Working with Word.
- Typing and Editing
- Formatting Text.
- Page design and layout
- Adding Tables
- Advanced features of word
- Hypertext., Mail Merge

15. MS - Excel (Worksheet):

- Entering Data
- Formatting
- Calculation in Worksheets
- Adding Charts

- Advanced features of Excel

16. **MS – PowerPoint (Presentation):**

- Working with PowerPoint
- Adding Text.
- Customize PowerPoint

17. **Brief Introduction to Networking:**

- Types of networking
- Different topologies

References:

Books

Fundamentals of Information Technology. (Text Book)
Introduction To Comp. Science
The Complete Reference Office 2000
Learn DOS in a day

Author

Alexis and Mathews Leon
Pearson (LPE)
Stephen L. Nelson
Stulz

Code: IM – 105A
ORGANIZATIONAL BEHAVIOUR

Course Objectives

Objective of this course is to help students to understand human Behaviour in organizations so that they improve their managerial effectiveness.

Course Contents

Foundations of Individual and Organizational Behaviour: OB Models, Personality—Determinants and Attributes, Values, Job Attitudes, Learning and Learning Theories, Perception-Factors affecting Perception and Cognitive Dissonance theory.

Motivation: Needs, Contents and Processes; Maslow's Hierarchy of Needs, Herzberg's Two Factor theory, ERG theory, Vroom's Expectancy theory, Reinforcement theory and Behaviour Modification.

Foundations of Group Behaviour: Defining and Classifying Groups, Group Structure and Processes, Process of Group formation, Group Decision Making, Group v/s Team, Team Effectiveness, and Decision Making.

Leadership: Trait theories, Behavioral theories-- Ohio State Studies, Michigan Studies, and Managerial Grid. Contingency theories-- Fiedler's Model, Hersey and Blanchard's Situational theory, Leader-Member Exchange theory, Path Goal theory, Charismatic Leadership.

Conflict: Intra-individual Conflict, Interpersonal Conflict, Intergroup Conflict, Organizational Conflict, Transitions in Conflict Thought, Functional versus Dysfunctional Conflict, Conflict Process, Conflict Management Techniques.

Organizational Change and Stress Management: forces of Change, Resistance to Change, and Lewin's Three-Step Model, Stress Management—Potential Sources, Consequences and Coping Strategies for Stress.

Organizational Culture: Definition, Uniform Cultures, Relevance of Culture, Creating and Sustaining Culture, How Employees Learn Culture.

Text Reading

1. Stephen P. Robbins, “**Organizational Behaviour: Concepts, Controversies, and Applications**”, New Delhi, Prentice Hall, 9th Ed., 2000.
2. Fred Luthans, “**Organizational Behaviour**”, New York, McGraw Hill, 8th Edn., 1998.
3. Bill Scott, “**The Skills of Communications**”, Jaico Publications, Bombay 1995.
4. John W. Newstrom and Keith Davis, “**Organizational Behaviour: Human Behaviour at Work**” New Delhi, Tata McGraw Hill, 1993.

Suggested Reading

1. Upinder Dhar and Santosh Dhar, “**Case Method in Management Education: Text and Illustrations**”, Excel, New Delhi, 2002.

Code:IM- 106B
Business Communication and Personality Development

Objectives of the course:

- To explain the dynamics of communication
- To make the students understand the importance of effective communication in personal as well as professional life
- To help students become effective communicators and develop good interpersonal skills
- To explain the meaning of personality
- To make students assess their personality and help them develop it

Pre requisites:

Students are expected to have good understanding of English language and fluency in English speaking. **This is not an English Speaking and/or Writing course.**

Contents:

Unit 1:

Communication: meaning, definitions, models, functions

Objectives of effective communication

Dimensions of communication: upward, downward, lateral/horizontal, grapevine

Barriers to effective communication

Unit 2:

Channels of communication: formal, informal

Types of communication: verbal, nonverbal

Written communication: letter writing, report writing

e-mail and mobile phone etiquettes

Public speaking, making effective presentations

Preparing for interviews

Listening

Unit 3:

Interpersonal communication: Johari Window, Transactional analysis

Unit 4:

Personality: meaning, definitions, aspects

Types of personalities

Having an effective personality

Note: classroom activities and exercises would be conducted and assignments would be given as per the session requirements. The assignments would be graded as a part of the internal assessment.

IM—203
COST ACCOUNTING

Course Objective:

To demonstrate an understanding of cost accounting fundamentals and be able to apply them to various business decision context.

Course Content--

1. Fundamentals: Cost Accounting- Meaning, Objective, Advantage and importance, concepts and classification of cost, cost accounting, as compared with Financial and Management Accounting

2. **Elements of Cost-Materials: Meaning and Classification, Labor: Meaning and Classification, Overheads: Meaning and Classification**

3. Unit or Output Costing—Costing Procedure, items excluded from cost, preparation of Cost Sheet, Numerical Problems: estimated cost sheets, Quotation and tenders, etc.

4. Contract costing – Features of contract costing, contract costing procedure, special points in contract costing. Numerical problems: Incomplete Contracts.

Job & Batch Costing- Difference between contract and job costing, job costing procedure, batch costing procedure, economic batch quality

5. Process Costing-- Essential Characteristics of Process Costing, Process Costing Procedure, Process Losses & Wastages, Process Gains & Effectiveness.

Numerical Problems: Partial Sale of Production, Inter-process profits, etc.

Joint Products & By Products—Distinction between joint& By products, various methods of absorption of joint costs. Numerical Problems.

6. Misc. Costing Methods—uniform costing, operating costing,

7. Miscellaneous—cost reduction & cost control, cost audit, recent trends in cost accounting.

Recommended Books—

Cost accounting- Principles & Practice by M.N. Arora

Practical Costing by Khanna, Pandey, Ahuja & Batra

Practical Costing by P.C.Tulsian

IM-210

C Programming

Course objective:

To develop an understanding of the structure of C programming language and to become familiar with the steps in the programme development process.

Course Contents:

Unit I:

History of Programming Language, Low Level, Middle Level and High Level Languages. Introduction to algorithms and flowcharts. Decision tables. Introduction to compiler, interpreter and assembler.

Unit II:

Different data types, variables names, constants, Expressions and operators, Basic I/O, precedence and order of evaluation, control constructs.

Unit III:

Statement and block, if-else, else-if, while, for, do-while loops, break, continue, goto and labels, functions and use of functions, function arguments, Call by value, Call by reference. Storage Classes, Preprocessor: Macro, File Inclusion, Preprocessor directives, and recursion.

Unit IV:

Pointers, pointers and function arguments, Pointers and arrays, address arithmetic, character pointers and functions, one dimensional arrays and multidimensional arrays, pointers arrays, pointers to pointers, initialization of pointer arrays, pointers Vs multidimensional arrays.

Unit V:

Structures, arrays of structures, pointer to structures, union typedef. Standard input and output, formatted input and output, different file access modes, creation and manipulation of files using structures, error handling during I/O operations, File Handling.

Suggested references:

- 1 Let us C by Yashwant Kanitkar
- 2 Working with C by Yashwant Kanitkar.
- 3 C Programming Language by Brian W. Kerningham and Dennis M. Ritchie.
- 4 Thinking in C by P B Mahapatra Wheeler Publications.
- 5 Schaum Series C Programming Book.

IM-214 **BUSINESS LAWS**

Course objective:

The course is based on important provisions of various laws related to business. The aim of the course is to gain an insight into the Indian Legal process and legal provisions specifically with reference to business and corporate functioning.

Course Contents:

The Indian Contract Act, 1872

General principles of contract, classification of contract and key terms, Essential elements of a valid contract viz., offer & acceptance competence of contracting parties, free consent, consideration, legality of object and consideration, void agreements

Performance of contracts, discharge of contract, and breach of contract remedies for breach of contract, Specific contracts viz, contingent contracts, quasi-contracts, contracts of indemnity and guarantee, contract of bailment, contract of agency.

The Indian Partnership Act 1932

General Principles- Meaning of partnership, essential features of partnership, types of partners

Formation of Partnership-Partnership deed, registration of partnership firms, position of a minor partner, duration partnership firm, rights of outgoing partner

Rights and Liabilities of Partners- Relations of partner with each other, rights of partner, duties of partners, relation of partner with third parties

Dissolution of Partnership Firms- Dissolution of partnership and dissolution of firm modes of dissolution of firm consequences of dissolution, rules for settlement of accounts after dissolution

The Companies Act, 1956

Company- Meaning and definition, characteristics of joint stock companies, types of companies difference between private and public limited companies.

Promotion and incorporation of companies-Promotion, Incorporation of companies, promoters: meaning and importance, process of incorporation: preparation contents and importance of various documents to be filed, Memorandum of Association, Articles of Association, certificate of commencement of business.

Memorandum of Association and Articles of Association- Contents and alteration.

Capital of the company- Share and its types, Debentures and its types, difference between shares and debentures, share certificate, share warrant and stock.

Prospects- Meaning and definition, contents and registration of prospectus, issue and allotment of shares.

Management of Companies- Board of Directors: Appointment, Qualifications and disqualification, powers, duties and position of directors, removals of directors.

General Principles of Meetings- Statutory Meeting, Annual General Meetings, Extra-ordinary General Meetings, Board Meetings.

Winding-up of Companies- Meaning and types of winding-up, provisions relating to winding-up.

The Negotiable Instruments Act, 1881

General Principles- Meaning of negotiable instrument, types of negotiable instruments, ambiguous instruments, maturity of negotiable instrument, payments of negotiable instruments, dishonor of negotiable instruments, provisions of sections 138 to 145.

Foreign Exchange Management Act, 1999

General Principles- Meaning & definition of various important provisions

Regulation & Management of Foreign Exchange- Current account transaction, capital account transaction. Provisions related to authorized person, Reserve Bank's power to issue directions to authorized person.

The Consumer Protection Act, 1986

General Principles- Meaning & definition of various important terms. Rights of Consumers

Nature & scope of remedies available to consumers.

The Information Technology Act, 2000

Main provisions of the I. T. Act, 2000

The Competition Act, 2002

Main provisions of The Competition Act, 2002

The SEBI Act, 1992

Main Provisions of The SEBI Act, 1992

Laws relating to Intellectual Property

Provisions relating to patent, copyright and trademarks.

An overview of Environment Protection Laws

Books:

Mercantile Law by S.S. Gulshan

Elements of Mercantile Law by N.D. Kapoo

Business Legislation for Management by M.C. Kuchhal

Business Law by S.K. Agrawal

Legal Aspects of Business by Akhileshwar Pathak

IM-215

Human Resource Management

Course Objective:

The course objective is to help the students help understanding of the dimensions of the management of Human Resource with particular reference to human resource management policies and practices in India. Efforts will also be directed towards developing communication and decision-making skills through case discussions, group discussion, role-playing, presentation and live and theoretical projects and assignments.

Course Contents

1. INTRODUCTION TO HRM: Functions of HRM, Role of HR manager.
2. HRM PLANNING: Concept of HR Planning, Job Analysis, and Job Description & Job Specification
3. PERSONNEL POLICIES: Objective, Need, Essentials, Policies, Formulation & Implementation of Personnel Policies
4. STAFFING PROCESS: Recruitment & Selection Process.
5. WAGE & SALARY ADMIN: Designing & Administering the Wage & Salary.
6. APPRAISING HR: Performance & Potential Appraisals, Meaning, Concept, Methods.
7. DEVELOPING THE HR: Training & Development of Employees, Need, Steps In Training Program, Training Techniques
8. TRENDS IN HRM: Latest Trends In HRM

Text Readings

1. Personnel Management- Stephen Robbins.
- 2 Principles of personnel management – Edwin Flippo
- 3 Human Resource Management – Dr. C.B. Gupta
- 4 Personnel Management - Arun Monappa and Mirza S. Saiyad

Suggested Readings

1. Pigors and Myers- Personnel Administration , McGraw Hill, Kogalusha.
2. Max. S. Wortman- Creative Personnel Management, Allyn & Bacon, 1996.
3. Dale Yoder – Personnel Management and Industrial Relations, Prentice Hall.

Websites to be referred:

"HRD Practices "-Vol. 1, for more details visit www.summit-personnel.com, hronline.com, and personnelindia.com

**“Human Resource Management”- Russel, for more details on the topic visit
www.prenhall.com/desseler**

See “HR Excess Trade Notes on Human Resource Information System”, BNA Bulletin to Management.

See Mary Mink, “Software cases HR Tasks” Career Union Executive Vol. 36, no.6 (NOV)

IM—216

Business Statistics

Course Objective:

The objectives of the course are to equip the students with the statistical techniques and their application to business problems. The emphasis will be on the concepts and application rather than derivations.

Course Content:

Statistical Methods:

- 1 Introduction to Statistics, types of data, their presentation, frequency distribution.
 - 2 Diagrammatical & graphical representations, Histograms, Bar diagrams, Frequency polygons, Ogives etc.
 - 3 Measures of Central Tendency: Mean, Mode, Median.
 - 4 Partition values: quartiles, deciles, percentiles etc.
 - 5 Measure of dispersion: range, quartile deviation, mean deviation.
 - 6 Standard deviation & variance.
 - 7 Concept of skewness & kurtosis, measures of skewness.
 8. Introduction, random experiment, sample space, simple & compound events.
 9. Probability of an event-formula, complementary events.
 - 10.Theorem of total probability problem.
 - 11.Conditional probability; compound probability.
 - 12.Correlation: meaning, linear correlation. Karl Pearson's coefficient of correlation.
 13. Correlation of Bivariate frequency distribution, rank coefficient of correlation.
 - 14 .Regression analysis: regression lines & regression coefficients, their properties.
- Books Recommended-**
1. Text book of Matrix: Gupta & Malik
 - 2.Business Statistics: S.C.Gupta
 3. Text book of differential calculus & integral calculus: Dr. Gorak Pol.:

CODE: IM-301B
MARKETING MANAGEMENT

COURSE OBJECTIVE

The objective of the course is to understand market move and strategies and how to have USP for the Organization.

Course Contents

1. **Marketing Concepts:** Customer Value and Satisfaction, Customers Delight, Conceptualizing Tasks and Philosophies of Marketing Management, Value chain, scanning the Marketing Environment.
2. **Market Segmentation, Targeting, Positioning:** Market segmentations, levels of market segmentations, patterns, procedures, requirement for effective segmentation, evaluating the market segments, selecting the market segments, tool for competitive differentiation, developing a positioning strategy.
3. **Marketing Information System** and Marketing Research Process.
4. **Product Decision:** Objectives, Product classification, Product-Mix, Product life cycle strategies, equity, challenges, repositioning branding, introduction and factors contributing the growth of packaging, introduction of labeling.
5. **Pricing Decision:** Factors affecting price, pricing methods and strategies.
6. **Distribution Decisions:** Importance and Functions of Distribution Channel, Considerations in Distribution Channel Decisions, Distribution Channel Members.
7. **Promotion Decisions:** A view of Communication Process, developing effective communication, Promotion-Mix elements.
8. **Marketing Strategies for Leaders, Challengers, Followers and Nichers:** Expanding to market, defining market share, expanding market share, defining the strategic object and openness, choosing a goal attacking strategies, market follower strategies.
9. **Emerging Trends in Marketing:** An introduction to Internet Marketing, Multi level Marketing, and Introduction of CRM & EVENT marketing.

Text Readings

1. Philip Kotler “**Principles of Marketing Management**”, New Delhi: Prentice Hall of India, Millennium Edn. 1999.
2. Willam J. Stanton, Michael J. Etzel and Bruce J. Welker, “**Fundamentals of Marketing Management**”, New York: Mc Graw Hill, 10th Edn., 1995.
3. Philip Kotler, “**Marketing Management, Planning Analysis and Control**”, New Delhi, Prentice Hall of India, 9th Edn., 1998.

CODE: IM-302
MANAGEMENT ACCOUNTING

COURSE OBJECTIVE

This course aims at developing an understanding of the principles of Management accounting and examining the role of management accounting in the planning and control functions of management applicable to a variety of business situations.

COURSE CONTENTS

1. **Management Accounting-Introduction**
 - The Nature of Management Accounting
 - Function of Management Accounting
 - Financial, Cost & Management Accounting
 - Need, objectives and importance
2. **Statement of Financial Information**
 - Balance sheet, Profit & Loss account, Relationship between Balance sheet and Profit & Loss account.
3. **Financial Analysis**
 - User of Financial Analysis
 - Types of ratios
 - Liquidity Ratio
 - Activity Ratio
 - Profitability Ratio
 - Leverage Ratio
 - Comparative statement analysis
 - Inter firm analysis
4. Statement of change in financial position
 - Nature of change in financial position. Definition of fund
 - Preparing the fund flow statement
 - Preparing the cash flow statement
5. **Cost Volume Profit Analysis**
6. **Budgetary Control**
 - Meaning, types and purpose of budget
 - Preparation of budgets
 - Budget administration
 - Essentials and advantage of budgeting
7. **Standard Costing**
 - Concept and types of cost standards
 - Components of standard C"
 - a. Material Labour and overhead standards.
 - Utility and limitation of standard costing
8. **Variance analysis for cost control**
 - Significance of Variance analysis
 - Variance computation
9. **Responsibility accounting and reporting**
 - Nature of responsibility accounting
 - Requirement of effective responsibility accounting
 - Cost control through responsibility accounting
10. **Management Reporting**
11. **Recent trends in management accounting**

TEXT READING

1. Management accounting a planning & approach by I.M Pandey.
Vikas Publishing House Pvt. l t d . (Third Revised Edition)
2. Management Accounting by M.Y.Khan & P.K.Jain
3. Accounting and Finance for Managers by Nitin Balwani
4. Managerial Accounting by Louderback & Holmen

Code: IM – 304B
OBJECT ORIENTED PROGRAMMING USING C++

Course Objective

The objective of this course is to help students to understand the concepts of Object Oriented Programming using C++ and their use in organization and processing complex business information.

Course Contents

1. **Object Oriented Programming**: Introduction, Advantages of Object Oriented Programming, Procedural versus Object Oriented Languages, **Overview of**: Objects, Classes, Encapsulation, Data Binding, Inheritance and Polymorphism.
2. **Programming with C++**: General forms of a C++ programme, I/O with cout and cin, different operators, scope resolution operator, Data types, For while, do-while, if-else, switch and conditional statements, Classes and objects: structure and classes, unions and classes, constructors and destructors, Automatic, external and static data members and member function.
3. **Arrays & Pointers**: arrays of objects, Pointer to object, the this pointer, Function: General form, Prototypes, returning, passing objects to functions returning objects, friend function, recursion, and references.
4. **Inheritance**: Multilevel and Multiple Inheritance, Constructor, Destructor and Inheritance, Private, Public and Protected access specifies, function and operator overloading.
5. **Functions & Templates**: Virtual function, pure virtual function, polymorphism, generic functions, generic types, overloading of templates and functions, standard parameters with template functions, applying generic functions, and generic class.
6. **File and Exception handling**: Introduction to templates and Exception handling, File Classes, Opening and Closing a file, Reading and writing a text file, detecting EOF.

Text Readings

1. Robert Lafore, “**Object Oriented Programming in Turbo C++**”, Galgotia Pub. Pvt. Ltd., New Delhi, 2000
2. Herbert Schildt, “**C++ : The complete reference**”, Tata McGraw Hill Publishing Company Ltd., New Delhi, 1999
3. D. Ravichandran, “**Programming with C++**”, Tata McGraw Hill Pub. Co. Ltd., New Delhi, 2000
4. E. Balagurusamy, “**Object Oriented Programming with C++**”, Tata McGraw Hill Pub. Co. Ltd., New Delhi, 2000

Suggested Readings

1. Bjarne Strstrup, “**The C++ Programming Language**”, Addison-Wesley, New York, 1995
2. Scott Meyers, “**Effective C++**”, Addison-Wesley, New York, 1999
3. Walter Savitech, “**Problem Solving with C++**”, Addison-Wesley, New York, 1996

Code: IM - 305A

Labour Law

COURSE OBJECTIVES: The course is based on various important provisions of labour laws. The aim of the course is to give the students knowledge of various labour laws and its practical aspects, which will make them capable to handle the matters in practical business life.

COURSE CONTENTS

- Industrial Disputes Act, 1947

Introduction, meaning and definitions of important terms

Authorities under the act and their duties and powers

Reference of disputes to the authorities

Procedures for disposal of disputes, award and settlements

Provisions regarding strikes, lockout, layoff and retrenchments

Provisions relating to closure of undertakings

- The Factories Act, 1948

Meaning and definitions of important terms

Concepts of manufacturing process and occupier

Provisions relating to health, safety and welfare

Working hours and employment of women and young person

Special provisions relating to hazardous process

- The Payment of Wages Act, 1936

Definitions of important terms

Provisions relating to applicability of the act

Responsibility for payment of wages

Deductions, which may be made from wages

- The Minimum Wages Act, 1948

Objects and applicability of the act

Important definitions

Concept of minimum wages and relevance of paying capacity

Fixation and revision of minimum wages and its procedure

Advisory board and misc. provisions

- The Trade Union Act, 1926

- Objectives and important definitions

Provisions regarding registration of trade unions

Funds, office bearers, membership rights and privileges

Alteration and change in name etc. and provisions regarding dissolution of trade unions.

- The Workmen's Compensation Act, 1923

Meaning, objectives and important definitions, Concept of “arising out of” and “in course of employment” and liability of employer in such cases, theory of notional extension of time and place, Concept of permanent and temporary disablement and liability of employers, Concept of occupational diseases, personal injury and accident and liability of employers in such cases., Remedies of employer against strangers, Provisions relating to compensation and responsibility of employer

- An introduction to misc. Labour Laws

The Payment of Bonus Act, 1965, The Payment of Gratuity Act Act, 1972, The Contract Labour (Regulation & Abolition) Act, 1970, The Employees State Insurance Act, 1948, The Employees Provident Fund & Misc. Provisions Act, 1952, The Industrial Employment (Standing Orders) Act, 1946,

Readings: A Hand book of Industrial Law: N. D. Kapoor

Industrial Laws: J.K. Bareja

Labour and Industrial Laws by P.K. Padhi

Study Material of The ICSI

References: **Labour Laws: P.L. Malik**

Bare Acts

Code: IM 310
FRENCH

COURSE OBJECTIVE

To introduce student to a foreign language and to make them capable of expressing themselves in certain everyday situation.

Course Contents:

To talk about oneself

Unit 1 - Good morning

- To enter in contact with someone
- To greet
- To excuse oneself
- To spell

Unit 2 - Meetings

- To introduce oneself
- To present someone
 - To ask someone to introduce himself

Unit3- 100% Questions

- To express one's choices
- To talk about oneself
- To express possession

Grammar & vocabulary

- Masculine/feminine
- Numbers
- Alphabet
- Definite articles
- Pronouns
- Interrogation
- Verbs
- Adjectif
- Internet language
- Possessif adjectif
- Partitive
- Negation
- Conjugaison of verbs
- Sports
- Professions

Cultural notes

- Greeting people
- The television
- Geography of France
- France in Europe

TEXT READING

Connexions – 1

Code: IM - 311

Quantitative Techniques

COURSE OBJECTIVE

The objective of the course is to understand the practical application of Statistics and Operation Research Concept in Business and Management.

COURSE CONTENTS

1. **Meaning of Quantitative techniques and Operation Research:** Characteristics of QT & OR, Scope of QT & OR management, Methodology of OR, Advantages and limitations of OR.
2. **Introduction of Linear Programming:** Meaning of linear programming, Mathematical formulation of linear programming problems, assumption, Solution of linear programming by graphical methods.
3. **Simplex Method:** -Maximization problems, Minimization problems (Big M Method), Problem of mixed constraints, Infeasibility, Unbounded ness, Degeneracy, Duality in linear programming problem.
4. **Transportation and assignment Model:** Introduction, Mathematical formulation of transportation problems, Initial basic feasible solution using NW corner method, Row minima method, Column minima method, Matrix minima method, Vogel's approximation method (VAM), Optimization (Maximization and Minimization) of transportation problems using stepping stone method and MODI method, Unbalanced problem and degeneracy in transportation problems, Transportation problem Maximization type.
5. **Probability:** Introductory ideas, Basic terminology in probability, Three types of probability, Probability rules. Probability under conditions of statistical independence, Probability under the condition of statistical dependence, Bayes' theorem.
6. **Probability Distributions:** What is probability distribution, Random variables, Use of expected value in decision-making, the binomial distribution, the Poisson distribution, The normal distribution, Choosing the correct distribution.

TEXT READING

1. **Statistical Methods by D.N. Elhance**
2. **Statistical Methods by S.P. Gupta**
3. **Operation Research by V.K. Kapoor**
4. **Statistical Methods by N.D. Vohrr**

IM-401C **INDUSTRIAL AND SOCIAL PSYCHOLOGY**

Course Objective: The objective of this course is to understand human behavior in social and industrial settings. A student will be able to comprehend the causes of behavior as well as the methods of improvement by going through this course.

COURSE CONTENTS :

1. Social and Industrial Psychology: Definition, Nature and Background
2. Social Perception: Non-Verbal Communication, Theories of Attribution, Impression Formation and Impression Management.
3. Social Identify: Self Concept, Self Esteem, Self Efficacy, Self Monitoring and Self Focusing.
4. Social Influence: Conformity, Compliance and Obedience.
5. Interviews, Application Blanks and Reference: The interview, Application Blanks and Biographical Inventories, References and Background Investigations.
6. Employment Testing: Testing Abilities, Testing Personality, Testing Skills and Achievements, Using and not using Tests.
7. Safety Psychology: Safety Management and Safety Psychology, Differential Accident Liability.

TEXT READING :

1. Robbert A Baron and Donn Byrne, Social Psychology : Understand Human Interaction, New Delhi, Prentice Hall of India 7th Ed., 1995
2. John B Miner, Industrial-Organizational Psychology: Singapore, McGraw-Hill, 1992

SUGGESTED READING

1. S.C. Tailor L.A. Peplau and D.O Sears, Social Psychology, New Jersey, Prentice Hall Inc., 7th Ed., 1995

IM-403

INCOME TAX

COURSE OBJECTIVE:

This subject contains all the provisions described under Income Tax Act, 1961 which helps to determine the types of income; its assessment & the levy of Income Tax through which the Govt. generates the revenue for meeting various socio-economic objectives & public welfare. After the completion of the course, students will be able to assess individual's income & calculate the Income Tax payable on the same.

COURSE CONTENT:

1. Introduction: Definition of Income, Casual Income, Agricultural Income, Person, Assessee, Previous year, Assessment year, Gross Total Income, Total Income; Exempted Income; Heads of Income, Residential Status & Tax Liability
2. Computation of Income from Salary: meaning & definition Different forms of Salary Allowances, Perquisites Valuation of allowances & perquisites. Valuation of allowances & perquisites. Provisions regarding Provident Fund. Entertainment Allowances, Professional Tax
3. Income from House Property: Introduction & Important provisions, Types of House Property. Determination of Gross Annual Value, Municipal Tax & Deductions u/s 24. Treatment of unrealized rent & Vacancy period.
4. Income from Business or Profession: Meaning, income chargeable under Income Tax (section 28) Income chargeable under Income Tax (section 28) Deductions in respect of expenses & allowances. Disallowed expenses.(Excluding special business)Depreciation How to compute profits & gains.
5. Capital Gain: Meaning, Items included & types of Capital Gain/Loss. Computation of Capital Gain/Loss. Capital Gain Exempted from Tax. (U/s 54,54B, 54D, 54ED, 54F, 54G, 54H) Capital Gain Exempted from Tax. (U/s 54,54B, 54D, 54ED, 54F, 54G, 54H)
6. Income from Other Sources: Meaning & types of Income. Allowable & Disallowable Deductions, exempted incomes. Computation of Income.
7. Set off & carry forward of Losses: Set Off of Losses under- same head, other head. Carry forward & set off.
8. Deductions: Deductions u/s 80Cto 80U
9. **Assessment of Individuals: Assessment of Individuals Assessment of Individuals & tax liability. Procedure for Assessment Advance Payment of Tax.**

TEXT READING :

Income Tax: Law & Accounts by Dr.H.C. Mehrotra

Reference Book: Students Guide to Income Tax by Dr. V. K. Singhania

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IM-405

PRODUCTION & OPERATIONS MANAGEMENT

COURSE OBJECTIVE:

1. To provide an awareness of the role of operations management in the functioning of a business organization
2. To give an insight into the relationships that exists between various factors that affect the operations of a business organization- manufacturing or service.
3. To equip students with tools and techniques for analyzing, designing and improving the functioning of an operations system.

COURSE CONTENT:

1. Production & Operations Management- Definition, Production Functions and its environment, interrelations with other subsystems.
2. Types of production, system concept of production, world class manufacturing
3. Product design and development-product decision and business strategies, product development processes, factor influencing product design
4. Value analysis and value engineering, standardization, simplification
5. Make or buy decision, ergonomic consideration in product design, concurrent engineering
6. Process and technology selection-classification of production processes and new technologies
7. Technical analysis for process selection, manufacturing processes and equipment selection.
8. Process selection and manufacturing strategy
9. Resources planning-an over view of resource requirement planning
10. Equipment planning and labor planning
11. Facility location and distribution system design-location decision process, decision variables
12. Choice of optimal location, location models
13. Facility layout and materials handling Types of layout, layout factors.
14. Layout procedure and techniques, material handling
15. Aggregate planning-nature of aggregate planning decisions, aggregate planning strategies,
16. Aggregate planning methods,
17. Quantitative methods of aggregate planning
18. Line balancing-concept of line mass production system, objectives of assembly line balancing
19. Scheduling for high volume continuous production
20. Capacity requirement planning-determination of plant capacity, capacity measurement and decision.
21. Interrelationship between capacity and other issues, investment decision.
22. Material requirement planning-introduction, product structure bill of material.
23. MRP concept and MRP calculation
24. Modern production management tools-just in time manufacturing, computer integrated manufacturing and flexible manufacturing system,
25. TQM,ISO9000series ,benefits of ISO 9000, steps in ISO registration

26. Maintenance management-maintenance objective, types of maintenance ,basic reasons for replacement
27. Reliability, reliability improvement, reliability calculation, failure modes, effect and critical analysis [FMECA]

TEXT READING:

Applied Production and Operations Management- James R. Evans

Reference-

1. Operations Management- Norman Gaither, Greg Frazier
2. Production & Operations Management- K. Shridhara Bhat
3. Production and Operations Management-R. Panneerselvam
4. Operations Management: Strategy and Analysis, Krajewski Lee J & Ritzman Larry P, Addison Wesley.
5. Modern Production / Operations Management, Buffa ES & Sarin RK.

IM-406

BUSINESS ECONOMICS (Macro)

COURSE OBJECTIVE:

To Impart Basic Knowledge Of Macro Economics, Which Is Necessary For Management Students

COURSE CONTENT:

1 Introduction: Macro Economic analysis, Micro and Macro Economics, goals of macroeconomic policies, stock and flow variables, exogenous and endogenous variables, EX- ANTE and EX-POST concepts.

2 Measurements of Macro Economic Aggregates: National Income and its variants, Real & Nominal GDP, Measures of national products and methods used, National income and Economic welfare, National income in India, its composition, trend & structural analysis, Okun's Law

3 National Income Determination: National income determination models under open and closed economy, Aggregate demand and supply, Calculation of multiplier, simple investment multiplier, government expenditure, tax, balanced budget and foreign trade multiplier, Super multiplier, limitations of multiplier.

4 Consumption & Savings function: Keynes' psychological law of consumption, Post Keynesian income consumption hypothesis, Trends of consumption and savings in Indian economy.

5 Investment Function: Investment, its types, factors affecting investments, MEC and factors affecting MEC, Accelerator principle. Investment trends in Indian economy, measures to stimulate public and private sector investment in India.

6 Theories of Employment: Classical theory, Say's law of market, Keynesian theory, overall equilibrium in factor, goods and assets market.

7 Money and Interest Rates: Money and its role, measures of demand and supply of money, money multiplier, interest rate and IS- LM framework.

8 Inflation and Deflation: Types of inflation, Inflationary gap, causes and consequences of inflation, Philips curve, Reflation, Deflation; trends and measurements of inflation in Indian Economy.

9 Monetary and Fiscal Policies: Objectives and Instruments of Monetary and Fiscal Policies, Analysis of the policies in Indian Economy, Current Budget.

10 Basic Macro Economic concepts for Open Economy: Balance of Payments, Current and Capital account, Official reserve account, Balance in BOP, Analysis of India's BOP Position

11 Business Cycles: Concept and phases of Business cycles, Monetary and Non Monetary theories of business cycles

READING LIST:-

1. G. MANKIW- MACRO ECONOMICS
2. DORNBUSCH & FISCHER- MACRO ECONOMICS, 9th edition
3. FRED GOTHIEL – PRINCIPALS OF MACRO ECONOMICS
4. EDWARD SHAPIRO – MACRO ECONOMIC ANALYSIS
5. SUNIL BHADURI – MACRO ECONOMICS
6. M.C. VAISH – MACRO ECONOMICS
7. M.L. SETH- MONETARY ECONOMICS

Course Conte

IM 912M
RURAL AND RETAIL MARKETING (MAJOR)

COURSE CONTENT:

RURAL

1. Analyzing the differences Between Rural And Urban Management.
2. Demand Of Products And Services In Rural Areas.
3. A. Distinctive Marketing Environment In Rural India.
B. Rural Marketing Segmentation Consideration.
C. Rural Consumer Behavior.
4. A. Product Planning With Respect To Rural Market.
B. Promotional Mix In Rural Market.
C. Distribution System Planning For Rural Market.
5. A. Problems And Constrains In Rural Marketing.
B. Strategy Development In Rural Marketing.

RETAIL

1. Concept Of Retailing, Functions, Retail Business Planning.
Change In Retail Environment (Socio Economic, Socio Demographic, Technological Changes And Its Impact On Retail Industry.)
2. Retail Marketing, Planning And Development, Strategic Planning Process And Integrated Marketing.
3. Fundamentals Of Merchandising Strategic And Planning.
4. Retail Market- Operations And Constrains.

Books:

Retailing Environment And Operation By Andrew J. Human And Peter Colley.

1. Rural Marketing In India By Ahmed Shamim.
2. Retail Marketing By David Gilbert.
3. Rural Marketing By V E Sanal Kumar.
4. Marketing Management By R L Barshady And SI Gupta.
5. Principles Of Marketing By Philip Kotler.

SITES:

1. businessworld.com
2. estrategicmarketing.com
3. itc.com
4. economictimes.com
5. businessweek.com
6. thirtyseven.com.

IM 904 MB

Marketing Research (Major)

Objective of the course

This course will provide students an opportunity to understand concepts and applications of Marketing Research. Objective of the course is to inculcate conceptualization and development of understanding on application of MR in marketing environment.

Course contents:

Nature and scope of marketing research:

Concept of Marketing research, nature, objectives, scope, difference between marketing research and market research, factors responsible for the growth of marketing research, features of good marketing research, types, uses and limitations of Marketing research.

Marketing research process and hypothesis:

Steps, common research errors, role of research in decision making, Hypothesis.

Research design:

Definition, types, exploratory research design, conclusive research.

Instrument design –structured and non-structured

Sampling design: Census method, sampling method, types of sampling, sampling error, non-sampling error, sample size decision, probability and non probability sampling, characteristics of a good sample plan.

Sources of data: Types of primary data, primary data collection methods, internal and external sources of secondary data

Questionnaire designing: Types, construction, Precautions in designing a questionnaire, Pretesting a questionnaire, reliability and validity of questionnaire, Pilot study and test marketing.

Data analysis: Basic statistical techniques (measures of central tendency, measures of variability, correlation, regression, etc.). Advanced statistical techniques - factor analysis, cluster analysis, Discriminant analysis, MDS, Conjoint analysis

Brief understanding of popular software like SPSS.

Data interpretation; Report writing: Types of report, principles of report preparation.

Applications: segmentation research, product research, potential assessment, advertising research

TEXT BOOKS

Marketing Research – Boyd, Westfall
Marketing Research - G. C. Beri

REFERENCE BOOKS

Marketing Research in Marketing Environment – Dillon, Firtle
Research Methodology – D. H. McBurney

Marketing Research – Luck, Rubin Marketing Research – Green, Tull, Albaum

Recommended Readings:

A&M (Advertising & Marketing)
Business World, Business Today, Business India
Special Supplements – Brand Equity (Economic Times), Catalyst (Business Line)

IM 905F
STRATEGIC FINANCIAL MANAGEMENT (MAJOR)

COURSE OBJECTIVES:

1. Application Of Various Tools And Techniques Of Financial Management For Formulation And Implementation Of Financial Strategy.
2. To Highlight The Linkages And Interdependence Between Finance And Strategy
3. To Develop A Value Based Financial Management Perspective

COURSE CONTENTS

1. Basic Themes In Finance : Valuation, Return And Risk.
2. Corporate Strategy, Value And Excellence
3. Valuation Of Large Scale Investment
4. Economic Value Addition
5. Capital Allocation Multiple Projects
6. Strategies For Resource Allocation
7. Capital Structure And Corporate Planning
8. Information Signaling, Dividend Decision & Corporate Strategy
9. Financial Policy And Flexibility
10. Financial Distress And Re-Organization
11. Strategic Technology Alliances : Valuation, Risk & Optionality
12. Corporate Governance
13. Financial Management In Knowledge Intensive Companies
14. Future Of Finance Function- The Role Of E-CFO

BOOKS:

1. Corporate Finance Principles By Brealey & Myers, MC Graw Hill
2. Financial Management : Prasanna Chandra

JOURNALS :

1. Harvard Business Review
2. Management Decision
3. The Paradigm
4. Economic And Political Weekly
5. The Mc Kinsey Quarterly

IM 909 F **BANK MANAGEMENT (MAJOR)**

Course objective:

The course aims at -

- Developing understanding about the various functions operations and activities of banking institutions
- Explain how to apply the basic finance concept to management of banking institute
- Provide framework rules regulations for governing banking institutions

COURSE CONTENTS

1. Overview of the banking industry and regulation; fundamental forces of change in banking, a case; GE Capital services.
2. Bank organization and regulation; structure of banking industry and organization forms, bank regulation.
3. Evaluating bank performance; commercial bank financial statements relationships between income and balance sheet statement, return on equity model and trade off, CAMELS Rating, alternative models of bank performance, managing non-interest incomes and –non-interest expenses.
4. Managing cost of funds bank capital and liquidity ; managing liabilities and cost of funds, effective use of capital, liquidity planning and managing cash assets.
5. Credit management; credit policies, evaluating loan proposals, evaluating consumers loan, credit analysis.
6. Managing investment portfolio; investment portfolio and policy guidelines, characteristics of various securities, active investment strategies.
7. Global banking activities; global banking participants, universal banking.
8. Bank merger and acquisition; recent travel, how mergers add value, valuation process, a case study.
9. E- banking: bank technology overview, bank services on computers, M- Banking.

TEXT BOOKS:

1. Financial institutions and markets: L.M Bhole(2nd addition Tata Mc Graw Hill publishing Company, New Delhi)
2. Bank Management- W. Koch Timothy and S. Scot McDonald(4th addition Dydren press Harcourt college, publishers)
3. Managing Bank technology
 - Marilyn R. Sheyman (Toppabn Company PTE Singapore)
 - Risk Management of financial institutions – William T . Thornhill (Banker's publishing company Illionis)

IM 911FM
PROJECT FINANCE (MINOR)

COURSE OBJECTIVE:

The objective of this course is to give an insight to the students of project financing as to enable him to understand project appraisal, means of finance, term loan and appraisal by financial institutions and various ways of financing a project.

COURSE CONTENTS:

1. Introduction To Project Finance
2. Financial Appraisal
3. Financial Projections
4. Time Value Of Money , Cost Of Capital
5. Financial Analysis
6. Means Of Finance
7. Euro-Loan Syndication And Euro Issue
8. Venture Capital
9. Planning The Means Of Finance: Norms And Policies Of Financial Institutions
10. Term Loans: Procedure Of Obtaining Term Loans
11. Applications For Financial Assistance
12. Detailed Project Report
13. Next Project Appraisal
14. Lease Finance
15. Working Capital Finance
16. Infrastructure Finance
17. Structured Finance
18. International Project Finance

TEXT BOOKS

1. Project Management – Prasanna Chandra (TMH, New Delhi)
2. Project Finance – H.R. Machiraju (Vikas Publishing House, New Delhi)
3. Project Financing – H.S. Pahwa.

IM 915 MM **SALES AND DISTRIBUTION MANAGEMENT (Minor)**

Course Objectives

The objectives of this course are to expose the students to various aspects of sales and distribution management as an integral part of marketing management, and provide abilities in sales and distribution system.

Course Contents

1. Personal Selling: The Role of personal selling in marketing mix. The personal selling process, Personal selling objectives, Types of Sales Jobs.
2. Theories of Sales Management: objectives, Nature and Scope. Buyer - Seller Dyads, Theories of selling - AIDAS Theory, “Right set of circumstances” Theory, “Buying Formula” Theory, and Behavioural Equation Theory of selling.
3. Sales Planning, Sales Organization, Sales Forecasting, Sales Budgeting, Territory Design and Setting Quotas.
4. Operational Sales Management: Selection, Training, Motivation and Compensation, Evaluation and Control of Sales Force.
5. Distribution: Design of Distribution Channel, Management of Channels, Managing Co-operation, Conflict and Competition, Vertical and Horizontal Marketing Systems.
6. Wholesaling and Retailing: Importance, Types, Marketing Decisions for Wholesalers, Retailing: Importance, Types, Retailer Marketing Decisions.
7. Physical Distribution: Objectives, Order Processing, Warehousing Inventory, Transportation, Organizing for Physical Distribution, EDI and supply chain, Internet as a medium for order processing and Information.

Text Readings

1. Philip Kotler, “**Principles of Marketing Management**”, New Delhi, Prentice Hall of India, Millennium Edn. 1998.
2. Cundiff and Govni, “**Sales Management - Decisions, Strategy and Cases**”, New Delhi: Prentice Hall of India, 1997.

Suggested Readings

1. Watuba R. Thomas ., “**Sales Management-Texts and Cases**”, Business Publication Inc.
2. Johnson, Kurtz and Scheving – “**Sales Management,Concept Practice and Cases**”, McGraw Hill NY, 1994.
3. S. L. Gupta, “**Sales and Distribution Management**”, New Delhi: Excel, 2000.
4. F. L. Lobo, “**Sales and Distribution Management**”, New Delhi: Global Business Press. 1998
- 5.

IM- 903A

BUSINESS ENVIRONMENT

Course Objective:- To acquaint students with the practical application of the factors that affect business

Course Content:-

- 1) Meaning of Business Environment - Business & Business Environment, Nature of Business in 21st century, Components of Business Environment, Stages of & Techniques for environmental analysis.
- 2) Economic Environment - Nature & Structure of Economy, Anatomy of Indian Economy, Economic Reforms, Economic Policies: - Industrial policy, SWOT Analysis of Indian Economy.
- 3) Social Environment – Social Environment, Poverty and Poverty Alleviation Programmes, Labour and Employment, Women in Work Force, Child Labour, Education, Health, Population and Family Welfare, Corporate Social responsibility, Corporate Governance.
- 4) Legal Environment – MRP Act, FEMA, Consumer Protection Act, Mergers and Acquisitions.
- 5) Technological Environment Concepts & Significance of Technological Environment, Technology & Business, Technological Transfer
- 6) Natural Environment: Economic development and Environment, market failure, Externalities, Economic solution to environmental problem.
- 7) Recent Developments in Business Environment of India: -Globalization- Meaning, scope, phases, indicators; Privatisation & Disinvestment – Mode, reasons, problems and Indian scenario; Foreign Investment, Capital account Convertibility, Corporate Governance, Consumer Protection

Text Books:-

- 1) Francis Cherullinum- Business Environment, Himalaya Publishing House, New Delhi
- 2) K. Aswathappa – Essentials of Business Environment, Himalaya Publishing House, New Delhi
- 3) Mishra & Puri – Economic Environment in India, Himalaya Publishing House, New Delhi
- 4) Justin Paul:- Business Environment – Text & Cases, McGraw Hill Companies, New Delhi
- 5) Raj Agrawal - Business Environment, Excel Books, New Delhi

Suggested Books:-

- 1) Dutt & Sundaram – Indian Economy, S. Chand & Co. New Delhi
- 2) I.J. Ahluwalia & I.M.D. Little – India's Economic Reforms and Development , Oxford University Press, New Delhi
- 3) E- Journals & Database :- EBSCO, INDIASTAT.COM, EIU.COM, RBI.ORG.IN,

IM-901C

STRATEGIC MANAGEMENT

Course Objective

The objective of teaching this course is to enable students to integrate knowledge of various functional areas and other aspects of management, required for perceiving opportunities and threats for an organization in the long-run and second generation planning and implementation of suitable contingency strategies for seizing / facing these opportunities & threats.

Course Contents

1. Meaning, Need and Process of Strategic Management; Business Policy, Corporate Planning and Strategic Management; Single and Multiple SBU organisations; Strategic Decision-Making Processes – Rational-Analytical, Intuitive-Emotional, Political – Behavioural; Universality of Strategic Management; Strategists at Corporate Level and at SBU Level; Interpersonal, Informational and Decision Roles of a Manager.

2. Mission, Business Definition and Objectives; Need, Formulation and changes in these three; Hierarchy of objectives, Specificity of Mission and Objectives.

3. **SWOT Analysis**

General, Industry and International Environmental Factors; Analysis of Environment, Diagnosis of Environment – factors influencing it; Environmental Threat and Opportunity Profile (ETOP); Internal Strengths and Weaknesses; Factors affecting these; Techniques of Internal Analysis; Diagnosis of Strengths and Weaknesses; Strategic Advantage Profile (SAP).

4. **Strategy Alternatives**

Grand Strategies and their sub strategies; Stability, Expansion, Retrenchment and Combination; Internal and External Alternatives; Related and Unrelated Alternatives, Horizontal and Vertical Alternatives; Active and Passive Alternatives; International Strategy Variations.

5. **Strategy Choice Making**

Narrowing the choices; Managerial Choice Factors, Choice Processes – Strategic Gap Analysis, ETOP-SAP Matching, BCG Product – Portfolio Matrix, G.E. Nine Cell Planning Grid; Contingency Strategies; Prescriptions for choice of Business Strategy; Choosing International Strategies.

6. **Strategy Implementation**

Implementation Process; Resource Allocation; Organizational Implementation; Plan and Policy Implementation; Leadership Implementation; Implementing Strategy in International Setting.

7. **Strategy Evaluations and Control**

Control and Evaluation Process; Motivation to Evaluate; Criteria for Evaluation; Measuring and Feedback; Evaluation and Corrective Action.

Text Readings

1. Lawrence R. Jauch and William F. Glueck, “**Business Policy and Strategic Management**”, McGraw Hill Book Co., New York,

Suggested Readings

1. Glen Boseman and Arvind Phatak, “**Strategic Management : Text and Cases** “ , John Wiley and Sons, Singapore, 1989
2. Daniel J. McCarthy, Robert J. Minichiello, and Joseph R. Curran, “**Business Policy and Strategy**” Richard D. Irwin, AITBS, New Delhi, 1988
3. Roanld C. Christenesen, Kenneth R. Andrews and Joseph L. Bower, “**Business Policy – Text and Cases** “ , Richard D. Irwin, Inc., Illinois, 1978

IM-506 **MARKETING STRATEGIES**

COURSE OBJECTIVES:

- To understand the strategic concepts and its role in the modern and innovative marketing planning.
- To build a strategic framework to sustain the competitive advantage.
- To help students to develop abilities and skills required for the strategy formulation and implementation under ever changing market scenario.

COURSE CONTENTS:

1. **Introduction** to strategy, key elements of marketing strategy formulation, formulating the marketing strategy, competition and marketing strategy, factors influencing competitive success, Basic marketing strategies, strategic role of marketing manager, factors influencing company's marketing strategy, Difference between marketing strategy and marketing management.
2. **SWOT ANALYSIS:** A framework for developing marketing strategy.
3. **SEGMENTATION, TARGETING AND POSITIONING STRATEGIES:** Meaning, process of segmentation, factors affecting the feasibility of segmentation, bases of segmenting consumer markets and industrial markets, market targeting, types of targeting strategy, factors influencing targeting decisions strategy, Positioning process, positioning strategy, factors affecting positioning strategy, positioning strategy overview.
4. **PRODUCT STRATEGY:** Meaning, strategies for developing new products, Product life cycle, Strategies at various stages of PLC, Branding strategies.
5. **BCG MATRIX:** Strategies to improve performance, sales volume and profitability, Understanding business portfolio through BCG matrix.
6. **MARKETING STRATEGIES** of market leader, market challenger, market follower and market niches, Porter's three generic strategies.
7. **PRICING POLICIES AND STRATEGIES:** Meaning of price, pricing objectives, role and significance of price, factors affecting pricing, pricing strategies for new products, established products, price flexibility strategy, Product-line pricing strategy, Leasing strategy, price-leadership strategy, pricing strategy to build market share.
8. **DISTRIBUTION (PLACE) STRATEGY:** Channel structure strategy, distribution scope strategy, multiple-channel strategy, channel modification strategy, channel-control strategy, conflict-management strategy.
9. **PROMOTION MIX STRATEGY:** Identify and understand the promotion mix variables, promotion objectives, strategies for developing promotional perspectives, Advertising strategies, Personal selling strategies.

BOOKS RECOMMENDED:

- **TEXT BOOKS**

1. Marketing Strategy	:Vernon R.Stauble
2. Marketing Management	:Philip Kotler
- **REFERENCE BOOKS**

1. Marketing Strategy and Management	:Michael J. Baker
2. Competitive Marketing Strategies	:Norton Paley

IM 601 C

E-BUSINESS FUNDAMENTALS

Course Objective:

The objective of this course is to help students to understand the basics of Electronic Business, Electronic Commerce, and related issues.

Course Content:

- 1. Introduction:** Introduction to internet, Introduction to e-business, Traditional business vs. e-business (Brick and Mortar system vs. virtual systems)
- 2. Basic concepts:** Basic concepts of e-Business, History of Internet, Emergence of e-business, Importance of e-Business
- 3. Structural transformation**-Business models, Functional model, Resource model
- 4. Consumer behavior:** Segmenting and analyzing target audience, Consumer Behavior Models
- 5. Internet Marketing:** Traditional marketing V/s e-marketing, Internet as a tool to promotion, Cyber Advertising and Cyber Branding e-Fulfillment
- 6. Customer relationship management:** CRM Myths, CRM Architecture, Supporting, Requirement of CRM infrastructure, Building CRM Infrastructure, Next Generation CRM trends
- 7. Business to business intermediations:** Virtual supply chain and Supply chain management
- 8. Electronic payment systems:** Payment methods, SET, Other payment services on Internet, e-Tailing, e-Banking, e-HRM, e-Commerce in service sector, e-Enterprise
- 9. Security Issues:** Technical and management perspective
- 10. Knowledge Management:** KM with Organization Perspective, Service and Products.
- 11. Cyber Laws**
- 12. Electronic Business Challenges and Prospective**
- 13. Strategies for electronic business**

Books Recommended :

- 1)Frontiers of Electronic Commerce by : Dr. Ravi Kalakota
- 2)Electronic Business by Danial Amor
- 3)E-Commerce BASICS by Bruce McLaren, Constance McLaren
- 4)E-Business Technologies by H.Albert Napier, Phil Judd, Rivers, Andrew Adams
- 5)New Perspectives on E-Commerce-Comprehensive by Gary Schneider.

IM 602A **Entrepreneurship**

Course summary and objectives:

The objective of this course is to develop appreciation and understanding of various aspects of entrepreneurship. This course will help the students in identifying business opportunity, translating it into a detailed business plan and getting versed with various issues in this course. This will provide exposure to the students to the entrepreneurial culture and industrial growth so that they may be prepared to set up and manage their own units.

Course contents:

1. **Entrepreneurship:** Concept of Entrepreneur, Concept and features of Entrepreneurship, Enterprise, Characteristics Of Entrepreneur, Characteristics of Entrepreneurship, Functions of Entrepreneurs, Entrepreneurial skills, Entrepreneur v/s Entrepreneurship, Attributes of Entrepreneurship.

Activities and Assignments:

Group task: studying various success stories of entrepreneurs and discussing their characteristics and reasons for success.

2. **Entrepreneurial Theories:** Economist's View, Sociologist's View, Psychologist View, Anthropologists View, Difference between Managers and Entrepreneurs, Classification of Entrepreneurs, Entrepreneurship Environment

3. **Creativity, Innovation and Idea generation:**

Creativity and Innovation, Creativity process, Innovation and Entrepreneurship linkage, Searching and selecting business ideas, Methods of generating new ideas

Activities and assignments: Idea generation by students.

4. **Organizational Structure of new venture:** Definition of Organization, Importance of Organization, Steps in Organizing, Functions/Forms of Organizations

5. **Project Planning:** Steps in business planning, Uses of a business plan, Criteria for a good business Plan.

Activities and assignments:

Students asked to finalize on their ideas and start writing business plans.

6. **Financial Management Issues in new venture:** Types of Industrial Finance, Sources of Finance.

7. **Marketing Management Issues in new venture:** Functions of Marketing, Product Concepts, Distributions, Promotions, Pricing, The Marketing Plan, Marketing Strategies

8. **Problems Of new ventures:** Internal Problems, External Problems

9. **New Venture Expansion Strategies And Issues:** Joint Ventures, Acquisitions, Mergers, and Franchising
10. **Legal Issues For The Entrepreneur:** Patents, Trademarks, Copyrights.

Books Recommended:

- 1) Entrepreneurship for SSI: Vasant Deasi (Text Book)
- 2) Entrepreneurship: New Venture Creation: David H. Holt
- 3) Entrepreneurship in small Scale factor: D Naxendra Kumar
- 4) Entrepreneurship development – Programs & Practices: Jasmer Singh Saini
- 5) Entrepreneurship: strategies & resources: Marc. J. Dollinger
- 6) Entrepreneurship: Hirsch Peters

IM 603
Econometrics

Objective: - The Objective Of The Course Is To Acquaint Students With Basics Of Econometrics And Create A Base For Advance Econometrics & Forecasting.

Course Description:

1. **Meaning And Methodology Of Econometrics:** Nature & Scope of Econometrics. The Nature of Regression Analysis and Basics of Two Variable Regression Analysis. Estimation and Hypothesis Testing.
2. **Extension Of The Two Variables Linear Regression Model:** Multiple Regression Model, Estimation and Inferences.
3. **Nature, Consequences, Detection and Remedial Measures :** Heteroscedasticity, Autocorrelation, Multi- Co linearity.
4. **Regression on Dummy Variable,** Dynamic Econometrics Models: Autoregressive and Distributed Lag Models.
5. **System of Equations,** Identification and Estimation Methods (ILS and 2SLS), Business application of Single Equation Econometrics Models and system of equations.

Books Recommended:

- 1) Gujrati: - Basic Econometrics
- 2) Koutsoyiannis: - Theory of Econometrics
- 3) Madnani: - Theory of Econometrics

IM 604 A
FINANCIAL MANAGEMENT II

Course Objectives: This course is designed to enhance the understanding of the fundamental concepts of finance with focus on long-term financial management.

Course Description:

1. Function of finance manager-a review
2. **Concept of Value:** Time preference for money, Compound value and present value, Numerical Exercises.
3. **Long Term Source of Finance:** Share, debenture and term loan.
4. **Capital Budgeting Decision:** Nature of investment decisions, Investment evaluation criteria-discounted and non-discounted cash flow criteria, Numerical exercises.
5. **The Cost of Capital:** Concept and significance of cost of capital, Factors affecting cost of capital, Measurement of cost of capital.
6. **Dividend Decision:** Concept, significance, forms, determinants and constraints of dividend decision, Share split and buy-back of shares, Case on dividend policy analysis.
7. **Capital Structure Planning:** Features of an appropriate capital Structure, Factors determining capital structure, Numerical exercises.

Reference Books :

1. Financial Management, Ravi M Kishore, Taxmann Publication, New Delhi.
2. Financial Management, I M Pandey, Vikas Publishing House Pvt. Ltd.
3. Fundamental of Financial Management, Brigham and Houston, Cengage Learning.
4. Financial Management, Theory, Concepts and problems; R P Rustagi
5. Indian Financial System Bharati V Pathak, Pearson Education.
6. Financial Management Text & Problems by M Y Khan & P K Jain, McGraw Hills Education (India) Ltd.

IM 605

Purchasing and Materials Management

Course Objective

Objectives of this course are to help the students acquire basic knowledge and understanding of purchasing and materials management and apply it for making relevant decisions.

Course Contents:

1. **Materials Management:** Objective, Importance, Integrated Materials Management, The role of Materials and Purchase management.
2. **Organization Of Materials Function:** Organization Structure Centralized Purchasing, Decentralization, Delegation of Power, Materials and User Department.
3. **Material Planning And Budgeting:** Planning: Advantages, Definition, Planning Approaches to Materials Management.
4. **Standardization And Codification:** Relevance, Definition, Specification, Advantages and Techniques, Identification, Evolution Of Codes, Classification, Methodology, Advantages Of Codification.
5. **Inventory Management And EOQ:** objective of inventory, inventory cost, inventory control techniques, evaluation of inventory management. ABC, XYZ, VED analysis.
6. **Ordering Systems:** Purchase Policy, Cash Purchase, Tender System, Rate Of Running Contract, Subcontracting, and Systems Contract Etc.
7. **Purchasing Cycle:** Purchasing Activities, Indent Status, Chasing And Follow Up, Transportation, Incoming Inspection, Bill Settlement, Documentation, Right Price, Right Time Of Purchasing, Right Method Of Material Handling, Right Mode Of Material Of Transport, Right Quality, Right Source And Right Buyers Sellers Relations.
8. **International Buying:** Why Imports, Import Policy, Classification Of Import, Objective Of Control, Preliminary Formalities, Source Selection, Licensing Procedures, Letter Of Credit, Documentation, Bill Of Lading Custom, Clearance Etc.
9. **Negotiations:** Objectives, Process, Process Factor, Other Parameter, Strategy And Tactics, Qualities Of Negotiator, Process And Guidelines For Negotiation, Negotiation Techniques.
10. **Vendor Rating:** Relevance Of Good Supplier, Need For Vendor Evaluation, Goals Of Vendor Rating, Advantages Of Vendor Rating, Parameters Of Vendor Rating.
11. **Financial Aspects In Materials Management:** Role of Finance, Interaction with Materials Holding and Acquisition Cost, Settlement Of Bill, Accounting, Audit In Materials Management.
12. **Disposal Of Obsolete And Scrap Items:** Management Of SOS, Categorization Of Obsolete/Surplus, Reasons For Obsolescence, Control Of Obsolescence And Scrap, Responsibility For Disposal, Disposal Methods.
13. **Warehousing Management:** Objectives Of Store, Location And Layout, Preservation Of Items, Management Of Receipts, Issue Control Store Documentation.

Books Recommended:

Purchasing And Materials Management - M.N. Verma.

Purchasing And Materials Management - P. Gopalakrishnan.

IM 606 **Project Management**

Course Objective:

To acquaint students with project management method and to develop skills on project planning, analysis implementation and control.

Course Contents:

1. **Project Planning and Phases:** Need and importance, phases of capital budgeting, project analysis facts, resource allocation framework (investment strategies, portfolio planning tools, and interface between strategic planning and capital budgeting), Generation and Screening of Project Ideas.
2. **Project analysis:** Market and demand analysis, (Including demand forecasting) Technical Analysis and Financial Analysis (Cost of Project, working capital requirement & its financing).
3. **Project Selection:** Project cash flows, Time value of money, cost of capital, Appraisal criteria and analysis of Risk.
4. **Project Management and Control:** Project Organizations, Planning and Control of project & human aspects of project management, Project control tools (Gantt Charts, Line off Balance)
5. **Network techniques for Project Management:** Basic concepts of networks, line estimation and determination of critical path (for both PERT and CPM models), network cost systems and activity crashing.
6. **Project Review:** Need for reviews, initial review, performance evaluation, abandonment analysis, evaluating the capital budgeting systems.

Books Recommended :

- 1) Maylor, Harvey: Project Management
- 2) Red F Parviz F: Project Estimating and cost management
- 3) Nevendorf Steve: Project Management
- 4) Royer Paul S.: Project Risk Management
- 5) Goel BB: Project Management
- 6) Patel M.Bhavesh: Project Financing
- 7) Rampal M.K. and Gupta S.L.: Project Report Writing

FT – 30 FM/ IM- 7 FM

Insurance and Banking(Mn)

Course Objective

This course is designed to enhance understanding of fundamentals of risk, Insurance and Banking. Insurance fundamentals are intended for students who have little or no prior education in insurance. The course introduces the subject matter banking from an economic perspective. The structures and role of central banking system and commercial banking will be examined.

Course Contents :

1. Risk and Insurance

Concept of risk and its classification, Insurance as risk management technique, Functions of insurers, Classification of Insurance, Concepts and advantages of reinsurance.

2. The Basic Principle of Insurance:

Utmost good faith, Insurable Interest, Indemnity, Corollaries of Indemnity, Proximate cause.

3. Practice of Insurance

**Life Insurance: Products, Riders, Options, documents and Claims
General Insurance: Products, Rating, and Concept of Underwriting, Claims.**

4. Commercial Banking System and Structure

Introduction & Definition of Banking, Structure of Banking System, Function of Commercial Bank, Credit Creation, Electronic Banking, Commercial Bank Financial Statement and its analysis. Various Banking Risks

5. Central Banking

Definition and Function of Indian Central Bank.

6. Legal Environment- Insurance and Banking

Insurance Regulatory Authority, Negotiable Instrument act.

Text and Reference Books:

1. K C Shekhar and Lekshmy Shekher, Banking Theory and Practice, Vikas Publishing House Pvt Ltd.
2. Justin Paul and Padmalatha Suresh, Management of Banking and Financial Services, Pearson Education.
3. Roger Leroy Miller and David D Vanhoose; Modern Money and Banking; 3rd ed.; Mc Graw Hill.
4. S Scott MacDonald and Timothy W Koch, Management of Banking, Thomson.
5. D M Mithani, Money Banking, International Trade and Public Finance. Himalaya Publishing House.
6. Principle of Risk Management and Insurance by Geoge E Rejda, Pearson Education
7. Risk Management and Insurance; Trieschmann, Gustavson, Hoyt., Cengage Learning
8. Principle of Insurance, IC-01, Insurance Institute of India
9. Practice of Life Insurance, IC-02, Insurance Institute of India
10. Practice of General Insurance, IC-11, Insurance Institute of India

IM - 701

BUSINESS FORECASTING TECHNIQUES

Course Objectives :

To familiarize the students with the substantive understanding of the concepts of forecasting and various forecasting techniques with special reference to business. Futurology as input for planning and decision making in business would broaden the ideas of the students of management science.

Course Contents :

1. Basic concepts of business forecasting and planning: fundamental of quantitative forecasting; criteria for evaluation; ME,MAD,MSE, RMSE (SDE), PE, MPE, MAPE.
2. Theil's U-statistics. Introduction to quantitative & technological forecasting. Quantitative v/s qualitative forecasting.
3. Time series methods of forecasting; naïve method, single and double moving averages.
4. Single exponential smoothing, adaptive response rate single exponential; smoothing.
5. Double exponential smoothing; brown's one parameter and holt's two parameter methods.
6. Simple regression & forecasting
7. Multiple regression & forecasting
8. Introduction to Box-Jenkins (ARIMA) models
9. The specifications, estimations & forecasting through input-output analysis
10. Introduction to input output analysis
11. Forecasting import, labor & investment requirements through input-output analysis.
12. Quantitative & technological methods of forecasting; subjective assessment methods jury of executive opinion, sales force composite methods formal surveys & market research based assessments, subjective probability assessments.
13. Exploratory methods- scenario development, Delphi, cross-impact matrices, curve fitting
14. Analogy methods, morphological search, catastrophe & planning in business organization, forecasting & planning in business organization, forecasting as input to planning & decision making
15. The role of forecasting in planning, relating forecasting & planning in business organization, forecasting as input to planning & decision making .
16. Contribution of forecasting to analysis & understanding (the valance as a measure of risk, marginal analysis, elasticity, costing, seasonal & cyclic considerations, simulation & sensitivity analysis,.

TEXT READINGS:

1. Makridakis wheelwright and McGee (1983), Forecasting: Methods and applications, John Wiley and Sons (latest edition)

COLLATERAL READINGS :

1. Hanke J.E.,D.W. Wichern and A.G. Reitsch (2001), Business forecasting, pearson Education
2. Sheerer, P. (1991), Business Forecasting & Planning, Prentice Hall.
3. Thirlwall, A.P. (1983), Growth and development with special reference to developing economics, ELBS/Mc Millan (ch.10)
4. Wheelwright & Makridakis (1985), Forecasting Methods for management, John Wilcy & Sons.

IM-702 **RESEARCH METHODOLOGY**

Course Objective

The overall purpose of the course is to introduce basic concept and methods for conducting research. The objective of the course is to make student familiar with the formulating the research plan; review of the literature, data collection; analysis of data; interpretation of data and reporting of findings.

Course Contents

1. **Research Methodology Introduction:** Meaning and purpose of research, Objective of research, Types of the research, Approaches to research, Process of the research, Research methods v/s methodology, Limitation of research.
2. **Research Design:** Selection and definition of problem, Survey of literature, Feature of good research design and different research designs, Identifying variables, Formulating of hypothesis, Measurement scales.
3. **Sampling Design:** Concept of sampling, Sampling terminology, Objective and principles, Types of sampling, Sampling and non-sampling error.
4. **Data Collection and Analysis:** Attitude measurement and scale; Methods of collection data and their advantages and disadvantages; Establishing the validity and reliability of a research instrument; Data organizing, presenting and analyzing techniques.
5. **Report Writing and Presentation:** Significance of Report Writing; Steps in Report Writing; Layout of Report and Precautions in Writing Research Reports; Writing Bibliography.

Suggested Reading

1. Shajahan, S.(2005) Research Methods for Management , Jaico Publishing House.
 2. Krishnaswamy, K.N., Sivakumar, A.P., Mathirajan, M.(2006) Management Research Methodology, Pearson Education.
 3. Panneerselvam,R. (2007) Research Methodology, Prentice Hall of India Pvt. Ltd.
 4. Kothari, C.R.(2004) Research Methodology - Methods and Technique, New Age International Publishers
 5. Fred N Kerlinger, Foundation of Behavioral Research, Surjeet Publication.
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FT – 3 F / IM- 70 F
SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT

Course Objective

The objectives of this course is to provide the students in dept understanding of investment techniques as applied to various forms of securities and acquaint them with the functioning of mutual funds, investment strategies and portfolio management services.

Course Contents

1. Introduction: Concept of Investment, Investment V/S Speculation, Financial And Economic Aspect Of Investment, Types, Characteristics And Objectives Of Investment.
2. Risk Return: Concept Of Risk And Return, Systematic And Unsystematic Risk, Valuation of securities, Concept of Beta, Capital Assets Pricing Model, SML And CML Valuations.
3. Valuation of Bonds: PV Model, Bonds Yield, Measures Duration, Modified Duration, Immunization Convervity, Bond Value Theorem.
Valuation Of Equity : Constant Growth Model, Multi-Stage Growth Model, P/E Ratio and Earnings Multiplier Models. Valuation Of Preference Shares, Valuation of Warrants, Rights Issued.
4. Security Analysis: Fundamental Analysis And Technical Analysis, Dow Theory, Elliott Wave Theory, Efficient Market Theories And Testing.
5. Portfolio Concepts: Portfolio And Security Returns, Diversification, Markowitz Model, Sharp Index Model.
6. Factor Models and Arbitrage Pricing Theory.
7. Portfolio Investment Process.
8. Portfolio Evaluation: Measures of Returns, Formula, Plans, Sharpe and Treynor Measures.

Text Readings

1. V.K.Bhalla, “**Investment Management: Security Analysis And Portfolio Management**”, S. Chand And Sons, New Delhi, sixth edition 1999.
2. Donald E. Fisher and Ronald J. Jordan, “**Security Analysis And Portfolio Management**”, PHI Publication, New Delhi, 1998.
3. V.A. Avadhani, “**Investment and Security Markets In India**”, Himalaya Publication, Bombay, 1998.

Suggested Readings

1. Edwin J. Elton and Martin J. Gruber, “**Modern Portfolio Theory And Investment**”, John Wiley and Sons, Singapore, 1996.
2. Preeti Singh, “**Investment Management**”, Himalaya Publications, 9th Edition, 2000.

IM- 70 F/FT-3 F

Insurance and Banking (Mj)

Course Objective

This course is designed to enhance understanding of fundamentals of risk, Insurance and Banking. Insurance fundamentals are intended for students who have little or no prior education in insurance. The course introduces the subject matter banking from an economic perspective. The structures and role of central banking system and commercial banking will be examined.

Course Contents

I. Risk and Insurance

II. Concept of risk and its classification, Management of risk, Insurance as risk management technique, Functions of insurers, Classification of Insurance.

III. The Basic Principle of Insurance:

IV. Utmost good faith, Insurable Interest, Indemnity, Corollaries of Indemnity, Proximate cause.

V. Reinsurance:

VI. Concept, types and advantages of reinsurance,

VII.

VIII. Practice of Insurance

IX. Life Insurance: Products, Riders, Options, Computation of Premium & Bonuses, documents and Claims

X. General Insurance: Products, Rating, and Concept of Underwriting, Claims.

1. Commercial Banking System and Structure

Introduction & Definition of Banking, Structure of Banking System, Function of Commercial Bank, Credit Creation, Electronic Banking.

2. Central Banking

Definition and Function of Indian Central Bank.

3. Legal Environment- Insurance and Banking

Insurance Regulatory Authority, Negotiable Instrument act.

Text and Reference Books:

1. K C Shekhar and Lekshmy Shekher, Banking Theory and Practice, Vikas Publishing House Pvt Ltd.
2. Justin Paul and Padmalatha Suresh, Management of Banking and Financial Services, Pearson Education.
3. Roger Leroy Miller and David D Vanhoose; Modern Money and Banking; 3rd ed.; Mc Graw Hill.
4. D M Mithani, Money Banking, International Trade and Public Finance. Himalaya Publishing House.
5. Principle of Risk Management and Insurance by Geoge E Rejda, Pearson Education
6. Risk Management and Insurance; Trieschmann, Gustavson, Hoyt., Cengage Learning
7. Principle of Insurance, IC-01, Insurance Institute of India

8. Practice of Life Insurance, IC-02, Insurance Institute of India
9. Practice of General Insurance, IC-11, Insurance Institute of India

FT -30 FM/ IM-70 FM

FINANCIAL MARKETS AND SERVICES (MINOR)

Course Objective:

This course is designed to give the participant a basic understanding of financial markets – the structure, the players, the instruments, the regulation and the jargon. It covers the capital markets, the money market, the foreign exchange market and the derivatives markets.

Course Content:

1. Introduction to Indian Financial System : Financial system: Significance and Definition ,Liberalisation of Financial System
2. **Capital Markets :Primary Market : Introduction, Institutional Structure, Instruments, Regulation and latest trends**
3. **Secondary Market :Stock Exchanges Introduction, Structure and working, Instruments, Regulation and latest trends.**
4. **Money Market :Characteristics and functioning, Instruments call-Money Markets, Government Securities Markets :Introduction, Structure and Players, Instruments, Concept of Yield and its role.**
5. **Forex Market : Introduction, Characteristics, Functioning and basic concepts**
6. **Derivatives Market :Introduction, Types of Derivatives, Trading and Regulation, Latest Trends**
7. **Financial Services :Introduction, Asset/Fund-Based Fee/Non-Fund Based**
8. **Lease Financing :Theoretical Framework, Regulation, Latest Trends**
9. **Venture Capital Financing :Introduction, Framework, Latest Trends**
10. **Merchant Banking Services :Introduction, Institutional Framework, Regulation**
11. **Investment Banking :Concept, Trends, Vis-à-vis Merchant Banking**
12. **Other Financial Services : An Introduction**
13. **Securitisation :Basic Concepts and Securitisation in India**

REFERENCES:

- Indian Financial System By; H.R.Machhiraju
- Indian Financial System By; M.Y.Khan
- Investment and securities markets in India By; V.A. Avdhani
- Management of Financial Services: By: B.S.Bhatia and G.s.Batra

FT-316 MM/MM-70 MM
Consumer Behavior (R & U)(MN)

Course Objective :

The consumer has become sovereign, a fact which has been recognized by the marketers. The students are explicitly required to acquire knowledge of such in order to develop effective strategies of influence and shape the behavior in order to achieve their organizational targets. The aim of teaching this subject is to acquaint the student with behaviour of rural and urban consumers.

Course Contents:

- 1 Introduction to Consumer Behavior, Definition, Models
- 2 Consumer Research
- 3 Market Segmentation, Targeting & Positioning
- 4 Consumer Needs & Motivation
- 5 Consumer Involvement & Perception: Information and its processing, types of consumer involvement, Perception – process, exposure attention and comprehension, Semiotics
- 6 Consumer Learning: Meaning, Classical conditioning, Operant Conditioning & Behavioral Learning
- 7 Consumer Motivation & Affect: Meaning, concept, types and systems, theories
- 8 Consumer Beliefs, Attitudes & Behaviors: concepts & formation
- 9 Consumer Attitude, Belief & Behavior Change: Decision-making Path,
- 10 Consumer Environment: impact of culture, reference group, family, social class and situational influences of rural and urban consumers
- 11 Consumer Decision Making Process: Problem Recognition & Search, Evaluation & choice, Post acquisition process

Text Readings:

- 1 Consumer Behaviour By Henry Assael.
- 2 Consumer Behaviour By Shiffman and Kanuk

Suggested Readings:

- 1 Consumer Behavior – James Engel, Roger Blackwell & Paul Miniard
- 2 Consumer Behavior – Mowen & Minor

FT-311SM /IM-70 S

OBJECT ORIENTED ANALYSIS AND DESIGN (MINOR)

COURSE CONTENT:-

1. REVIEW OF OBJECT ORIENTED CONCEPTS

- Classes, objects and attributes ,Encapsulation and interfaces,Association and multiplicity,Inheritance and aggregation,Polymorphism and collections

2. THE UNIFIED PROCESS

- Traditional software lifecycle,The object-oriented software life cycle,Use case-driven and architecture-centric feature,Iterative and incremental development

3. USING UML NOTATION

- Use case diagrams,Object model,Packages and subsystem,Interaction diagrams

4. CAPTURING SYSTEM BEHAVIOR IN USE CASES

(producing requirement models)

- Finding primary and secondary use cases,Include and extend dependencies,Use case generalization,Refining use cases:rapid prototypes

5. REFINING CLASSES AND ASSOCIATIONS

(establishing the model object)

- Analysis model vs design , boundary and control,Categorising classes: entity,boundary and control Modelling association and collection ,Preserving referential integrity

6. USE CASE REALIZATION

(generating the behavioral model)

- Sequence diagram , object lifelines and messages types ,Modelling collection multiobjects,Refining sequence diagrams to match object models,Typing object and behavioral models with collaboration diagrams

7. OBJECT ORIENTED DESIGN

- Partitioning systems for deployments across processors , tasks and thread,Persistency: storing objects to disc and databases,Mapping designs to concurrent systems

8. OBJECT ORIENTED DATABASE

- Overview of DBMS concepts,Approaches to Object Oriented Database

9. OOA AND D CASE STUDIES

Text Books:

Object oriented modeling and design- James Rumbaugh

Object Oriented Analysis and design with Application- Grady Booch

The Unified Modeling Language User Guide- Grady Booch

FT-317SM /IM-70 SM
JAVA(MINOR)

COURSE CONTENT:-

1. JAVA BASICS

- Object oriented programming
- Features of java
- Classes and objects, Operators, identifiers and literals
- Application and applet programming
- Structure of java program

2. DATA TYPES AND CONTROL STRUCTURES

- Data type, Type casting
- Decision control structures
- Loop control structures
- Jump statements
- Arrays

3. CLASSES AND METHODS

- Class as a basic building block
- Access specifier, Methods
- Constructors and garbage collection
- Recursion
- Overloading methods
- Abstract and inner classes
- Static Methods
- String Class

4. INHERITENCE

- Basic
- Types
- Introduction to interface
- Use of extends and implements
- Using super

5. EXCEPTIONAL HANDLING

- Introduction to exception
- Introduction to try and catch
- Use of throw, throws and finally

6. MULTITHREADING

- Introduction to thread
- Thread cycle
- Main thread
- Creation of user define thread
- Thread priorities
- Thread methods

7. APPLETS

- Introduction
- Applet cycle
- Applet class

o Creation and use of applets.

References :

- The Complete reference Java – Herbert Schild
- CoreJava- Orelly Publication.

FT-304FB/ IM-70 F **CORPORATE TAXATION (MAJOR)**

Course Objective: This course is based on the provisions of various direct and indirect tax laws with reference to company assesses. This course will enable the students to understand the tax provisions related to the companies and compute the tax liability.

Course Contents:

1. **Introduction:** Introduction and brief history of income tax, definitions Corporation tax, Tax Planning, Tax Evasion, Tax Avoidance, Tax Management, Dividend Tax, Indian Company, Foreign Company.
2. **Computation of Total Income and Tax Liability of Companies:** Income from business, capital gain, income from other sources, Gross Total Income, Deductions from Gross Total Income, computation of Total Income. Introduction to MAT, FBT and Dividend Distribution Tax
3. **Special Tax Provisions:** Tax provisions in respect of Free Trade Zone and Special Economic Zone, Tax provisions in respect of Infrastructure Development, Tax provisions in respect of Backward Areas,
4. **Amalgamation related tax issues.**
5. **Tax Payment:** Tax deduction at source, Tax collection at source, and Advance payment of tax.
6. **The Wealth Tax Act, 1957:** Introduction of wealth tax, meaning, scope and incidence of tax, Assets included for wealth tax, assets exempted from wealth tax, deemed assets,
7. **Central Excise and Custom Duty:** Meaning and important provisions.
8. **Service Tax:** Background and nature of service tax, Value of service tax, Exemption from of service tax, Classification of services, Procedure of service tax, other important provisions.
9. Introduction to Value Added Tax (VAT)

Books:

Direct Taxes Planning and Management by V.K. Singhania
Corporate Tax Planning and Management by H.C. Mehrotra
Students' Work Book on VAT and Service Tax by V. S. Datey

Study Material published by ICSI, Financial Dailies and journals like Business Standard, The Economic Times and Financial Express, Economic and Political Weekly

FT-311FA/ IM-706F

FINANCIAL MARKETS AND SERVICES(MAJOR)

COURSE OBJECTIVES:

The course aims at:-

- Developing understanding about the various functions operations and activities of banking institutions.
- Explains how to apply the basic finance concept to the management of banking institute.

Course Contents:

01: INTRODUCTION TO INDIAN FINANCIAL SYSTEM—

Financial System:: Significance in definition, Liberalization of financial system.

02: CAPITAL MARKET

Primary Market:: Introduction, Institutional Structure, Method of issue, instruments, regulations.
Secondary Market: Introduction to Stock Exchanges, Instruments, Clearing and settlement Mechanism, Players,Regulations and Latest Trend.

03:MONEY MARKET:

Characteristics and functioning , Instruments , call money market, Treasury bills, certificate of deposit, commercial Paper, REPOS

04. Regulatory Institutions: SEBI and RBI

05. Working capital Financing management: Bank and Institutional Financing, management of cash, receivables and inventories.

06. Introduction to financial Institutions: SFC's and DFI's, their importance and scope(IDBI, IFCI, SIDBI)

07:DERIVATIVES:

Introduction to Derivatives , futures and options, terminologies, operational margins, concept of hedging ,risk in derivatives,.

08:MUTUAL FUNDS:

Introduction, Structure of Mutual industry, Types of Funds, Advantages Of Mutual Funds. Guide Line of Mutual Funds, Concept of SIP, Mutual Funds in India.

09:FINANCIAL SERVICES

Introduction of Financial Services

10:LEASING FINANCING : Concept of Leasing

11:VENTURE CAPITAL FINANCING :Introduction , Framework, Latest Trend

12:MERCHANT BANKING : Introduction, Institutional Framework, Regulation

13:INVESTMENT BANKING : Concept, Trend Vis-à-vis Merchant Banking

14:SECURITIZATION : Basic Concept and securitization in india

15:OTHER FINANCIAL SERVICES: Factoring

TEXT READING:

1. M.Y.khan," Financial services"" tata McGraw Hill 2000
2. B.S.bhatia, G.S.Batra," Management of capital markets, financial services and institutions"" Deep and Deep publications,2000
3. Investment of security market in India: V.A.Avadhani
4. Indian Financial system: P.N.varshney and D.K.Mittal

IM 801

TOTAL QUALITY MANAGEMENT (TQM)

Course Objective:

After successful understanding of TQM principles, tools and techniques, the students will be able to apply this knowledge as management executives and contribute as a member of team in improving the quality standards in industry/corporate sector.

Course Contents:

1. Quality definition, product quality, service quality, dimensions of quality, quality evolution.
2. Inspection QC, quality assurance, total quality control, other aspects of quality, rehabilitee, maintainability and availability.
3. Concept of total quality.
4. Total quality management - definition, and guiding principles.
5. Quality management philosophies, Demming philosophies, Fourteen points of management, Juran philosophy, Quality trilogy, cross by philosophy comparison.
6. Cost of quality.
7. Quality management and ethics, quality culture.
8. Focusing on customers – internal and external customers.
9. TQM leadership
10. Quality improvement and problem solving, introduction to TQM tools and techniques, statistical process control
11. Kaizen, bench marking, quality systems – ISO 9001:2000

References:

1. TQM – K.S. Bhat
2. TQM – Besterfield
3. TQM – Ross
4. Quality – Donna, C.S. Summers
5. Quality Management – Goetsch
6. Principles Of Total Quality – Swift
7. Kaizen Strategy For Customer Care – Patricia Weillington

IM-803 H/FT-403H

Performance Planning and Appraisal

Objective of the Course

To help the students to comprehend what is meant in an organization by performance and how its planning is important in an organization with respect to attaining and maintaining a contented work force for the larger objective of having a competitive edge in the industry.

Course Content:

1. Overview: Challenges and opportunities
2. Prerequisites for an objective performance appraisal
3. Performance Appraisal basics :PA and expectancy theory, Defining performance Appraisal process, Absolute process, Relative Methods, MBO,
4. New objectives of PA
5. Developing performance appraisals
6. Performance appraisal in a government organization
7. Performance appraisal in a private industry
8. Project on Performance Appraisal
9. Road Ahead

Test books & other references:

- Organization Behavior by Robbins
 - Personnel / Human Resource Management by DeCenzo and Robbins
 - Handbook on Organizational Performance – Johnson and Redman
 - Designing and Managing HR Systems- Pareek and Rao.
-

IM - 803HM / FT- 403 HM

HR AND PERFORMANCE PLANNING

Course objective:- To make students aware of performance control mechanism in the organization.

Course Content:-

- 1) **HUMAN RESOURCE PLANNING:** - Definition, model for HR planning, forecasting demand and supply, planning for shortages & surplus, planning for new establishment, Managerial succession planning, Career planning.
- 2) **HR INFORMATION SYSTEM:-** Purpose of HRIS, uses of HRIS, Establishing an HRIS, approaches to evaluate an HRIS.
- 3) **HRD AUDIT:** - Meaning, Concept, HRD Audit Process, Parameters to be audited, audit results, preventive and corrective actions.
- 4) **INTRODUCTION TO PERFORMANCE AND POTENTIAL APPRAISAL:-** HRD and Performance Appraisal Systems, Identification of KPA's Self Appraisal.
- 5) **PERFORMANCE ANALYSIS PROCESS:-** Performance Rating, Counseling and Feedback.
- 6) **JOB ENRICHMENT:-** Quality of work life and role efficacy.

Text Readings:-

1. Designing and Managing HRS – Udai Pareek & T.V. Rao
2. HRD Audit – T.V. Rao
3. Performance Planning analysis and review - T.V. Rao
4. Redesigning Performance Appraisal System - T.V. Rao
5. Personnel Management – C.B. Mamoria

IM - 803MM / FT – 404 MM

PRODUCT AND BRAND MANAGEMENT

Course Objectives:

The objectives of this course are to discuss various concepts involved in learning Product and Brand Management for the success of any concern, to understand how the product manager implements business strategy in the marketplace and to acquaint the students with the process and strategies of new product management. The course also explores the methodology for managing the cohesive development and marketing of new products from idea inception to product discontinuation.

COURSE CONTENTS:

- 1. Product Management: Introduction and concept of product, Product components, objectives of Product Management, Roles of Product Manager.**
- 2. Product mix** and product line decisions, Growth strategies for the FMCG.
3. Routes of new product development, Process of new product development, the latent factors behind marketing success and failure of any new product, Product elimination strategies
- 4. Brand Management:** Branding concept, Benefits of Branding, Brand perspectives, Characteristics of a Brand, Branding decisions
5. Brand Personality: Introduction, concept Types and brand personality scale
6. Brand Extension, Types of Brand extension, Strategies for successful brand extension
7. Brand positioning and repositioning
- 8. Global branding: Concept, advantages and disadvantages**
- 9. Brand equity: Introduction and concept of brand equity, Cost based, price based, customer based Methods**
10. Brand Loyalty: Concept, Loyalty pyramid
11. Brand management and the future
12. The Six myths of Branding

Books recommended:

1. Marketing Management by Philip Kotler.
 2. Product Management by R. Majumdar
 3. Strategic brand management by Kevin Lane Keller.
 4. Brand Management by Y.L.R.Moorthy.
- **Collateral Readings for Brand Management:**
Doyle, P. (1989), “Building successful brands : The strategic options” , Journal of Marketing Management.
Kapferer, J.- N.(1997), Strategic Brand management.
Brand Equity of “The Economic Times” newspaper.
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IM-804F/FT-405F

FINANCIAL ENGINEERING & RISK MANAGEMENT

Objective of the Course:

The focus is to provide an opportunity to develop a basic understanding of process of financial engineering, risk & risk management techniques, Derivatives & Derivative trading process for managing risk.

Course Content:

Unit I: Introduction to Financial Engineering

Scope of Fin. Engg., Tools of Fin. Engg. ,Factors contributing to Growth of Fin. Engg. Environmental Factors, Intra-firm factors.

Unit II: Risk & Risk Management

Types of Risk: Market Price Risk, Measuring exposure to price risk, Interest rate risk, Exchange rate risk, Risk Management: Why Risk Management, Hedge Ratios & their uses, Composite Hedging.

Unit III: Tools of Financial Engineering

Introduction to derivatives, Forward & Future Contract, Trading in Futures Market, SWAP, Options, Fixed Income securities, Recent Debt market innovations, Equity related Instruments & Hybrid securities, Asset Liability Mgt.

Leverage Buy Out (LBO), Arbitrage.

Unit IV: Forward & Futures

Forwards, Futures, Forward Rate Agreement, Market participants in futures market, Hedging using Futures Contracts, Valuation of Forward & Futures Contract, Stock Index Futures, their valuation, Hedging using stock Index futures contract .

IM-804 HA/FT-410H

HUMAN RESOURCE PLANNING AND AUDIT

Course Objectives:

This course will introduce students to different aspects of human resource planning and how it is helpful in giving organizations a competitive edge. The role of HRD audit and its impact on business improvement will also be examined.

Course Contents

1. **Human Resource Planning:** Definition, HR Planning, Model for HR Planning, forecasting Demand and Supply, Planning for Shortages, Surplus, Planning for New Establishment, Managerial Succession Planning, Career Planning.
2. Downsizing, HR information System: Purposes of HRIS, Uses of HRIS, Establishing an HRIS, Approaches to Evaluate HR Function.
3. **HRD Audit:** Meaning and Concept, Need, Designing HRD Audit Process, Parameters to be Audited, Audit Results, Preventive and Corrective Actions, Role in Business Improvement, Methodology and Limitations.
4. **HRD styles and culture:** OCTAPACE Culture, Importance of Top Management Styles in Building Culture, Auditing the HRD Culture, Auditing the Style of Top Management, Current Structures and Structural Alternatives.
5. **HRD Competencies:** Challenges, Professionalism in HR, Myths and Realities of HRD, Competencies Needed, Auditing HRD Competencies, individual interviews, Group interviews, Observation, HRD Audit instruments.
6. HR Performance and Benchmarking in Policy, Process and Management Styles, Benchmarking Analysis.

Text Reading

1. Donald Currie, “**Personnel in Practice for the New IPD-CPP**”, Blackwell, MA, 1997.
2. R. W. Mondy and R. M. Noe, “**Human Resource Management**”, Prentice Hall, London, 6th Ed., 1996.
3. T. V. Rao, “**HRD Audit**”, Response Books, New Delhi, 1999.

Suggested Reading

1. Satish Pai Ed., “**HRD Skills for Organizational Excellence**”, Bombay, Himalaya Publishing House, 1999.

Strategies & Modeling in Marketing

Objectives of course:

The objectives of this course are to help the students to gain an understanding of concepts of marketing strategies and modeling, and their applications in real life corporate world with the help of case studies.

Course Content:

- 1. Strategic Marketing:** Basic concept of strategy, Strategic management, Strategic planning at corporate, SBU and operational level, Strategic marketing, Marketing management, Process of strategic marketing.
- 2. Strategic analysis:** Corporate appraisal, understanding competition, analyzing customers, scanning the environment.
- 3. Strategy Formulation:** Analysis models, portfolio analysis, strategy selection, segmentation, targeting, differentiation and positioning.
- 4. Market strategy:** Dimensions of market strategy, strategies for new, growing, mature and declining markets.
- 5. Product Strategy:** launch, relaunch, Positioning, repositioning, overlap, scope, design, elimination, and new product strategies.
- 6. Pricing Strategies:** Factors affecting prices, initiating and responding to price changes, New product, product mix, Discriminatory pricing strategies, formulating strategies for price leadership.
- 7. Distribution strategies:** Channel structure strategy, channel mix, modification, control and management strategies.
- 8. Promotion strategies:** Strategies for developing promotional prospective, Promotion mix strategies.
- 9. Implementation and control of marketing strategies.**
- 10. Marketing models:** science and marketing models, types, purpose and development of models, decision support models, theoretical modeling in marketing.
- 11. Application of models:** Consumer behavior, Organizational Buying, New product Development and advertising.

Text Reading:

1. Subhash C. Jain, 'Marketing Planning and Strategy', 'India : Thomson- South Western.
2. Ferrell, 'Marketing Strategy', India: Cengage
3. Lilien, G.L: Kotler Philip and Moorthy, K.S., ' marketing Models' India : PHI
4. Kotler Philip, 'Marketing Management' India : PHI
5. Kotler Philip, 'Marketing Management- a south asian perspective', India: Pearson

IM 805F / FT 403F
INTERNATIONAL FINANCE

Course Objective:

The focus of “**International Finance**” course is two fold- one, it develops an understanding of International Financial System. Two, it gives an insight into different dimensions in managing MNC’s. Specifically understanding of International Financial System and Business Environment.

Course Contents:

1. Growth & Evolution of International Business

Additional Readings:

- “From trade to Investment”, Merchants to Multinationals by Geoffrey Jones, Oxford university press
- History of World Trade, by Mira Wilkins

2. International Monetary System

- IMF, World bank, Asian Development bank etc.
- Exchange rate regimes

Additional Readings:

- www.imf.org, www.worldbank.org,
- Global Corporate Finance , Kim & Kim

3. International Trade & balance of payments

Class Discussion:

“India’s BOP- critical analysis of Present and Present”*Website to be visited:www.rbi.org.in*

4. Foreign Exchange Management

- Foreign Exchange Market and Mechanism
- Determinants of Exchange rates (theories)
- Foreign Exchange Risk & Exposure
- Exchange Control Regulations & Role of RBI

Cases:

- Ken & Joan Morse
- Coimbatore Yarns Receivables
- Eurotunnel

5. Internal Examination I & Mid-term Review of Term Paper

Management of MNC’s

- Foreign Direct Investment
- Drivers of MNC
- Strategic Entry Options to MNC’s

Additional Readings:

- Foreign Direct Investment: India, a case study, Yamini Karmarkar, G.Kawadia
- Cross-Border Management: Motivations & Mentalities, Bartlett & Ghoshal, Transnational Management, Irwin McGraw Hill Pub.
- Are MNC’s Safer, Journal of International Business, spring 86, vol 17, issue 1

Case: AT & T Consumer Products

6. Multinational Cash Management

Case: British Metal Corporation

7. Multinational Capital Budgeting & Capital Structure

Additional Readings:

- An Empirical Examination of MNC Capital Structure, Todd Burgman, Union College
- MNC vs DC ;Financial Performance and characteristics, Journal of International Business, Fall 86, vol 17, issue 3

Case: Wiley International

8. Financing Foreign Operations

Case: Reliance Industries Ltd: Global Financing Choices

9. International Banking Transactions for Export & Import

10. International Taxation

11. Internal Examination II & Submission of Term paper

Text Books & Other references:

Text Books

- International Financial Management, P.G.Apte, Tata McGraw Hill
- Multinational Financial Management, Madhu Vij, Excel Publications

Reference Books:

- “International Financial Management”, Alan Shapiro
- “Global Finance”, Eng, Lee, Maur, Addison Wesley Ltd.
- “Global Corporate Finance”, Keith Pilbeam

Journals:

- RBI Bulletin
 - Journal of Foreign Exchange and International Finance
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IM - 805FM / FT – 403 FM

INTERNATIONAL FINANCIAL MARKETS & INSTRUMENTS

Course Objective:- The objective is to familiarize the participants to the International Financial Markets and the instruments available for financing the needs of the capital.

Course Contents:-

1. **EVOLUTION OF TRADE AND MONETARY SYSTEM:** - Barter System, Evolution of money and foreign trade.
2. **INTERNATIONAL MONETARY SYSTEM AND INSTITUTIONS:** - Need for institution to manage growing trade and fix exchange rate for currencies.
3. **FOREIGN TRADE AND BALANCE OF PAYMENTS:**- Growth of foreign trade and system of balance of payment to settle the transactions
4. **FOREIGN EXCHANGE MANAGEMENT:** - Structure of foreign exchange markets, Fixing of exchange rates.
5. **RESERVE BANK OF INDIA & EXCHANGE CONTROLS:** - RBI'S role as controller of foreign exchange reserves and its management.
6. **INDIAN AND INTERNATIONAL FINANCIAL MARKETS.**
7. **INSTRUMENTS OF FOREIGN FUNDING:**- FC loans v/s Bonds, FC notes, Fixed v/s floating rate notes, CP's, FDI, GDRs, ADRs.
8. **RISK MANAGEMENT IN FOREIGN EXCHANGE.**

Text Books & Other references:

Text Books

- International Financial Management, P.G.Apte, Tata McGraw Hill
- Multinational Financial Management, Madhu Vij, Excel Publications

Reference Books:

- “International Financial Management”, Alan Shapiro
- “Global Finance”, Eng, Lee, Maur, Addison Wesley Ltd.
- “Global Corporate Finance”, Keith Pilbeam

Journals:

- RBI Bulletin
- Journal of Foreign Exchange and International Finance

IM-805M /FT 403M

INTERNATIONAL MARKETING

COURSE OBJECTIVE:

The objectives of this course are to help the students to gain an understanding of concepts of international marketing, types of international markets, demand and supply, position in international markets, import-export documentation, policies and procedure of foreign trade.

COURSE CONTENT:

- 1. INTERNATIONAL MARKETING:** basis of international trade, theories of international trade, absolute advantage, comparative advantage and factor endowment theory, difference between domestic, international, multinational. Global markets, EPRG framework.
- 2. SCANNING OF INTERNATIONAL ENVIRONMENT:** social, political, legal, economic.
- 3. FACTORS AFFECTING INTERNATIONAL TRADE:** methods of entry, role of IMF and WTO in international trade.
- 4. FOREIGN TRADE POLICY:** EXIM policy, salient features of latest policy. Export documentation and procedures and institutional support for export promotion in India.
- 5. PRODUCT:** identifying new products, international product planning, product design strategy, product elimination, adoption and diffusion of new products, branding strategies.
- 6. PRICING STRATEGIES:** factors affecting international prices, methods of pricing, pricing an international product, transfer pricing.
- 7. DISTRIBUTION SYSTEM FOR INTERNATIONAL MARKETS:** direct and indirect channels, factors affecting international channel, international channel management.
- 8. PROMOTING PRODUCTS/SERVICES IN OVERSEAS MARKETS:** perspectives of international advertising, standardization v/s localization, global media decisions, and global advertising regulations.

TEXT READINGS:

1. W.J.KEEGAN- “Global marketing management”, new delhi, PHI, 5th edition 1997

2. SACK ONKVISIT AND JOHN SHAW, "International marketing analysis and strategies", new delhi, PHI, 1998
 3. SUBHAS S.JAIN, "International marketing management", Delhi, CBS Publishers Distributors, 1997.
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IM-806 HA/FT-407HA

HR Based Business Process and Transformation

Course Objective:

The objective of the course is to study business transformation through managing people with special emphasis on motivation, creativity, team building, TQM and BPR.

Course Contents:

1. **Innovation and Creativity:** Theories of innovation and creativity, managing people side of motivation, resistance to motivation, the creative process, releasing creativity, creative techniques of problem solving, the creative environment, creative organization, creativity training, introduction to learning organizations, Architecture of Learning Organization.
2. **Team Building:** Redesigning Work, Developing Teams, Building Teams Structure and Skills, managing Disruption and Conflict, Improving work process and work flow, Appraising Team Performance, Leading High Performance Teams.
3. **Total Quality Management:** History and Philosophy of TQM, TQ as a System, Step by step TQM Implementation Process, ISO 9000 and ISO 4000 process Implementation and obtaining Certification, Malcom Baldrige Award criteria, Demings Award, Rajiv Gandhi Quality Award.
4. **Basic HR issues in TQM:** Leadership Vision and Continuous Process of improvement, Kaizan, performance appraisal and TQM, People Capability Maturity Model (PCMM), Quality HR Practices.
5. **Business Process Re-Engineering:** Basic Concepts, Process Mapping, Work flow Mapping, Effectively Applying BPR in the Organizations.
6. **Management Of Change:** Theories of Change, Leading Change, Resistance to Change, Change Process, Visioning, HRM and Culture.
7. **Knowledge Management:** Meaning, Application, Creating Knowledge Organization, Role of Chief Knowledge Officer in Organization.

Text Readings:

1. Pradip N. Khandwala, Fourth Eye: “Excellence Through Creativity”, Wheeler Publishing, New Delhi
 2. Knoues B Stephen “Human Resource Management Perspective on TQM: Concepts and Practices, Milwaukee Kilsconsin, ASQC Quality Press latest edition, 1996.
 3. Robert A. Pato an James Mccalman, “Change Management: A Guide to Effective Implementaton” New Delhi, Response Books, 2000.
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IM-807M /FT- 409M

SERVICE MARKETING

Course Objective:

The objectives of the course are to expose students to the nature of service markets and develop abilities to help them apply marketing concepts in these markets.

Course Contents:

- 1. Services:** Service sector and Economic Growth, Service Concept, Classification of Service, Challenges in Service Marketing, Characteristics and Strategies for dealing with unique characteristics.
- 2. Strategic Issues in Service Marketing:** Segmentation, Differentiation and Positioning of Services
- 3. Marketing Mix in Service Marketing:** Product, Price, Place, Promotion, People, Physical Evidence and Process Decisions
- 4. Designing a Service Strategy:** Service management Process; Internal, External and Interactive Marketing Strategies
- 5. Managing Service Quality and Productivity:** Concepts, Dimensions and Process; Service Quality Models (Gronnos and Parsuraman) Application and Limitations, Productivity in Services, Customer Focus
- 6. Applications of Service Marketing:** Marketing of Financial, Hospital, Health, Educational, Tourism, Telecom and IT, and Marketing for Non Profit Organizations and NGOs.

Text Readings

1. Christopher H. Lovelock, “**Services Marketing**”, New Delhi: Prentice Hall of India, 3rd Edn., 1996.

Suggested Reading

1. Ravi Shankar, “**Services Marketing**”, New Delhi, Global Press, 2nd Edn., 1998.
 2. V.A. Zeithamal and M.J. Bitner, “**Service Marketing: Integrating Customer Across the Firm**”, McGraw Hill, 2002.
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IM-807M /FT- 409M

SERVICE MARKETING

Course Objective:

The objectives of the course are to expose students to the nature of service markets and develop abilities to help them apply marketing concepts in these markets.

Course Contents:

- 1. Services:** Service sector and Economic Growth, Service Concept, Classification of Service, Challenges in Service Marketing, Characteristics and Strategies for dealing with unique characteristics.
- 2. Strategic Issues in Service Marketing:** Segmentation, Differentiation and Positioning of Services
- 3. Marketing Mix in Service Marketing:** Product, Price, Place, Promotion, People, Physical Evidence and Process Decisions
- 4. Designing a Service Strategy:** Service management Process; Internal, External and Interactive Marketing Strategies
- 5. Managing Service Quality and Productivity:** Concepts, Dimensions and Process; Service Quality Models (Gronnos and Parsuraman) Application and Limitations, Productivity in Services, Customer Focus
- 6. Applications of Service Marketing:** Marketing of Financial, Hospital, Health, Educational, Tourism, Telecom and IT, and Marketing for Non Profit Organizations and NGOs.

Text Readings

1. Christopher H. Lovelock, “**Services Marketing**”, New Delhi: Prentice Hall of India, 3rd Edn., 1996.

Suggested Reading

1. Ravi Shankar, “**Services Marketing**”, New Delhi, Global Press, 2nd Edn., 1998.
 2. V.A. Zeithamal and M.J. Bitner, “**Service Marketing: Integrating Customer Across the Firm**”, McGraw Hill, 2002.
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IM - 807MM / FT – 409 MM

SERVICE MARKETING

Course Objective:

The objectives of the course are to expose students to the nature of service markets and develop abilities to help them apply marketing concepts in these markets.

Course Contents:

- 1. Services:** Service sector and Economic Growth, Service Concept, Classification of Service, Challenges in Service Marketing, Characteristics and Strategies for dealing with unique characteristics.
- 2. Strategic Issues in Service Marketing:** Segmentation, Differentiation and Positioning of Services
- 3. Marketing Mix in Service Marketing:** Product, Price, Place, Promotion, People, Physical Evidence and Process Decisions
- 4. Designing a Service Strategy:** Service management Process; Internal, External and Interactive Marketing Strategies
- 5. Managing Service Quality and Productivity:** Concepts, Dimensions and Process; Service Quality Models (Gronnos and Parsuraman) Application and Limitations, Productivity in Services, Customer Focus
- 6. Applications of Service Marketing:** Marketing of Financial, Hospital, Health, Educational, Tourism, Telecom and IT, and Marketing for Non Profit Organizations and NGOs.

Text Readings

1. Christopher H. Lovelock, “**Services Marketing**”, New Delhi: Prentice Hall of India, 3rd Edn., 1996.

Suggested Reading

1. Ravi Shankar, “**Services Marketing**”, New Delhi, Global Press, 2nd Edn., 1998.
2. V.A. Zeithamal and M.J. Bitner, “**Service Marketing: Integrating Customer Across the Firm**”, McGraw Hill, 2002.

IM 808F/ FT 404 FA

BANK MANAGEMENT

Course objective:

The course aims at developing understanding about the various functions operations and activities of banking institutions. The course also covers application of basic finance concept to management of Indian banking institutes

COURSE CONTENTS:

1. Bank's role as financial intermediaries, Basic Principles of Banking
2. **Evaluation of Bank Performance:** Introduction and analysis of financial statements of banks operating in India. Non-interest incomes and non-interest expenses in Indian banks. Key performance indicators for Banks CAMELS Ratings, alternative models of bank performance.
3. **Bank Customer Relationship:** Bank customer, Forms of bank customer relationship. Types of customer and their accounts. Bank's duties and rights, Termination of bank customer relationship.
4. Some Important Legal Provisions Relevant for Bankers.
5. **Sources of Bank Fund I-Deposits and Non Deposits:** Basic Concepts, types of Deposits, Deposit insurance, Deposit pricing, Non-deposit sources. Nomination facility of deposit accounts. Reserve requirement and computation of NDTL for banking system in India, Non deposits sources for banking system in India.
6. **Source of Bank Fund-II Capital:** Function of bank capital, Bank capital standards, Basel Committee.
7. **Use of Bank Fund-I Lending:** Purpose, security and modes of credit delivery, Broad steps to credit analysis, risk classification criteria, Fixed vs floating rate, Legal Aspect of Lending. Prudential norms, Loan sales.
8. **Use of bank fund II-Investment:** Basic concepts, VaR, Banks investment portfolio in India.
9. **High Tech Banking:** E Payment system and electronic banking
10. **Retail Banking:** Innovation in products and services in banking.

BOOKS:

1. "Management of Banking" - S. Scot McDonald and Timothy W. Koch, Thomson.
2. "Management of Banking and Financial Services" Justine Paul and Padmalatha Suresh, Pearson Education.
3. "Financial Institutions and Markets" L.M Bhole, Tata Mc Graw Hill Publishing Company, New Delhi.
4. "Bank Financial Management" S N Swastikar, Taxmann Publication Pvt. Ltd.

IM-808H/FT-412H
Labour Law

COURSE OBJECTIVES: The course is based on various important provisions of labour laws. The aim of the course is to give the students knowledge of various labour laws and its practical aspects, which will make them capable to handle the matters in practical business life.

COURSE CONTENTS

• **Industrial Disputes Act, 1947**

Introduction, meaning and definitions of important terms

Authorities under the act and their duties and powers

Reference of disputes to the authorities

Procedures for disposal of disputes, award and settlements

Provisions regarding strikes, lockout, layoff and retrenchments

Provisions relating to closure of undertakings

• **The Factories Act, 1948**

Meaning and definitions of important terms

Concepts of manufacturing process and occupier

Provisions relating to health, safety and welfare

Working hours and employment of women and young person

Special provisions relating to hazardous process

• **The Payment of Wages Act, 1936**

Definitions of important terms

Provisions relating to applicability of the act

Responsibility for payment of wages

Deductions, which may be made from wages

• **The Minimum Wages Act, 1948**

Objects and applicability of the act

Important definitions

Concept of minimum wages and relevance of paying capacity

Fixation and revision of minimum wages and its procedure

Advisory board and misc. provisions

- **The Trade Union Act, 1926**

- Objectives and important definitions**

Provisions regarding registration of trade unions

Funds, office bearers, membership rights and privileges

Alteration and change in name etc. and provisions regarding dissolution of trade unions.

- **The Workmen's Compensation Act, 1923**

Meaning, objectives and important definitions, Concept of “arising out of” and “in course of employment” and liability of employer in such cases, theory of notional extension of time and place, Concept of permanent and temporary disablement and liability of employers, Concept of occupational diseases, personal injury and accident and liability of employers in such cases., Remedies of employer against strangers, Provisions relating to compensation and responsibility of employer

- **An introduction to misc. Labour Laws**

The Payment of Bonus Act, 1965, The Payment of Gratuity Act Act, 1972, The Contract Labour (Regulation & Abolition) Act, 1970, The Employees State Insurance Act, 1948, The Employees Provident Fund & Misc. Provisions Act, 1952, The Industrial Employment (Standing Orders) Act, 1946,

Readings: A Hand book of Industrial Law: N. D. Kapoor

Industrial Laws: J.K. Bareja

Labour and Industrial Laws by P.K. Padhi

Study Material of The ICSI

References: Labour Laws: P.L. Malik

Bare Acts

IM- 810 F/FT-407 F
PERSONAL FINANCIAL MANAGEMENT

Course Objectives:

To acquaint the students with the basic understanding of all personal financial planning related concepts and procedures and programs. Also to have understanding about insurance and its applicability in personal financial planning.

Course Contents:

1. Personal Finance:
 - Introduction
 - The Goal And Steps Of Personal Planning
 - Personal Financial Statements
2. Models Of Personal Finance:
 - 4 Stroke Model
 - Stair Case Model
 - Earning –Expenses Model
3. Managing Expense Mix: Personal Expenses, Personal Investment And Personal Charities
4. Principles And Importance Of Insurance In Personal Financial Planning
 - Principles Of Insurance
 - Principles Of Life Insurance: Uberrima Fide And Insurable Interest
 - Various Types Of Insurance: Their Importance In Personal Financial Planning, Their Characteristics, Corollaries Of Indemnity
5. Plan Of Life Insurance: Premium Computation, Surrender Value Computation, And Loanable Amount Computation.
6. Non Life Insurance: Fire, Marin, Moto, House Holds, Health, Etc. And Their Importance In Personal Financial Planning.
7. Claim Management.
8. Managing Personal Taxes: IT, Wealth Tax And Property Taxes Etc.
9. Managing Fixed Invest: House Buying, Bond Buying, Etc.
10. Consumer Credits, Credit Cards, Auto And Consumer Durables Loans And Personal Loans And Their Planning.
11. Some Special Schemes: Post Office Schemes, Government Schemes, Etc.
12. Cases In Personal Financial Management.
13. Presentation Of Projects.

Reference:

1. Personal Financial management Volume I, II, III by ICFAI
 2. Planning for Retirement by IIBF
 3. Insurance products and Services by IIBF
 4. Fundamentals of Insurance by P.K. Gupta, Himalaya Pub.
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IM - 810FM / FT -411FM

PERSONAL FINANCIAL MANAGEMENT

Course Objectives:

To acquaint the students with the basic understanding of all personal financial planning related concepts and procedures and programs. Also to have understanding about insurance and its applicability in personal financial planning.

Course Contents:

I. Personal Finance: - Concept. Goal and steps of Personal finance, Present Economic and Financial environment, Statement & record keeping of Personal finance, Personal Budget.

II. Models Of Personal Finance: 4 Stroke Model, Stair Case Model, Earning –Expenses Model

III. Risk: - Concept of risk, Types of risks and individual's risk management

IV. Tools for Personal Financial Management:- Expense sheet, Calculation of income level, Calculation of expenses

V. Principles And Importance Of Insurance In Personal Financial Planning: Principles Of Insurance, Principles Of Life Insurance: Uberrima Fide And Insurable Interest, Various Types Of Insurance: Their Importance In Personal Financial Planning, Their Characteristics, Corollaries Of Indemnity

VI .Managing Investment:- Understanding Investments, Investment return & security.

VII. Personal debt management:- Loan, housing loan, personal loan and other loans, repayment period, monthly installment, interest frequency

VIII. A person's financial net worth:- Net worth, Managing assets and liability, Taxes and tax planning

IX. Personal finances:- Teaching children, Creating savings account, lower bad debt , insurance policies.

X. Some Special Schemes: Post Office Schemes, Government Schemes, Etc.

Reference:

1. Personal Financial management Volume I, II, III by ICFAI
 2. Planning for Retirement by IIBF
 3. Insurance products and Services by IIBF
 4. Fundamentals of Insurance by P.K. Gupta, Himalaya Pub.
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IM - 810HM / FT -411 HM

HR FOR BUSINESS EXCELLENCE

Course Objectives: The Objective of the course is to acquaint students with the importance of HR role in business excellence and to offer insights into various mode of business excellence.

Course Content

- 1.Theories Of Innovation, Innovation V/S Kaizem, Team & Its Types, Team Building & Its Process, Resistance To Team Building, Performance Evaluation For Teams, Teams V/S Groups, Small Group Activities (SGA) Like Quality And Kaizem Group
- 2.Total Quality Management: History & Philosophy Of TQM, Total Quality As A System, Step By Step TQM Implementation Process, ISO 9000 & ISO 14000 Process Implementation & Obtaining Certification, Malcon Bridge Award Criteria, Demings Award, Rajeev Gandhi National Quality Award
3. Problem Solving Tools & Business Process Re-Engineering (BPR): 7 QC Tools, BPR Meaning, Concept, Methodology & Its Implementation Of HR Intervention In BPR
4. TQM in Service & Manufacturing Industries: Understanding the Different Processes & Designing TQM Models For These Industries
5. Turnaround Mgmt. : Meaning, Types, Methodology & Implementation, Barriers To Turnaround & Methods Of Minimizing Them.
6. Change Mgmt.: Theories Of Change, Leading To Change, Resistance To Change, Change Proneness, Visioning, HRM & Culture Of Change

Text Readings:

1. Pradip N. Khandwala, “Turnaround Excellence Theory & Cases”, Response Books, New Delhi,2001
2. Lt. Gen. Ahluwalia J.S (Ed.), “TQM: The Transforming Role Of Quality In A Turbulent World. ”, New Delhi, Tata Mcgraw Hill, 1997
3. Madhukar Shukla, “Competing Through Knowledge”, Response Books, New Delhi,1999
4. Knouse B Stephen & Milwaukee Klisconsin, “Human Resource Management Perspectives On TQM: Concepts & Practices ”

Suggested Readings:

1. Anthony R. Montbellow, “Work Teams That Works”, Bestsellers, Usa,1996
2. Charles N Weaver , “Managing The Four Stages Of Tqm: How To Achieve World Class Performance Asqc Quality Process”

IM-810M/FT-405M
PRODUCT AND BRAND MANAGEMENT

Course Objectives:

The objectives of this course are to discuss various concepts involved in learning Product and Brand Management for the success of any concern, to understand how the product manager implements business strategy in the marketplace and to acquaint the students with the process and strategies of new product management. The course also explores the methodology for managing the cohesive development and marketing of new products from idea inception to product discontinuation.

COURSE CONTENTS:

- 1. Product Management: Introduction and concept of product, Product components, objectives of Product Management, Roles of Product Manager.**
- 2. Product mix and product line decisions, Growth strategies for the FMCG.**
3. Routes of new product development, Process of new product development, the latent factors behind marketing success and failure of any new product, Product elimination strategies
- 4. Brand Management:** Branding concept, Benefits of Branding, Brand perspectives, Characteristics of a Brand, Branding decisions
5. Brand Personality: Introduction, concept Types and brand personality scale
6. Brand Extension, Types of Brand extension, Strategies for successful brand extension
7. Brand positioning and repositioning
- 8. Global branding: Concept, advantages and disadvantages**
- 9. Brand equity: Introduction and concept of brand equity, Cost based, price based, customer based Methods**
10. Brand Loyalty: Concept, Loyalty pyramid
11. Brand management and the future
12. The Six myths of Branding

Books recommended:

1. Marketing Management by Philip Kotler.
2. Product Management by R. Majumdar
3. Strategic brand management by Kevin Lane Keller.

4. Brand Management by Y.L.R.Moorthy.
- **Collateral Readings for Brand Management:**
Doyle, P. (1989), “ Building successful brands : The strategic options” , Journal of Marketing Management.

Kapferer, J.- N.(1997), Strategic Brand management.

Brand Equity of “The Economic Times” newspaper.
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International Institute of Professional Studies

Devi Ahilya Vishwavidyalaya, Indore

MBA (TOURISM)

Semester III

(July – Dec. 2008)

TA - 302

Subject- Cargo and Airline management

Course Objective

Aim of the paper is to make students aware of the policies and working of airline industry. Also keep them updated of the latest happening in aviation, government policies, agencies etc.

Examination:

End Semester Examination	60 Marks
Internal Assessment I	20 Marks
Internal Assessment II	20 Marks

Course Contents

1. Introduction-aviation, airline working, history of aviation
2. Airport handling, YMS-CRC, check-in formalities, documentation
3. Abbreviations pertaining to airlines, phonetics, agencies related with aviation
4. Regulatory authorities in aviation- ICAO, IATA, DGCA, AAI- (IAD, NAD)
5. Load and trim sheet basic understanding of weight control
6. Baggage handling-PIR, Lost luggage handling
7. Service control, seat allocation, coupon handling, post flight documentation
8. Special handlings, UM, HUM, YP, WCHC ETC
9. Ramp equipments- trolleys, step, conveyor belt, gpu. Ramp safety and precautions.
10. Air Cargo-AWB, Dangerous goods, capacity and configuration live stocks etc.
11. Aircrafts types, maintenance scheduling
12. Coordination-sales, Accounts, Reservation, ATC etc for flight operation.

Ref Books-

IATA AIRPORT HANDLING MANUAL

FLIGHT SAFETY MANUAL-IATA

AVIATION WEEKLY

JANES WEEKLY



International Institute of Professional Studies

Devi Ahilya Vishwavidyalaya, Indore

MBA (TOURISM)

Semester III

(July – Dec. 2008)

TA – 301b
French Language II

Course Objective

Our objective consists of the following:

- A) Linguistic: to learn basic French grammar and vocabulary.
- B) Communication: to enable students to introduce oneself and converse spontaneously in given social settings.
- C) Civilization: to introduce some aspects of France and its people and culture.

Examination

End Semester Examination	60 Marks
Internal Assessment I	20 Marks
Internal Assessment II	20 Marks

Course Contents

1. Inspector Darot's Investigation
2. A Busy Pdg.
3. The Mysterious Disappearance
4. The Investigation Begins
5. The Investigation Continues
6. A Dramatic Turn Of Events

Books: Le Nouveau sans frontiers



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TA 304
International Ticketing

Course Objective

This subject will provide the basic skills to enable the students to accurately issue and price the most common type tickets.

Examination

End Semester Examination	60 Marks
Internal Assessment I	20 Marks
Internal Assessment II	20 Marks

Contents

- 1 International City, Airport & Airline Codes
- 2 IATA Geography, Global indicator & Air itinerary
- 3 How to refer OAG flight guide and PAT
minimum connecting time & Flight routing,
- 4 How to see fare. Fare rules & special fares
OAG & PAT book
- 5 Mileage system
MPM, TPM, HIP, Stopovers
- 6 What are International Sales indicators ?
- 7 What is PTA & MCO
- 8 Fare construction
One way, Round Trip, Round the world fares and Mix class journey
Side Trip and open jaw, Back haul check
- 9 Issuance of International Air Ticket,
Manual entry & Automated Ticket Entry
IROE & LCF-calculation. How to make changes in ticket? Reinsurance
of International AIR Tickets. ? Voluntary and Involuntary routings. With and without
changes in fare and how to do Re-routing

Text Book: Tourism and Travel by Dr. Jag Mohan Negi
Recommended Reading: OAG Flight Guide and PAT



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TA-310
Consumer Behaviour

Course Objective :

The consumer has become sovereign, a fact which has been recognized by the marketers. The students are explicitly required to acquire knowledge of such in order to develop effective strategies of influence and shape the behavior in order to achieve their organizational targets. The aim of teaching this subject is to acquaintain the student with behaviour of rural and urban consumers.

Examination

End Semester Examination	60 Marks
Internal Assessment I	20 Marks
Internal Assessment II	20 Marks

Course Contents:

- 1 Introduction to Consumer Behavior, Definition, Models
- 2 Consumer Research
- 3 Market Segmentation, Targeting & Positioning
- 4 Consumer Needs & Motivation
- 5 Consumer Involvement & Perception: Information and its processing, types of consumer involvement, Perception – process, exposure attention and comprehension, Semiotics
- 6 Consumer Learning: Meaning, Classical conditioning, Operant Conditioning & Behavioral Learning
- 7 Consumer Motivation & Affect: Meaning, concept, types and systems, theories
- 8 Consumer Beliefs, Attitudes & Behaviors: concepts & formation
- 9 Consumer Attitude, Belief & Behavior Change: Decision-making Path,
- 10 Consumer Environment: impact of culture, reference group, family, social class and situational influences of rural and urban consumers
- 11 Consumer Decision Making Process: Problem Recognition & Search, Evaluation & choice, Post acquisition process.

Text Readings:

- 1 Consumer Behaviour By Henry Assael.
- 2 Consumer Behaviour By Shiffman and Kanuk

Suggested Readings:



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- 1 Consumer Behavior – James Engel, Roger Blackwell & Paul Miniard
- 2 Consumer Behavior – Mowen & Minor

TA-307
Hotel Operations & Management

Course objective

Examination

End Semester Examination	60 Marks
Pre Mid Term Examination	15 Marks
Mid Term Examination	15 Marks
Internal Evaluation	10 Marks

Course Contents

1. **Overview of Hotel Industry : brief history – last 70 years, Types of hotels – based on location, facility, size, clientele etc, Role of hotels for growth of Tourism Industry**
2. **Organization of Hotel Operations: Revenue producing departments, Ancillary and supporting departments, Sample organization charts and roles of major designation**
3. Front Office Operations: Layout, Front Office Activities – Reservation, Registration, Information, cash, and Lobby management
Inter-departmental relationship of front office with other department
4. Food & Beverage Operations: Types of F & B Outlets, Types of meals, menus, cuisines, and set-ups, F&B Glossary of terms, Brief introduction about food production methods and equipments
5. Other areas of Hospitality operations: Housekeeping and property management, Marketing and business promotion, Administration and HRD
6. Personality skills required for hospitality operations: Personal hygiene and grooming, Communication and interpersonal skills, Sales and promotional skills
7. Computerization in hotel industry: How computers help to enhance services, Software and packages available for hospitality industry, Networking – how it improves services



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Electronic Commerce For Tourism

Teaching Methods

1. The conceptual understanding through class room studies will be imparted it will emphasized to provide the participation with the skills to cope up with challenges & problems of business decisions,
2. The discussions in the class will be carried out to identify the practice used for various business decision problems. Clarify what is observable and hypothesized as to why certain decision is taken in industry or organization.
3. Cases & discussion will be taken up as scheduled.
4. Project is to be taken up by the students as per guidelines provided.
5. Individual assignment is to be carried out by students.

Class Approach and Student Evaluation

Midterm Exam	40
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Class participation

Will be evaluated on the basis of understanding and using assigned reading and study findings, contributing to insight on analysis and action recommendation for the case or topic being discussed, and taking into account others' inputs. Excessive absence or tardiness from class or other disregard for professional behavior will adversely affect this grade. To get a good grade in participation students must verbally contribute, discuss and raise question in class. Students are encouraged to discuss material for classes & papers, but are individually responsible for all final products including examinations and the case paper. The team project is a team grade. Participation is also influenced by active contribution to the team project.

An Individual Case Study

Papers are to "mimic" regular HBS and IIPS case studies. the papers are to take into account not only the class material to that point, but also the class discussion and insights after the class. Specific criteria will be presented in class during the first two classes. Students will be provided case studies in advance in course pack itself. Students are expected to read and analyze case there own and then discuss in there groups. Submission of written report of case has to be done by group wise before the discussion in class. Details are given below. Groups for case will be declare in class.



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Describe the company's business into 25 words or less.

1. Give industry background: growth, number of firms, major players, etc.
2. Give background of company: age, size, growth, and market.
3. Analyze the porter five forces, SWOT and others relevant framework, only if appropriate
4. Investigate the competitive financial situation; ratio analysis on key operating performance measures (inventory turnover, sales/employee, ROA, etc.) compared to industry values.
5. Discuss key management challenges: today, a few year ago, a few years in the future similar class. What questions would you ask (and how would you answer them)? What would be the learning points?
6. Find major facts related to decision area in the case.
7. Find Issues involved with decision area.
8. Propose solution and strategy for implementation.

Project

Design a project in your favorite functional area that should be based on this module. Preferably project may be based on some data analysis. The objective should be detailed enough to cover all aspects of market research based decision-making. If you need data from secondary source to substantiate objectives and analysis please refer online data base sights as Indiainfoonline.com or indiastate.com or any other website. Project report should cover following.

1. Introduction to problem.
2. Review of literature.
3. Objective
4. Marketing decision-making and use of technical for the same.
5. Source of data
6. Procedure for data collection if any
7. Listing of data and presentation of data
8. Justification for selecting analysis tech. And software used
9. Relevant output for analysis.
10. Interpretation of result.
11. Discussion of on above result on the context of objectives.
12. Constraints and assumptions if any

Each group would submit the project report on the **(date)**. Groups for project will be declared in the class later on

Course materials

There is no course pack for the class. All reading will be available online the detailed reading are being assembled now and links identified. Some readings may be added to te syllabus; for some cases area articles about a company will be used in lieu of case- they will be treated the same way.



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Students are expected to visit the websites of all case study & lecture reference companies prior to class discussion.

There are books for the course:

- Frontiers of electronic commerce: Ravi kalakota
- Road map success in ebuisness: Ravi kalakota

Examination and other grading material will not depend on these optional texts. These are listed so that a serious student can obtain additional material relevant to the course subjects. Other texts may be recommended during the semester.

Week of	Topics
[Week 1]	<h3><u>Introduction</u></h3> <p>Course overview & administration. Scope & content of syllabus. Introduction of Instructor. Discussion of assignment, grading criteria, case paper & exams. Overview of Internet, e-comm. (EM) and e-Biz (EB), as well as other aspects of EC. Review of history of the Internet & EC/EB.role of technology in commerce and strategic systems. Keys frameworks for course. Key vocabulary. Introduction to EC language & tools.</p>
[Week 2]	<h3><u>EC Sites: business perspective</u></h3> <p>Discussion of sites “progressions” and typical sites, relative to a business’ intent and technology implication. The elements of a “business model” as well as the spectrum of EC business models observed will be discussed. Relation of EB/EC to value chains and extended enterprise models.</p>
[Week 3]	<h3><u>EC Sites: Technology perspective</u></h3> <p>Organizing principle and major network and internet technology components, and ISPs, portals, search engines, and other features. E-comm “language.” Mechanics of creating Web pages and launching them in to cyberspace. The technology, software, network connection, and business design will be discussed for several business models.</p>
[Week 4]	<h3><u>Model Components: Sell Sides, CRM, and Auctions</u></h3>



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	<p>This module will discuss how various companies are positioning them to use EC/EB in their marketing and sales operation. Relevant product suites for these types of operation will be discussed. Customer relationship management (CRM) will also be discussed together with the subject of data mining. Impacts on the channels and distribution chains will also be discussed.</p>
[Week 5]	<h3><u>Model components: buy side, SCM, and integration</u></h3>
[Week 6]	EC/EB for tourism industry
[Week 7]	Impact of internet on marketing.
[Week 8]	<h3><u>EC Business: Linkages with strategy</u></h3> <p>How do existing business cope with the establishment of EC in their industries? What steps do mature companies take to create and implement an EC strategy? What factors are in the way? What strategic questions arise and how should they be answered? Various rules of EB will be discussed and related to performance parameters. Performance metrics for EC/EB will also be discussed. EC/EB business will also be discussed from the shareholder and stock market perspective.</p>
[Week 9]	<h3><u>Security and other issues surrounding electronic commerce</u></h3> <p>Key issues surrounding EC will be discussed. Specific focus will be on security and "hacker proof" sites, privacy, authentication, and safeguards, hence, a discussion on protection of company system and information by firewalls and security-limited access. Solutions to security problems with various hardware and software configurations will be covered. Protocols and features of EC software such as browsers that allow heightened security will also be discussed.</p>
[Week 10]	<h3><u>Knowledge management</u></h3>
[Week 11]	<h3><u>EC Sites: Design Criteria and Layout</u></h3> <p>What factors lead to successful EC sites? What are the various evaluation criteria? How can you become a "destination" site? Several specific areas will also be discussed relative to site design, including collaborative filtering versus structured filtering, search engine bias, and common gateway interfaces (CGI). These factors are particularly instrumental in site functionality and relative success. Aesthetic factors will also be highlighted.</p>
[Week 12]	<h3><u>Html & xml</u></h3>



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[Week 13]

Html & xml

End of Syllabus.

RESEARCH METHODOLOGY

Objectives:

1. To familiarize students with different aspects of research in the field of management.
2. To enable the students to understand research methodology and commonly used statistics.
3. To equip the students for conditioning research in the area of management.

Course Contents:

1. Introduction to enquiry /ways to knowing, nature of scientific methods, theory and facts, concepts and constructs, variables.
2. Research questions, selections and statements of problem, review of related literature, writing the objectives of research study, formulation and type of hypothesis, selection of sample.
3. Survey, historical and experimental research, qualitative and quantitative research, tools, types of tools, standardization of tools.
4. Qualitative and quantitative analysis, common statistics; frequency tables, central tendencies, measurement of variability, correlations, parametric and non parametric statistics, level of measurement.
5. Writing a research report: Structure and Organization, language, presentation, etc.

Books Recommended:

1. Kerlinger, F.N: Foundations of behavioral Research, Surjeet Publications, New Delhi, 1983.
2. Gay L R and Diehl, P L: Research methods for Business and Management, Prentice Hall international.
3. Aaker D.A. Kumar V., George S.D: Marketing Research, John Wiley & Sons Inc, 1997



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MARKETING STRATEGIES

Course Objective

In today's competitive environment it has become difficult to build an identity for the product/brand in the market. This course aims at developing strategic thinking in students in order for them to successfully position their product/brand in the market and become successful marketing professionals.

Examination:

Examination

End Semester Examination	60 Marks
Internal Assessment I	20 Marks
Internal Assessment II	20 Marks
(2) External Assessment (60 marks)	

Teaching Plan

Hrs.	Topic	Assignment
02 hrs.	Introduction to corporate plan, concept of SBU and profit center.	
02 hrs.	Marketing Analysis, SWOT.	
05 hrs.	Framework to improve marketing planning – BCG matrix, market – product grid, GE model.	
02 hrs.	Strategy, Formulation & Implementation.	
02 hrs.	Strategic marketing planning process.	
08 hrs.	Strategies for leaders, followers, nichers and challenges.	
08 hrs.	Product and new product strategies, Branding Strategies.	



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- 05 hrs. Pricing Strategies.
- 04 hrs. Physical Distribution Strategies.
- 04 hrs. Internet as Strategic Marketing tool.
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TA 201:FRENCH LANGUAGE I

Objective of course

1. Our first objective consist of the following:
Linguistic: to learn basic French grammar & vocabulary
Communication: to enable students to introduce oneself & converse spontaneously in given social settings
Civilization: to introduced some aspect of France its people & culture
2. Our second objective is to emphasize & develop four linguistic skills which further enhance the course: (1) Written & Oral expression (2) Written & Oral Comprehension

Story: A spring time in Paris and an adventure in Burgundy.

- | | |
|----------|---------------------------------------|
| Lesson 1 | meeting and introducing each other |
| Lesson 2 | Striking a friendship |
| Lesson 3 | Expressing one's likes and dislikes |
| Lesson 4 | Expressing agreement and disagreement |
| Lesson 5 | Expressing surprise |
| Lesson 6 | A countryside house |
| Lesson 7 | Lunch at Broussac |

Vocabulary

- Professions and nationalities
- Day to day life and hobbies
- Physical and psychological descriptions
- Cardinal numbers
- Lodging and getting food
- Clothes and colors

Grammar

- Definite and indefinite articles
- Gender and number of nouns and adjectives
- Masculine and feminine forms
- Interrogative and negative forms
- Conjugation of verbs in the present tense
- Portative articles
- Demonstrative and possessive adjectives

Phonetics

- Intonation
- Linking words
- Oral and nasalized vowel sounds
- Intonation
- Semi vowels



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Communication

Meeting and getting to know each other
Inviting someone and replying
Describe people
Giving order and expressing obligation
Requesting and ordering

Civilization

Paris: Monuments and public places
The life of four Parisians from different professions
A French region: The Burgundy
Daily life in countryside



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TA 202: Cargo Management

Objective of the course

To enhance the knowledge of tourism students about the cargo movement (Import-Export) and their legal formalities so as to successfully deal cargo along with passengers in all modes of transportation.

Hrs	Contents	Activities
03	I. Introduction of Cargo management Export-Import (a) procedure.	
04	(b) Documentation: Post and pre Export-Import (c) Clearance (d) Bank negotiation of documents (e) Units-100% Export oriented units, free trade zone, Export Processing zones, software technology park, electronic hardware technology park	Exercise
04	II. International commercial terms: Free on board, cost insurance and freight, cost and freight, etc.	Presentation
	Class test (I, II)	
03	III. Cargo liabilities and insurance: Marine insurance, general cargo insurance and relevant clauses, Mutual and liability insurance's claims & procedures.	
04	IV. Multimodel transportation: containerization, combined transport, Trade: classification, Problems. Distribution channels, value added chain. Logistic management: classification models	Exercise
03	Physical infrastructure for multimodel transportation, container freight station, dry port	Assignment
03	Packaging, palletization and storage of cargo, handling and transportation of dangerous cargo, storage and warehousing in India	Exercise
	Class test (III, IV)	
04	V. Introduction Foreign trade licenses: Duty exemption pass book scheme, Export promotion capital good schemes, special Import license, Duty drawback, Open general license, foreign license authority	Presentation
04	Transport liabilities: multimodel transportation of goods act, Inter model transport state practice, carriage of goods by sea,	Assignment



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	<u>air, waterways and road.</u> Warsaw convention, Hague convention, Hague-visby rule, Hamburg rule	
04	Sea-air cargo, documents in three modes (Airways bill, Railway Receipt, lorry receipts, etc.) General terms (less than container load, full container load, consolidation, freight forwarding, etc.) Electronic data Interchange in Transport management.	Exercise
Class test (v)		

Recommended Reading: EXIM (magazine)



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TA 205:Tourism Product in India

Objective of the course

The main objective of this course is to expose students to the cultural, natural and historical heritage of Indian order to widen their view towards travel and tourism. this knowledge will help them in their future as professionals in travel & tourism trade and make India a popular tourism destination.

Class Exercise

Students will be allotted rigorous assignments and exercises on topics. Students have to submit write-up and/or make presentation on topics as required. They are advised to be regular and pay attention to the environment.

Hour s	Contents	Assignments
02	Defining Tourism Products, their characteristics & types in India	
02	Indian Architecture: Temples, Churches, stupas & mosques-their structure, distinguishing characteristics, examples, their present condition, way &means to improve & promote them	Presentation
02	Indian Classical Music: (I) Vocal- origin, evolution, styles, ragas, gharanas, instruments, festivals& events. (ii) Instrumental- origin, evolution, styles, ragas, gharanas, instruments, festivals& events	Presentation
02	Indian Sculpture & paintings: Origin, history, evolution, characteristics, styles, and examples.	Presentation
02	Dances of India: Classical Dances Folk dances, Dance Drama- history, characteristics of each, dance festival & events, ways & means to promote	Presentation
02	Yoga, Meditation & Ayurved: Yoga-concepts, history asanas, benefits (ii) Ayurved-history, concepts characteristics, uses, centers	Presentation
02	Religion: History, evolution, (i) Hinduism (ii) Buddhism (iii) Jainism (iv) Sikhism (v) Zoroastrianism (vi) Christianity (vii) Islam	Presentation
02	Fairs and Festivals of India	Presentation



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02	Indian Cuisine	Presentation
02	Shopping & Souvenirs	Presentation
02	Beaches of India/ beaches tourism & Island tourism	Presentation
02	Adventure Sports in India / Adventure Tourism	Presentation
02	Wildlife of India: National parks, Sanctuaries, game Reserves- Setup, administration and Management, present state & promotion	Presentation
02	Famous Museums & Art Galleries	Presentation
02	Famous Forts & palaces of India	Presentation
02	Indian Mythology	
01	Sacred Trees of India	
01	Rites, Customs & Rituals	
02	World Heritage Sites in India	Presentation
02	Famous Trains of India: History, Routes, importance	Presentation
02	Eco-tourisms & Rural tourism	Presentation
01	Tribes of India	Presentation

TEXT BOOKS

Tourism product of India- Dr L.C. Gupta & Dr.S. Kasbekar

Recommended Reading

Outlook traveler
Encyclopedia
Reader's Digest

Recommended websites

www.khoj.com
www.yatra.com
www.Indiatravel.com



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Semester II

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BUSINESS ECONOMICS

Objectives:

To Impart Basic Knowledge Of Macro Economics, Which Is Necessary For Management Students.

Course Contents:

1. **Introduction** - Macro Economic analysis, Micro and Macro Economics, goals of macro economic policies, stock and flow variables, exogenous and endogenous variables, and EX- ANTE and EX- POST concepts.
2. **Measurement of Macro Economic Aggregates** - National Income and its variants, Real & Nominal GDP, Measures of national products and methods used, National income and Economic welfare, National income in India, its composition, trend & structural analysis.
3. **National Income Determination** - National income determination models under open and closed economy Aggregate demand and supply, Calculation of multiplier, simple investment multiplier, government expenditure, tax, balanced budget and foreign trade multiplier, Super multiplier, limitations of multiplier.
4. **Consumption & Savings function** - Keynes' psychological law of consumption, Post Keynesian income consumption hypothesis, Trends of consumption and savings in Indian economy.
5. **Investment Function** - Investment, its types, factors affecting investments, MEC and factors affecting MEC, Accelerator principle. Investment trends in Indian economy, measures to stimulate public and private sector investment in India.
6. **Theories of Employment** - Classical theory, Say's law of market, Keynesian theory, overall equilibrium in factor, goods and assets market.
7. **Money and Interest Rates** - Money and its role, measures of demand and supply of money, money multiplier, interest rate and IS- LM framework
8. **Inflation and Deflation** - Types of inflation, Inflationary gap, causes and consequences of inflation, Philips curve, Reflation, Deflation; trends and measurements of inflation in Indian Economy.
9. **Monetary and Fiscal Policies** - Objectives and Instruments of Monetary and Fiscal Policies, Analysis of the policies in Indian Economy.



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10. Basic Macro Economic concepts for Open Economy - Balance of Payments, Current and Capital account, Official reserve account, Balance in BOP, Analysis of India's BOP Position.

11. Business Cycles - Concept and phases of Business cycles, Monetary and Non Monetary theories of business cycles.

Books Recommended:

1. G. Mankiw- Macro Economics
2. Dornbusch & Fischer- Macro Economics, 9th Edition
3. Fred Gothiel – Principles Of Macro Economics
4. Edward Shapiro – Macro Economic Analysis
5. Sunil Bhaduri – Macro Economics
6. M.C. Vaish – Macro Economics

TA 207:Travel agency and Tour Operation Management

Objective of the course

Travel agency & tour operation are integral part of travel & tourism industry without which both the aspects would not be possible. In this the students are required to learn the ropes of the industry in order to facilitate the procedure. Many students are likely to pursue their career in this field and hence it becomes imperative for them to get acquainted with both travel agency & tour operation business.

Class Exercise

Students will be allotted rigorous assignments and exercises on topics. Students have to submit write-up and/or make presentation on topics as required. They are advised to be regular and pay attention to the environment.

Hours	Contents	Assignments
02	Introduction – segments of travel industry, international travel requirements	Assignments
06	Introduction to travel agency &tour operation business, history, types of agencies, types of organization – proprietorship, partnership & corporate, organizational structure	Assignments
06	Starting level agency: Market Research & provision of investment, IATA rules and regulation, IATA requirements and criteria for approval, approvals from various government and non-government bodies like ministry of tourism & transport, ministry of External Affairs, Railways, civil Aviation etc.	Assignments
01	Function of a travel agency: i. Travel information	Assignments



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02	ii.	Documentation: (a) passport- types & requirements (b) Visas- types & requirements	
03	iii.	Accommodation: classification, rates & terms, room categories, room rates categories, reservation.	
10	iv.	Domestic Ticketing: issuance of a ticket, PTA, sales report etc.	
	v.	Cruises: types, procedure	
01	vi.	Rail Travel: Eurail, Britrail etc.	
02	vii.	Product Development: preparation of itineraries, planning & costing	
05	viii.	Client Service	
01	ix.	Tour Operation Techniques	
02			

TEXT BOOKS

Travel Agency & Tour Operation: Jagmohan Negi

TA- 20 FINANCIAL MANAGEMENT

Course Objective:

This course is designed to enhance the understanding of the fundamental concepts of finance with basic focus on basic techniques like time value of Money, Capital Budgeting and the Cost of Capital, Working Capital Management, etc.

Examination

End Semester Examination	60 Marks
Internal Assessment I	20 Marks
Internal Assessment II	20 Marks

Course Contents:

1. FINANCIAL MANAGEMENT: AN INTRODUCTION – Concept and Nature of financial management , Goals of Financial management , Finance function, Scope of Finance. Organization of Finance Function, Relationship of Finance Function with other disciplines.
2. RECEIVABLES MANAGEMENT: Objectives, costs, benefits, Credit policies. Collection policies. Numerical Problems
3. INVENTORY MANAGEMENT: Objectives, cost & benefits of holding Inventory. Techniques: ABC system, EOQ model, Numerical problems
4. CASH MANAGEMENT: Introduction, motives & objectives for holding cash, factors determining cash, Cash Budgeting as management tool, Numerical problems



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5. WORKING CAPITAL MANAGEMENT: Introduction, nature & concepts. Determination of financing mix, Determinants of working capital, Estimation and Calculation of Working Capital, Numerical problems
6. LEVERAGE ANALYSIS: Concept of Leverage, Operating Leverage, Financial Leverage, and Combine Leverage. Importance of Leverages, Relationship of Leverages with Capital Structure, Numerical problems.
7. SOURCES OF LONG TERM FUNDS: Concept, Debt and Equity, Equity and Preference Shares, Debentures, Term Loans, etc. Lease, Hire purchase
8. CONCEPT & MEASUREMENT OF COST OF CAPITAL: Introduction, Concept, Definition & Importance, Assumptions, Cost Of Debt, Cost Of Preference, Cost Of Equity, Weighted Average Cost Of Capital. Numerical Problems.
9. CAPITAL BUDGETING: Introduction, Importance, Difficulties and kinds of CB Decisions, Concept of Time Value of Money, Discounting and Compounding techniques, Basic Data Requirements- Identifying relevant cash flows, Appraisal Criteria's; DCF and Non DCF Methods for Evaluating Projects, Evaluating Mutually Exclusive and Independent Proposals. Evaluating projects with unequal life, Numerical problems.
10. An introduction to Dividend Policy

Books Recommended:

1. Financial Management by Khan & Jain

Reference Books:

1. Financial Management by I. M. Pandey
2. Fundamental of Financial Management; James C Van Horne & John M Wachowicz, Jr
3. Financial Management Text & Problems by M Y Khan & P K Jain
4. Financial Management: Prasanna Chandra
5. www.economicstimes.com, www.sebi.org.in, www.rbi.org.in



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TA- Business Communication & Personality Development

Course Objectives

The main objective of this course is to nurture students into well balanced, positive thinking human beings. The values thereof instilled will aim at developing students into professionals who are capable of facing new challenges and coming out the winners.

Examination

End Semester Examination 60 Marks

Pre Mid Term Examination 15 Marks

Mid Term Examination 15 Marks

Internal Evaluation 10 Marks

Course Contents

1. Communication: meaning, nature, definitions, features, processes, models, functions

Objectives of Effective Communication: information, order, advice, suggestions, motivation, persuasion, warning, education, raising morale, conflicts and negotiation, group decision making

2. Dimensions of Communication: Upward, Downward, Lateral/Horizontal, Diagonal, grapevine, consensus



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Semester II

(July – Dec. 2008)

3. Channels of Communication: Formal, Informal

4. Patterns of Communication

5. Media of Communication: Verbal, Nonverbal

6. Barriers to Effective Communication

7. Listening

8. Interpersonal Communication: Transactional Analysis, Johari Window

9. Business Correspondence: Layout, planning, inquiries and replies, complaints, follow up, circulars, notices, goodwill letters, applications for employment

10. Report Writing, Public Speaking: Speeches and presentations, Interviews, Professional use of the telephone

11. Self Improvement, Developing positive attitudes, Self Motivation, Time Management, Stress management, Modern Manners

Text Books

Business Communication: K.K. Sinha

Business Communication: M. V. Rodrigues

The Art of Effective Communication: Margerison

Suggested Readings

Effective Communciation: Asha Kaul

Managing Time: David Fontana

Managing Stress: David Fontana



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(JULY – DEC. 2008)

ORGANIZATION BEHAVIOUR

Objectives:

An organization is a living organism whose basic component is the individual. The students are required to gain the intricacies of individual behavior in order to function effectively and efficiently in the organization and also avoid potential sources of conflicts which will make their careers interesting and enjoyable.

Course Contents:

1. Introduction to Organization Behavior, Definition, Model, Variables.
2. Foundation of Individual Behavior: Biographical characteristics, ability, personality
3. Perception: Definition, Factors affecting perception, process, social perception, perceptual barriers
4. Values & Attitudes: (i) Value importance, source types (ii) Attitudes- source, types, and theory
5. Motivation: Definition, process, process Theories, Content theories, Motivation Applied- MBO, OB Mod, Goal Setting & Job Design.
6. Learning: Meaning, Definition, Types, Theories of learning, Reinforcement, Techniques, of Reinforcement, Punishment
7. Job Satisfaction: Meaning, Factor Affecting JS & Outcomes of JS
8. Group Dynamics: definition, types, Reason for joining groups, group Development, Group Structure
9. Power & Policies: Definitions, Social Influence, and Tactics of SI. Individual Power, Bases Of Power
10. Interactive Behavior & conflict:
 - A: Intra-Individual conflict- Conflict due to frustration, Goal conflict, Role conflict
 - B: Interpersonal conflict- transactional Analysis, Johari Window
 - C: Inter-group Behavior
 - D: Managing conflict
11. Job Stress: Meaning, Causes, Effect and Coping Strategies
12. Organization Culture: definition, Type, Creating& Sustaining
13. Organization Change & Development: Reason for Change, OD Technique

Books Recommended:

1. Organization Behavior-Stephen Robbins
2. Organization Behavior-Fred Luthans

Reference Books:

1. Management of Organization Behavior-Paul Hersey & K.H. Blanchard
2. Organization Behavior-Nelson & Quick



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(JULY – DEC. 2008)

**-----
TA– 109**

FUNDAMENTALS OF COMPUTER APPLICATIONS

Course Objectives:

The objectives of this course are to introduce the students to the basic concepts of computer. Special emphasis will be laid on helping students acquire a high degree of proficiency in Windows based applications in various functional areas of management.

Examination:

Internal Assessment I- 20 marks
Internal Assessment II- 20 marks
End- Semester Examination 60 marks

Course Contents:

1. Introduction: Course overview and administration. Scope and contents of syllabus. Discussion of assignments, tests and marks criteria.
2. Fundamentals of Computer: Block diagram of the computer Input devices, Output devices.
3. Operating systems: Introduction to operating system, Types of the Operating System, MS-DOS - DOS Features, External and Internal Commands, Working with Files, Working with Directories, Managing Disks, Advanced Command Techniques.
4. WINDOWS: windows operation, File management, Resource location, Managing icons and location, Control manager, Accessories of windows
5. MS – Word (Word Processing): Introduction, Working with Word, Typing and Editing, Formatting Text, Page design and layout, Adding Tables, Using styles, templates and themes, Merging Data and documents, Using Graphs, Advanced features of Word.
6. MS – Excel (Worksheet):Introduction, Working with Excel, Entering Data, Advanced worksheet formatting, Customizing Workplace, Calculation in Worksheets, Adding Charts, Working with lists databases and pivot table, Advanced features of Excel.
7. MS – PowerPoint (Presentation): Introduction, Working with PowerPoint, Adding Text, Expert presentation – building technique, Including Multimedia, graphics and special effects, Customize PowerPoint.
8. MS –Access: Access essentials, Creating and customizing tables, Linking Multiple tables, Using Queries to find and filter data, Designing and using forms, Presenting Data with reports
9. Basic Programming Techniques: Algorithms, Flowchart, Program generation

Text Books

- 01 Computer and commonsense, Roger Hunt and John Shelly
- 02 Using MS- office 2000, Woody Leonhard
- 03 The Computer Guide to MS – Office, Ron Monsfield
- 04 The Complete ref, office 2000, Stephen L. Nelson
- 05 Learn DOS in a Day, Stulz



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(JULY – DEC. 2008)

TA – 106B

MARKETING FOR TRAVEL AND TOURISM

Course Objective:

The objective of the course is to provide an understanding of the Principles of Marketing concepts and their applications in the Tourism Industry. The course provides students with a customer-oriented approach to Marketing in the Tourism Industry.

Examination:

Internal Assessment I- 20 marks
Internal Assessment II- 20 marks
End- Semester Examination 60 marks

Course Contents:

1. UNDERSTANDING MARKETING & THE MARKETING PROCESS: Concept & Scope of Marketing, Marketing Challenges in the Digital Age, Customer Value, Satisfaction, & Retention, Philosophies of marketing management.
2. DEVELOPING MARKETING OPPORTUNITIES: Marketing Planning, Marketing Environment, Marketing Information System, Market Research, Consumer Buyer Behavior: Model and Factors affecting, Segmentation, Targeting, & Positioning
3. DEVELOPING THE MARKETING MIX:
 - (i) Product & Service – Nature & Classification, Branding, New-Product Development & Product Life Cycle
 - (ii) Price – Pricing Considerations & approaches; Initiating & Responding to price changes
 - (iii) Marketing Channels – Channel Design
 - (iv) Promotion – Advertising, Sales Promotion, Personal Selling, Direct Marketing, Public Relations
4. MANAGING MARKETING: Creating Competitive Advantage, The Global Marketplace, Internet Marketing, Communication process. Building customer relationship through satisfaction, value and retention.

Books Recommended:

Principles of Marketing – Philip Kotler
Hospitality Marketing – Wearne & Morrison

Reference Books:

1. Marketing Management by Philip Kotler
2. Doyle, P. (1995), "Marketing in the new millennium", Journal of Marketing.



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(JULY – DEC. 2008)

TA-105

PRINCIPLES AND PRACTICES OF MANAGEMENT

Objectives:

The basic objective of this course is to provide an opportunity for the participants to understand the various methods of management techniques and eventually to develop skills in problem solving and decision making.

Examination:

Internal Assessment I- 20 marks

Internal Assessment II- 20 marks

End- Semester Examination 60 marks

Course Contents

1. Introduction–What is Management, Definition of management, Functions of Management, Principles of Management, Is management Art or Science?
2. Management Thoughts – The Classical School, the Human relation School, the Decision Theory School, The Management Science School, The System Theory School, The Contingency Theory School
3. Planning – The Concept, Nature, Type, Steps and Principles of Planning, Instruments of Planning, Strategies Rules, Procedures, Methods, Standards, Projects and Budgets.
4. Decision Making- Nature, Theories, Types, Process of Decision Making, Group Decisions.
5. Organizing & Directing Organization and Organization Structure, Line Staff & Lateral Relation, Directing or Actuating.
6. Motivation and Communication Need Concept, theories of Motivation, , Process, Strategies for Communication.
7. Leadership- Tasks of Leaders, Meaning, Approaches
8. Coordination & Control Concept, Nature, Types, Methods of Coordination, Management Control, Types, Principles, Techniques of Controlling

Text Readings



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1. Harold Koontz, O'Donnell and Heinz Weihrich, "Essentials of Management", New Delhi, Tata McGraw Hill, 1992.

BUSINESS MATHEMATICS AND STATISTICS

Objectives:

The objectives of the course are to equip the students with the mathematical and statistical techniques and their application to business problems. The emphasis will be on the concepts and application rather than derivations.

Examination:

Internal Assessment I- 20 marks
Internal Assessment II- 20 marks
End- Semester Examination 60 marks

PART I – BUSINESS MATHEMATICS

1. Theory of Equations: Introduction, Degree of an equation, Solution of an equation, Linear equation in two variables and its application, Solution of quadratic equation and its application, Linear & Quadratic simultaneous equation.
2. Differentiation concepts: Derivatives of a function, derivatives of sum, difference, product and quotient, applications of differentiation in economic and managerial problems like marginal analysis, elasticity, Maxima and Minima.
3. Integration Concepts: Elementary integration, Integration by parts, Integration by partial fractions, definite integrals, economic application, consumer surplus and producer surplus.
4. Sequences and Series: Introduction to Arithmetic, Geometric and Harmonic Progressions, introduction to Discounting, Compounding, and Annuity.
5. Determinants and Matrices with Business application: Types of matrices, operations on matrices, adjoint matrix, inverse matrix, elementary row operations. Solution of simultaneous linear equations using matrices, input/output analysis.

PART II – BUSINESS STATISTICS

1. Introduction to Statistics: Meaning and Definition of Statistics, Scope and Limitations of Statistics, Role of Statistics in Management Decisions.
2. Introduction to Measurement of Central Tendency: Types of central tendency and its application. Introduction to Measures of dispersions, Types and its application.
3. Sampling Theory: Introduction, Population, Sample, Parameter and Statistic, Types of sampling.



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4. Probability Theory and Probability Distributions: Concepts, additive, multiplicative, conditional probability rules, Baye's Theorem, Binomial, Poisson and Normal distributions- their characteristics and applications
5. Correlation & Regression: Correlation (Karl Pearson's and Spearman's Coefficient), Methods of computing simple correlation and regression.
6. Time Series: Time Series and its Components, Analysis, Models of Time Series, Methods of Studying Components of Time Series: Measurement of trend (moving average, exponential smoothing and least squares method), Measurement of seasonal variations (simple average, trend, and moving average method) Measurement of cyclic variations (residual method).

Text Reading

1. J.K. Sharma, "**Mathematics for Management and Computer Applications**", New Delhi, Galgotia Publication,
2. R. K. Ghosh and S. Saha, "**Business mathematics and statistics**", Calcutta, New Central Book Agency 9th Ed., 1999.
3. S. Saha, "**Business Mathematics and Quantitative Techniques**", Calcutta, Central Book Agency, 2000
4. Richard I. Levin and D.S. Rubin, "**Statistics for Management**", New Delhi: Prentice Hall of India, 2000
5. S. P. Gupta, "**Statistical Methods**", New Delhi, Sultan Chand and Sons, 2001

Text Reading

1. J. N. Kapur and H. C. Saxena. "**Mathematical Statistics**", New Delhi, Sultan Chand and Company Ltd., 20th ed., 2001
2. R. Jayprakash Reddy and Y. Mallikarynna Reddy, "**A Text book of Business Mathematics**", New Delhi, Ashish Publishing House, 2002
3. K. B. Dutta, "**Matrix and Linear Algebra**", New Delhi, Printice Hall of India 1999
4. D. C. Sancheti and V. K. Kapoor, "**Statistics: Theory, Methods and Applications**", New Delhi: Sultan Chand and Sons., 2001
5. D.N. Elhance, Veena Elhance and B. M. Aggrawal, "**Fundamentals of Statistics**", Allahabad: Kitab Mahal, 1996



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GEOGRAPHY FOR TOURISM

Objectives:

To make students understand the basic concepts of physical and human geography. The main objective is to create awareness of all important tourist destination countries in the world.

Examination:

Internal Assessment I- 20 marks

Internal Assessment II- 20 marks

End- Semester Examination 60 marks

Course Contents:

01. Introduction
02. The Physical World
03. North America –An overviews of the continent : Geographical location and condition: main countries of tourist interest: referring political and physical maps.
04. Central America - An overviews of the continent : Geographical location and condition: main countries of tourist interest: referring political and physical maps:
05. South America –An overview of the continent: Geographical location and condition: main countries of tourist interest: referring political and physical maps.
06. Europe – An overviews of the continent: Geographical location and condition: main countries of tourist interest: referring political and physical maps.

Books Recommended:

1. Tourism Geography-Philip G.Davidoff. J. Doughlas Eyer.
2. The 21st Century World Atlas.





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(JULY – DEC. 2008)

ACCOUNTING FOR MANAGERS

Objectives:

Objective of the subject is to acquaint students with concepts of accounting and help them acquire the ability to develop and use the accounting data as an aid to decision making.

Course Contents:

1. FUNDAMENTALS OF FINANCIAL ACCOUNTING: Meaning and definition of accounting, Need and functions of accounting, users of accounting information, importance and limitations of accounting, Relationship of accounting with other disciplines, Accounting Principles- Concepts and Conventions, An introduction to Accounting Standards and US GAAPs
2. DOUBLE ENTRY SYSTEM OF ACCOUNTING: Concept and definition, Process of Accounting, various stages of DES accounting: Journal, Ledger, Trial Balance, Preparation of Final Accounts, Adjustments in Final A/cs., Preparation of Final a/cs. With adjustments, Numerical Problems
3. FUNDAMENTALS OF COST ACCOUNTING: Concept of Cost, Classification of Cost, Elements of Cost, Need for Cost accounting, Advantages and Limitations of Cost Accounting, Various techniques of Cost Accounting, Installation of Cost Accounting system, Cost Reduction, Cost Control and Cost Management, Components of Total Cost, Preparation of Cost Sheet, Numerical Problems
4. INTRODUCTION TO MANAGEMENT ACCOUNTING: Introduction to Management Accounting, Balance sheet & related concepts, Profit/ Loss account & related concepts, Need, Importance and Limitations of Management Accounting, Difference between Management, Cost & Financial Accounting.
5. ANALYSIS OF FINANCIAL STATEMENTS: An overview of Financial Statement Analysis, Objectives, Methods and Importance, Ratio Analysis, Funds Flow Analysis, Cash Flow Analysis, Trend Analysis, Comparative Statement Analysis. Numerical Problems
6. COST ANALYSIS AND DECISION MAKING: Marginal, Absorption and Differential Costing, Break Even Analysis & CVP Analysis. Budget, it's meaning & types, Fixed & Flexible Budgets, Preparation of various types of Budgets, viz: Cash Budget, Production Budget, Sales & Revenue Budget Flexible Budget, Standard Costing and Variance Analysis,

TEXT BOOKS: Financial A/c. for Management by Ambrish Gupta (Pearson Education), Accounting for Managers by M.E. Tukaram Rao (New Age) and Management Accounting by S. P. Gupta (Sahitya Bhawan, New Delhi)

REFERRENCES BY: 1. I.M. PANDEY

2. S.K. BHATTACHARYA

3. KHAN & JAIN

4. LATEST ANNUAL REPORTS OF LISTED COMPANIES

JOURNALS: 1. "THE MANAGEMENT ACCOUNTANT" (ICMA, LONDON)



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2. "THE ----- CHARTERED
ACCOUNTANT" (ICAI, NEW DELHI)

TA-10

FUNDAMENTALS OF TOURISM

Objectives:

The main objective of this course is to develop a practical prospective on the travel and tourism industry. The knowledge of such will help students understand the intricacies of the travel and tourism industry.

Examination:

Internal Assessment I- 20 marks

Internal Assessment II- 20 marks

End- Semester Examination 60 marks

Course Contents:

1. Introduction: Historical evolution of travel and tourism. Understanding tourism. Definitions of tourism. Models of tourism, Tourism as a system. Types of tourism. Tourist motivators.
2. Classification of tourism and travelers
3. Transportation: History, Types, Various national and international organizations related to transportation.
4. Accommodation: Introduction, Bases of classification, Primary and supplementary accommodation, Ratings, Accommodation related national and international organizations.
5. Social and Economic Benefits of tourism: Benefits, Multiplier Effect, Factors governing the benefits.
6. National and International Organizations related to travel and tourism
7. International conventions held for the development and Planning of travel and tourism
8. National Tourism Acts and National Tourism Policies along with State tourism policies
9. Impact of tourism: Economic impact: Social impact: Environmental impact and political impact.
10. Threats and Obstacles to tourism

Books Recommended:

Tourism & Travel: Concepts and Principles- Dr. Jagmohan Nagi
Tourism Development –Bhatia

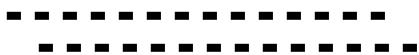
References:

Travelers



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Outlook Travel





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MBA (TOURISM)

Semester IV

(January-May 2009)

French Language III
Course Code: TA – 40

Examination

End Semester Examination	60 Marks
Internal Assessment I	20 Marks
Internal Assessment II	20 Marks
(2) External Assessment (60 marks)	

Objective of the course

1. Our first objective consists of the following:
 - Linguistic: to learn basic French grammar and vocabulary.
 - Communication: to enable students to introduce oneself and converse spontaneously in given social settings.
 - Civilization: To introduce some aspect of France, its people and culture.
2. our second objective is to emphasize and develop four linguistic skills which further enhance the course : (i) Written and Oral expression (ii) Written and Oral Comprehension.

Story: The Queen of Sands

- Lesson 1 Coup de theatre
- Lesson 2 Plans
- Lesson 3 Breakdown
- Lesson 4 Discovery
- Lesson 5 Conflicts
- Lesson 6 Towards the future.

Vocabulary

- Press and Media
- Cities and link roads
- Weather and Seasons

Grammar

- Pronouns "en" and "y"
- Relative Pronouns
- Conjugation and Superlative forms
- Conjugation of verbs in the future, present continuous, recent past.

Phonetics

- Intonation
- Complex Sounds

Communication

- Asking for permission
- Forbidding



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MBA (TOURISM)
Semester IV
(January-May 2009)

Formulating plans
Discussing and debating

Civilization

Administration and regional life
Economical and ecological problems
Traditions and modernity.



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MBA (TOURISM)
Semester IV
(January-May 2009)
Conference and Convention Management
Course Code : TA – 40

Objective of the course

With the increase in demand of conferences and exhibitions, a need for trained professionals for this field has been recognized. This subject aims at preparing students to successfully plan and execute conferences and exhibitions.

Examination

End Semester Examination	60 Marks
Internal Assessment I	20 Marks
Internal Assessment II	20 Marks
(2) External Assessment (60 marks)	

Course Contents

1. Introduction: Conference – sales conference, press conference; Corporate Presentations, Annual General Meetings, Road shows, Product Launch, Exhibitions, Seminars and Symposia
2. History
3. Group History and Analysis
4. Setting the Objectives
5. Budgeting : Projection and Controlling Budget
6. Developing Meeting Plans – Checklist, GANTT, PERT
7. Programming – Agenda and Pattern
8. Determining Space, Destination and Venue
9. Developing and Organizing Meeting Plan
10. On-site Management
11. Post-meeting Evaluation
12. Trade Shows:
 - (i) Planning – show selection, show location, analysis, pre-show planning etc.



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MBA (TOURISM)

Semester IV

(January-May 2009)

- (ii) Co-coordinating show
- (iii) Marketing
- (iv) Post show follow up.

Text Books

The Complete Conference Organizers Handbook: Robin O'Connor

How to get the most out of Trade Shows: Steve Miller

Recommended and Suggested Readings

Students are advised to search current material and cases on the internet. the sites can be accessed through the search engine – www.google.com or www.altavista.com



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MBA (TOURISM)

Semester IV

(January-May 2009)

ENTERPRENEURSHIP

Course Code : TA – 40

Examination

End Semester Examination	60 Marks
Internal Assessment I	20 Marks
Internal Assessment II	20 Marks
(2) External Assessment (60 marks)	

COURSE CONTENTS

1. Entrepreneurship : An Introduction

- The concept of Entrepreneurship
- The introduction and concept of Entrepreneur
- Characteristics of an Entrepreneur
- Functions of an Entrepreneur

2. Entrepreneurship and its environment

- External Market, Economy, Political & Legal, Technology, Social & Cultural.
- Internal Materials, Machines & Equipments, Processes, Capital Labors.

3. Problems and Challenges of Organizations / Enterprises

- Economic (Capital, material and Labor)
- Non-economic (Social, Political and Personal).

4. Project Planning

- Steps in business planning.
- Formulation of Business Plan.

5. Financial Management Issues

- Financial requirement and its planning.



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MBA (TOURISM)

Semester IV

(January-May 2009)

- Balance Sheet and Income Statement.
- Determination of cost.
- Cost-Volume-Profit Analysis.

6. Marketing Management Issues

- Functions of Marketing.
- Concept of Product Life Cycle.
- Issues related to Product & its design, Distribution, Promotion, Price.

7. Operations Management Issues

- Location / Layout / Capacity Planning.
- Inventory management.
- Quality Management.

8. Human Resource Management Issues

- HR Planning, Recruitment & Selection, Training & Development, performance Appraisal, Motivation, Compensation & Rewards.
- Relevant Labor Laws.

9. Legal Issues

- Patents
- Copyrights
- Trademarks.



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MBA (TOURISM)

Semester IV

(January-May 2009)

SERVICE MARKETING

Course Code : TA – 40

Course Objective

The objectives of the course are to expose students to the nature of service markets and develop ability to help them apply marketing concepts in these markets.

Course Contents

S.No.	Topics
1	Service : Service sector and Economics growth, service concept, characteristics and classification of services, challenges in service marketing.
1	Strategic Issues in service marketing: Segmentation Differentiation and Positioning of services.
3	Marketing Mix in service Marketing: Product, Price, Place promotion, people, physical evidence and process decisions.
4	Designing a service strategy: Service management process, internal, external and interactive marketing strategies.
5	Managing service quality and productivity: Concepts, Dimensions and process; service quality Models (Gronnos and Parsuraman) application and limitations, productivity in services.
6	Applications of service Marketing : Marketing of financial, Hospital, Health, Educational and Professional services, marketing for Non Profit Organizations and NGO's.
7	CASE STUDIES

Text readings

- Christopher H. Lovelock, "Service Marketing" New Delhi: Prentice Hall of India, 3rd Edn., 1996.

Suggested reading

- Ravi Shankar, "Service Marketing", New Delhi, Global Press, 2nd Edn., 1998.

Course Code : TA – 40

Foreign Exchange Management



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Semester IV

(January-May 2009)

Course Objective:

This course will provide students an opportunity to understand the travel and tourism industry and prepare them to face challenges on the industry. This course in particular provides an insight into the foreign exchange involved in the various tourism related activities.

Evaluation Scheme:

- (1) Internal Assessment (40 marks) :
 - (a) Test 1-15 marks
 - (b) Test 2 – 15 marks
 - (c) Assignment, Attendance and class participation 10 marks.
- (2) External Assessment (60 marks)

Course Description:

- 02 Theory of Foreign Exchange: Meaning & Need of Foreign Exchange, International Monetary System. International Forex Market, Risks.
02. Balance of Payment, Forex Reserves, Currency convertibility – Partial & full.
- 04 Indian Forex Market : Retail market, wholesale market and their activities. Administration of Forex, Market, Role of FEMA, RBI & FEDAI, Exchange Control, ADs & AMCs.
- 12 Exchange Rate Mechanism: Factors affecting Exchange Rate. Types of Quotation. Different types of rates quoted by ADs and their application. Forecasting exchange rates. Numerical problems on exchange rates.
- 04 Exchange Risk Management : Hedging through Forwards, Options. Swaps and Futures.
- 10 Finance of Foreign Trade: Export Finance and Import Finance. Factoring and Forfeiting.
- 03 International Institutions and Organization IMF, IBRD, ADB, ICC, ACU.
- 03 Trends in Forex Market: Concept of GDR, VDR Foreign Bonds & Euro Bonds. 1: FCNR (B) RIC & accounts.

TA - 401
Human Resource Management

Course Objective

The course objective is to help the students help understanding of the dimensions of the management of Human Resource with particular reference to human resource management



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Semester IV

(January-May 2009)

policies and practices in India. Efforts will also be directed towards developing communication and decision making skills through case discussions, group discussion, role playing , presentation and live and theoretical projects and assignments.

Examination

End Semester Examination	60 Marks
Pre Mid Term Examination	15 Marks
Mid Term Examination	15 Marks
Internal Evaluation	10 Marks

Course Contents

1. INTRODUCTION TO HRM: Concept, Functions of HRM
2. HRM PLANNING: Manpower Planning, Job Analysis, Job Description & Job Specification
3. PERSONNEL POLICIES: Objective, Need, Essentials, Principles of Personnel, Policies, Formulation & Implementation of Personnel Policies
4. STAFFING PROCESS: Recruitment & Selection Process, Placement & Induction in Organization.
5. WAGE & SALARY ADMIN.: Designing & Administering the Wage & Salary Structures, Incentives & Fringe Benefits
6. APPRAISING HR: Performance & Potential Appraisals, Meaning, Concept, Methods & 360 Degree Appraisal System.
7. DEVELOPING THE HR: Training & Development of Employees, Need Steps In Training Program, Training Techniques
8. EXECUTIVE DEVELOPMENT: Purpose, Objective & Components of Executive Development Program and Transactional Analysis.
9. TRENDS IN HRM: Latest Trends In HRM

Text Readings

1. Personnel Management- Stephen Robbins.
- 2 Principles of personnel management – Edwin Flippo
- 3 Human Resource Management – Dr. C.B. Gupta
- 4 Personnel Management - Arun Monappa and Mirza S. Saiyad

Suggested Readings

1. Pigors and Myers- Personnel Administration , McGraw Hill, Kogalusha.
2. Max. S. Wortman- Creative Personnel Management, Allyn & Bacon, 1996.
3. Dale Yoder – Personnel Management and Industrial Relations, Prentice Hall.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
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MCA (6 Years)

I SEMESTER

JULY-DECEMBER 2012

Sub. Code	Sub. Name	Credit
IC-101	Mathematics-I	4
IC-102	Statistics Methods-I	4
IC-103	Physics-I	4
IC-104	C Programming	4
IC-105	PC Software	4
IC-106	English	4
IC-107	Lab Viva	2
IC-108	Comprehensive Viva	4

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
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MCA (6 Years) I SEMESTER
IC-101: Mathematics-I**

Aim of Course: To provide a course on elementary mathematical techniques and familiarize students with basics of differentiation and integral calculus.

Objectives:

- Understand basic concepts of Partial differentiation, Maxima & Minima of the function, convergence and divergence of the series.
- Solve mathematical problems based on the course material.
- To develop mathematical skills and methods appropriate for students in the computer science.
- To prepare students for more advanced mathematical courses.

Course Contents:

UNIT I

Review of the basic concepts of calculus: Introduction, concepts of function of one variable, Idea of limit, continuity and differentiability of the function.

UNIT II

Successive differentiation: Successive differentiation, Rolle's Theorem, Mean value theorem, Taylor's theorem, Taylor's and Mac Lauren series, Intermediate forms.

Application of differentiation: Tangents and normals, Curvature, Maxima and Minima of the function sketching of curves (Cartesian and polar form) Asymptotes.

UNIT III

Integration: integration of Rational, irrational, and Transcendental function, Reduction formula, Integral as the limit of the sum, summation of series.

UNIT IV

Partial Differentiation: Partial Differentiation function of several variable, limit continuity and differentiability, partial derivatives, Euler's theorem, Mean value theorem, Taylor's theorem

UNIT V

Maxima and Minima: Maxima and minima of function of two and three variables.

Convergence Divergence: Convergence and Divergence of series, Definition and various tests.

Reference Books:

1. Differential Calculus – Shanti Narayan
2. Integral Calculus –Gorakh Prasad
3. Advanced Calculus-R.B. Thakur
4. Calculus For IInd Yr-H.K. Pathak

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES,
DEVI AHILYA UNIVERSITY, INDORE
MCA (6 Years) I SEMESTER
IC-102: Statistical Methods-I**

Aim of Course: The aim of this course is to make student aware about the statistical methods, which help them to build their logics.

Objectives:

- Understand basic concepts of statistical methods, probability and distribution.
- Learn to effectively display the information in data sets graphically.
- Provide a curriculum that combines the statistical knowledge in theory, practice and various applications.

Course Contents:

UNIT I

Variable and Graph statistics: Population and sample, Discrete and continuous variables, Graphs. Frequency distributions: Histogram, frequency polygons, cumulative- frequency curve (ogive).Measures of central tendency: the arithmetic mean, weighted arithmetic mean, median, mode, harmonic mean, geometric mean, quartiles, deciles and percentiles.

UNIT II

Measures of dispersion: The range, Semi-interquartile range, Mean deviation, Root mean square deviation, Standard Deviation, Coefficient of variation. Moments, moments of various types, relation between moments. Sheppard's correction of moments. Skewness and Kurtosis.

UNIT III

Elementary probability theory: Sample Space, events. Classical definition of probability, Relative frequency definition of probability. Theorem of total and compound probability, Independent and dependent events. Mutually exclusive events.

UNIT IV

Theoretical Distribution: Discrete and continuous probability distributions. Mathematical expectations, Moment generating functions. Application of degenerate, Bernoulli , Binomial distribution , Geometric, negative binomial, Hyper geometric distribution, Poisson distribution, Normal distribution.

UNIT V

Curve fitting and method of least squares: Curve fitting, fitting of parabola, straight line, Correlation thory, linear correlation, Measures of Correlation, Rank Correlation Regression, properties of regression coefficients Theory of attributes, Consistency of data, Association of attributes, coefficient of association, Contingency tables

Reference Books:

1. S.C. Gupta & V. K. Kapoor: Fundamentals of mathematical statistics, S.Chand sons.
2. Spiegel. M.R. : Statistics Schaum's outline series.
3. A.M.Gun, M.K.Gupta, B.Dasgupta: An outline of statistical theory (volume 1)
4. Kapoor & Saxena: Mathematical statistics. S. Chand and sons.
5. S.P. Gupta : Statistical methods
6. P.N. Arora : Statistics for Management. Shrivastava and Shenoy : Quantitative techniques

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES,
DEVI AHILYA UNIVERSITY, INDORE
MCA (6 Years) I SEMESTER
IC-103: Physics-I**

Aim of Course: To make students aware about basic concepts of physics such as circuit elements, resistance, electromagnetic induction, capacitors and some laws related to passive elements.

Objectives:

- Develop and apply knowledge and understanding of physics.
- Develop the knowledge and skills for more advanced learning in physics.

Course Contents:

UNIT I

Charge, coulomb's law, electric field Intensity, dipole and quadruple fields. Electric potential, flux of electric field, gauss's law and its applications, steady current, current density non-steady current and continuity equation, Torque on a dipole in uniform electric field

UNIT II

Ohm's law, resistance, factors affecting resistance, colour code, variable resistors, power and energy, Kirchhoff's law and analysis of multiloop circuits, Rise and decay of current in R-L and R-C circuits, decay constants, AC currents RL, RC and LC circuits, series and parallel resonant circuits, Q factor and band width, power consumed in an AC circuit delta – star transformations

UNIT III

Capacitors, factors affecting capacity, type of capacitors, series and parallel connection of capacitors, Dielectrics and dielectric polarization, vector and relation between D,E, &j P, capacity of capacitor when dielectric is filled partially, energy stored in a capacitor, redistribution of charge when two conductors are connected by a conductor wire.

UNIT IV

Electromagnetic Induction, faraday's law, self induction and Mutual inductions Maxwell's displacement current, Maxwell's equations, wave equation satisfied by E & B plane electromagnetic waves in vacuum and in dielectric.

UNIT V

Force on moving charge, Lorenz force and definition of B force on a conductor carrying current in a uniform magnetic field, magnetic dipole moment, angular momentum and gyro-magnetic ratio, Bio and Savier's law calculation of B in simple geometrical situations, Ampere's law, Laplace and Poisson's equation

Reference Books:

1. Basic Electrical circuit Volume-IB. L.Tharej
2. Resnick and Halliday – Physics part –II
3. Unified physics part –I R.P.Goyal

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES,
DEVI AHILYA UNIVERSITY, INDORE
MCA (6 Years) I SEMESTER
IC-104: C Programming**

Aim of Course: To develop logic of problem solving and learn basics of programming methodologies
Objectives:

- Develop the logic for the given problem
- Recognize and understand the syntax and construction of C code
- To gain experience of procedural language programming
- Know the steps involved in compiling, linking and debugging C code
- Apply all the concepts that have been covered in the theory course

Course Contents:

UNIT I

Introduction to Programming Language & Problem solving Approach: Development of flow charts & Algorithms, Why Programming Language? Program development steps, Programming language classification, Translators, Program design techniques.

History of C Language, Feature of C Language, Why is C Language Popular? Structure of C Program, A Sample C Language Program. Errors, Compilation and Execution of C Programs and Exercise.

UNIT II

Useful terms of Language: Data types, The C character set, Constants, Variables, Keywords, C Instructions, Type Modifier, Storage class specifies, Storage classes in C and Exercises. Operator Expressions and Assignment Statements : Arithmetic Operators, Relational and Logical Operators, Increment and decrement Operators, Assignment Operators and Expressions, Conditional Expression, Precedence and order of Evaluation and Exercises.

UNIT III

Control Structure in C : Decision Control Structures, Loop Control Structures, Conditional Statements and Exercises, break Statement, The continue Statement.

Console Input and Output: Introduction to Input/Output, Unformatted and Formatted Input/Output Function.

UNIT IV

Array : Introduction to Array, One Dimensional Array, Multidimensional Array, Initialization, Declaration, Storage and Access Mechanisms on Array and Exercises. String Manipulation: Introduction to Strings, Two Dimensional Array of characters.

Function : Introduction to Functions, Function Declaration and Prototypes, Function Definition, Call by Value and Call by Reference, return statement, exit() function, Function with arguments, Calling Function with Array, Command Line, Arguments, Recursion in Function

UNIT V

Structure : Structure Definition, Giving Values to members, Structure initialization, Comparison of Structure variables, Array of Structure, Array within Structures, Structures within Structures, Passing Structures to Functions, Why use Structure, Features and Uses of Structures. Union : Union Definition and Declaration, Accessing a union Member, Union of Structures, Initialization of a Union Variable, Use of Union, Use of User Defined Type Declarations

Reference Books:

1. Let us C, By Y.P. Kanitkar, B.P.B. Publications

2. C -The Complete Reference, Tata Mcgraw Hill
3. C-How to Program, Deitel & Deitel

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES,
DEVI AHILYA UNIVERSITY, INDORE
MCA (6 Years) I SEMESTER
IC-105: PC Software**

Aim of Course: To make students understand basics of computer and its working.

Objectives:

- To make students aware of basic units and model of computer.
- To understand number system for data representation in computer.
- Understand basics of Operating system and DBMS.
- Learn working with MS Office and Internet.

Course Contents:

UNIT I

Introduction to Computer: Definition, Characteristics, functions and applications of a Computer, Components of a Computer: Hardware and Software, Block diagram of a computer: Input devices, Output devices, CPU, Memory. Classification of computer, generation of computer. Data representation and computer software: Number system-Binary, Decimal, Octal, Hexadecimal and its conversion. Computer software: system software and application software. Computer languages: Machine, Assembly, High level and Fourth generation languages

UNIT II

Introduction to Operating System: Definition and functions of an Operating System, Type and classification of Operating Systems. MSDOS: DOS features, External and Internal Commands, Managing disks, advanced command techniques, working with batch programs. Microsoft Windows and its environment. Introduction to Data Base Management System: Introduction, Quality of information, What is Database, DBMS? Why a database, DBMS? Types of DBMS

UNIT III

Microsoft office environment: Microsoft Word: Working with Word, Typing and Editing, Formatting Text, Page design and layout, adding tables, using graphs, mail merge Microsoft Excel: Working with excel, entering data, formatting, customizing workplace, calculation in worksheet, adding charts, advanced features of excel. Microsoft–PowerPoint: Working with PowerPoint, Adding Text, Including Multimedia, Customize PowerPoint, Microsoft Access: Creating database, addition and deletion of records, searching, sorting and indexing the records, creating tables and records, advance features of Access.

UNIT IV

Internet and World Wide Web: Introduction, Internet access, Internet basics, Internet protocols, Internet addressing, Web pages and HTML, Web browser and search engines, Electronic mail. Computer Security: Physical access restriction, Passwords, Firewalls, Cryptography, Computer virus, Bombs and worms. Antivirus software.

UNIT V

Introduction to Multimedia: Introduction, Multimedia in entertainment, Multimedia in software training, Multimedia in education training, Multimedia server and databases, Multimedia tools

Reference Books:

1. Introduction to Computer, Alexis Leon
2. Introduction to Information Technology, Alexis Leon
3. Introduction to Computer, Peter Norton's Galgotia Publications

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES,
DEVI AHILYA UNIVERSITY, INDORE
MCA (6 Years) I SEMESTER
IC-106: English**

Aim of Course: The aim of this courses is to enable students to improve both their ability to communicate and linguistic competence in English language.

Objectives:

- To give students knowledge of correct usage of English with an emphasis on reading and writing skills.
- To practice writing skills at sentence and paragraph levels with correct grammatical structures.
- To practice and learn English speaking skills to communicate in daily situations effectively.

Course Contents:

UNIT I

Anthem – Ayn Rand

The Third Wave – Alivn Tofler: First three chapters

UNIT II

Common errors in the use of articles, prepositions, number, pronoun and all parts of speech.
Writing skills: Writing simple paragraphs, Developing a simple data, Writing simple letters and applications

UNIT III

Vocabulary: The knowledge of atleast 50 words. Their meaning, pronunciation and their usages, Synonyms, Antonyms, one word substitution, idioms and phrases, proverbs.

UNIT IV

Imaginative literature: film – Mary Poppins, life is beautiful – The elements of the novel are to be discussed

UNIT V

Poetry recitation: Elegy written in country church yard (for stress , intonation, tone & pitch)

Communication, Elements of good and effective communication, Modes of communication.

Reference Books:

1. Anthem - by Ayn Rand.
2. The Third Wave – by Alwyn Tofler
3. Developing Communication skills – by Krishna Mohan & Meera Banerji
4. Living English Structure by W.S.Allen
5. A Practical English Grammar by Thomson and Mar

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

MCA (6 Years)

II SEMESTER

JANUARY – MAY 2013

Subject Code	Subject Name	Credits
IC-201	Mathematics-II	4
IC-202	Statistical Methods-II	4
IC-203	Physics-II	4
IC-204	Basic Electronics	4
IC-205	Programming with C++	4
IC-206	Comp Lab Viva	2
IC-207	Electronics Lab Viva	2
IC-208	Comprehensive Viva	4
Total		28

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE
MCA (6 Years) II SEMESTER
IC-201: Mathematics-II**

Aim of Course: To familiarize the students with advanced mathematical concepts and techniques.

Objectives:

- Understand basic concepts of curve tracing, rectification, groups, cosets, homomorphism and isomorphism.
- Solve mathematical problems based on the course material.
- To develop mathematical skills and methods appropriate for students in the computer science.

Course Contents:

UNIT I

Curve tracing: Introduction, pre-requisites, for the curve tracing, maxima & minima, concavity and convexity of the curve, Singular points, asymptotes, symmetry, tangents, Main points of tracing the curve in Cartesian and polar form, some problems on curve tracing.

Improper integral: Improper Integral definition, types of the improper integral, their convergence, Beta Gamma function and their properties, some important deductions followed by some numerical problems

UNIT II

Rectification: Methods and formula for finding out the length of curve in Cartesian and polar form, numerical, intrinsic equation. Derivation of formula for finding the area under plane curve, followed by some problem solving.

Multiple integrals: Integration of function of two and three variables. Double and triple integral. Dirichlet integral. Change of order of integration. Use of double and triple integral in finding the area and volumes of Cartesian curves.

UNIT III

Groups and their general properties : Binary Operation, algebraic structure, definition and example of groups, examples. Order of an element in a group. General properties of a group. Modulo System. Subgroup, complex subgroup, definition and examples, algebra of complexes. Criterion for a complex to be a subset of a group. Union and intersection of subgroups. Cyclic group and subgroups generated by a subset of a group. Theorems generating system of a group

UNIT IV

Coset and coset decomposition : Coset definition, properties of cosets. Cosets decomposition. Partitioning of a group. Relation of congruency modulo in subgroups. Lagrange theorem with its corollaries. Index of a subgroup in a group. Fermat and Euler theorems. Multiplication of two subgroups. Order of the product of subgroup of finite order.

Normal subgroup & quotient group: Definition, example and theorems on normal subgroup quotient groups. Center and normalize of a group. Conjugate, self-conjugate elements of different groups.

UNIT V

Homomorphism and isomorphism of groups : Definition of homomorphism of groups, examples, various types of homomorphism, auto-homomorphism, inner automorphism, theorem, maximal normal subgroup. Permutation, Transformation groups and Cayley's thermo.

Ring and integral domain : Definition, examples and properties of ring. Types of rings, sub rings, Ideal, Types of ideals and their properties, Euclidean ring. Homomorphism and isomorphism of rings, Kernel of a ring homomorphism. Theorems on ring homomorphism, Quotient ring fundamental theorem on ring homomorphism.

Integral domain : Integral domain, subdomain, ordered integral domain, theorems. The characteristics of the integral domain, definition and theorems.

Reference Books:

1. Shanti Narayan, Differential Calculus.
2. Gorakh Prasad, Integral Calculus.
3. R.B. Thakur, Advanced Calculus.
4. H.K. Pathak, Calculus For IInd Yr.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE
MCA (6 Years) II SEMESTER
IC-202: Statistical Methods-II**

Aim of Course: The aim of this course is to make student aware about the statistical methods for research and real life data analysis.

Objectives:

- Understand basic concepts of statistical methods for data analysis.
- Learn Hypothesis testing.
- Learn the application of different tests such as Chi-square, T & F-statistic.

Course Contents:

UNIT I

Estimation: Unbiased-ness, consistency, efficiency and sufficiency, minimum variance unbiased estimator. Cramer-Rao inequality and its application. Maximum likelihood estimator.

Testing of Hypothesis: Simple and composite hypothesis. Test of significance for samples; test for single proportion and for difference of proportion. Test of significance for single mean, test of significance for difference of means.

UNIT II

Interval estimation: Confidence Interval and confidence limits, confidence limits for large samples.

Tests of significance: Procedure for testing of hypothesis. Test of significance for large samples. Test for single proportion and for difference of proportions. Test of significance for single mean, test of significance for difference of means

UNIT III

Test of significance for small samples: Concept of Chi-square, t & F-statistic, test for Chi-square distribution, to test goodness of fit, to test independence of attributes, to test the homogeneity of correlation coefficients.

Test based on t-distribution: t-test for single mean, difference of means , paired t-test, t-test for testing significance of an observed sample correlation coefficient

UNIT IV

Test based on F-distribution: Test for equality of population variance. Test for testing the significance of an observed multiple correlation coefficient.

Non parametric test: Sign-test, median test, run test, Wilcoxon signed rank test.

UNIT V

Analysis of variance and design of experiments: One-way & two-way classification with one observation per cell. Design of experiments, completely randomized design randomized block design and Latin square design.

Reference Books:

1. S.C. Gupta & V. K. Kapoor: Fundamentals of mathematical statistics, S.Chand sons.
2. S.C. Gupta & V. K. Kapoor: Fundamentals of Applied Statistics, S.Chand sons.
3. A.M.Gun, M.K.Gupta, B.Dasgupta: An outline of statistical theory (volume 1)
4. Kapoor & Saxena: Mathematical statistics. S. Chand and sons.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE
MCA (6 Years) II SEMESTER
IC-203: Physics-II**

Aim of Course: To make students aware of atomic theory and semiconductors.

Objectives:

- Develop and apply knowledge and understanding of physics.
- Develop and understand atomic models, semiconductors and their properties.

Course Contents:

UNIT I

Failure of classical mechanics for explaining photoelectric effect, black-body radiation, Compton effect. Plank's hypothesis and radiation law, properties of photons, explanation of photoelectric effect and black-body radiation on the basis of Plank's theory. Wave particle duality, de-boglie's concept of matter waves, properties of matter waves, Davision and Germers electron diffraction experiment, G.P. Thompson experiment, Heisenberg's uncertainty principle, time-dependent and time-independent Shrodinger wave equation, stationary state solution of shrodinger wave equation, solution of shrodinger wave equation for particle in a box.

UNIT II

Atomic model, Rutherford's Experiment on particle scattering, Rutherford's nuclear atomic model. Bohr's atomic model, Bohr's theory of atom. Electron energy levels in hydrogen atom, special series of hydrogen atom spectrum, Bohr's quantum condition for De-Broglie hypothesis, short comings of Bohr's theory, Sommerfield's correction for atomic model, vector atom model, quantum numbers associated with vector atom model, Pauli's exclusion principle, types of spectra.

UNIT III

Band theory in metals, Intrinsic Semiconductors, electrons and holes, Fermi level, temperature dependence of electron and hole concentrations, Extrinsic semiconductors, doping, N and P type semiconductors, conductivity, mobility, P-N junction diode, biasing of diode, Zener and Tunnel diodes, light emitting diode, Metal-semiconductor junction, transistor and its characteristics in CB and CE mode.

UNIT IV

Power supply: diode as a circuit element, load line concept, half wave, full wave and bridge rectifier, ripple factor, filter circuits such as series inductor and shunt capacitor, Zener diode as voltage regulation, regulated power supply, h-parameters of transistor, field effect transistor N-channel and P-channel, FET characteristics and its constants

UNIT V

Interference of light: the principle of superposition of waves, two slit interference, coherent sources, conditions for interference, fringe width of interference fringes, diffraction of light, half period zone method, zone plate and its multiple foci, polarization, Brewster's law, double refraction , Quarter and half wave plates, Principle of Laser, population inversion, optical pumping, Ruby and He-Ne laser.

Reference Books:

1. W.D. Stanley "Electronic Devices, Circuits and Applications"
2. B.G Stretman "Solid State Electronic Devices"
3. R.P. Goyal "Unified Physics part-II and part-III"
4. D.P. Khandelwal "Optics and Atomic Physics"
5. A.K.Ghatak "Quantum Mechanics"

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE
MCA (6 Years) II SEMESTER
IC-204: Basic Electronics

Aim of Course: To introduce students with basic concepts of electronics.

Objectives:

- Understand basic components of circuits.
- Understand the use of diodes as power supply rectifiers.
- Understand the operation of transistors as switching circuits.

Course Contents:

UNIT I

Basic Components: Circuit Symbols, Working Principle, Classification according to construction, Specification, and applications of passive components-Resistors & Color coding, Inductors, Transformers, Switches, Relays (Electromagnetic), Thermistor, LDR, Microphone and Loudspeakers.

UNIT II

Capacitors:- Capacitance, Capacitor Specifications, Classification of Capacitor-Fixed(Mica, Paper, Ceramic, Plastic, Electrolytic etc), Variable capacitor (Trimmer, Padder, Gang), Stray capacitance, Leakage Resistance, Testing of Condenser, Area of Application, Problem related to Electrical Energy Storage.

UNIT III

Semiconductors: Conductors, Semiconductors and Insulators, Classification on the basis of Band Theory, Intrinsic and Extrinsic Semiconductors, Diode current equation (Derivation not required), Drift & Diffusion.

UNIT IV

P-N Junction-Forward and reverse bias of Diode. Concept of recombination of carriers, Temperature variation of Forward and Reverse Current through the P-N Junction. Characteristics of Forward & Reverse Bias Diode, Dynamic and Statics Resistances, Voltage dependent Junction Capacitance of a P-N Junction

UNIT V

Special Diodes: Zener Diode, its construction and characteristics, Temperature coefficient of Zener Diode, Zener Diode as Voltage Regulator, Schottky Diode, Power Diode, Tunnel Diode, LED, Solar Cell, Photodiodes.

Reference Books:

1. Malvino A.P., Electronics principal
2. B.L. Theraja, Electrical Technology
3. V.K. Mehta Principal of electronics.
4. Boylestad, Electronics devices and circuit theory.
5. Milliman J. Halkias C, Integrated electronics

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE
MCA (6 Years) II SEMESTER
IC-205: Programming with C++**

Aim of Course: The aim of course is to help students to gain a better understanding of OO design and program implementation by using OO language features.

Objectives:

- Understand object-oriented programming features in C++,
- Apply these features to program design and implementation,
- Understand object-oriented concepts and how they are supported by C++,
- Gain some practical experience of C++,
- Understand implementation issues related to object-oriented techniques,
- Build good quality software using object-oriented techniques

Course Contents:

UNIT I

Principle of Object Oriented Programming and Introduction of C++ : Object-Oriented Terminology, OOP Paradigm, Basic concept of OOP, Benefits of OOP, Application of OOP. Introduction of C++: Tokens, Keywords, Identifier and constants, Operator, Data Type, Variable Manipulator, Expression and Control structure.

UNIT II

Classes and Function in C++ :

Class: Defining Classes in C++, Classes and Encapsulation, Member functions, Instantiating and Using Classes, Access specifiers, Static Class Members.

Constructor and Destructor: Use of Constructors, Multiple Constructors, Types of constructor, Using Destructors to Destroy Instances.

Function: Function Introduction, Main function, Function Prototyping, inline function, friend function.

UNIT III

Inheritance & Polymorphism: Overview of Inheritance, Defining Base and Derived Classes, Constructor and Destructor Calls, Virtual base classes, Abstract classes.

Overview of Polymorphism

Operator & Function Overloading: Operator Overloading, Working with Overloaded Operator Methods, Introduction to Function overloading.

UNIT IV

Pointer and Virtual Function : Introduction of Pointer, Dynamic memory allocation, Pointers to object, this pointer, Pointers to derived classes, Virtual Functions, Pure virtual function.

UNIT V

Working with files in C++, Exceptions Handling and Templates:

Files: Standard Streams, Manipulators, Unformatted Input and Output, File Input and Output.

Exceptions: Basics of Exception handling, Exception handling mechanism.

Templates: Template Overview, Customizing a Template Method, Standard Template Library Containers.

Reference Books:

1. E. Balagurusamy, Object-Oriented Programming with C++
2. Yashwant Kanitkar ,Let us C++.
3. The Complete Reference - C++, Tata Mcgraw Hill

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

MCA (6 Years)

III SEMESTER

JULY-DECEMBER 2012

Sub. Code	Sub. Name	Credit
IC-301	Mathematics-III	4
IC-302	Physics-III	4
IC-303	Digital Electronics	4
IC-304	DS with C++	4
IC-305	Engineering Drawing	4
IC-306	Digital Elex. Lab	2
IC-307	Computer Lab	2
IC-308	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) III SEMESTER
IC-301: Mathematics – III

Aim of Course: To make the students familiar with different methods of solving ordinary and partial differential equations and their application in real life situation.

Objectives:

The course is designed to make students:

- Understand mathematical modeling for practical problems related to Management Science and Technology in terms of differential equations.
- Learn the skill of solving differential equations.

Course Contents:

UNIT I

Differential equations: Meaning of differential equation, formation from primitive, examples. First order linear differential equations, method of solution, separation of variables, homogenous form, and examples. Equations reducible to homogenous form, linear form, reducible to linear form. First order exact differential equations. Condition for exactness, method of solution.

UNIT II

Integrating factor. Rules for determining I.F., examples. Diff Equation of 1st order and higher degree solvable for p, y . Equations solvable for pie, clairauts form. Trajection , orthology trajectory in Cartesian and polar form.

Linear diff equation with constant coefficients. Standard form. Homogenous linear diff equation with variable coefficient. Exact differential equation of higher order condition for exactness.

UNIT III

Method for solving exact diff equators, example. Diff equators of particular forms method of solution when part of c.f. is known. 2nd order linear diff equator with variable coeff method of solution when part of c.f. ic known example. Solution by factorization of operators. Method of variation of. Method of undetermined coeff. Simultaneous linear doff equators with constant coeff.

UNIT IV

Symmetrical form. Total diff equators conditions of inheritability, method of solution. Initial and boundary value problem, approximation by picards method. Series solution of diff Equator simple cases. Solution about single point.Partial diff equations formation of p.d.e

UNIT V

Solution of pdf lagrange method. Standard form I ,II. Standard form III IV. linear partial differential equation with constant coeff, homogenous form.Non homogenous with constant coeff . Non-homogenous Linear Partial differential Equations.

Reference Books:

1. Dr. N.M. Kapoor, Text book of differential equations.
2. P.N. Wartikar, Text book of Applied Maths.
3. Dr. G. Paria, Ordinary diff equations with laplace transform.
4. R.K. Gupta , J.N. Sharma, Differential equations.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6Years) III SEMESTER
IC-302: Physics – III

Aim of Course: The main aim of this course is to import some knowledge of modern physics, like radioactivity, Nuclear Physics, and Relativity to students.

Objectives:

The course is designed to make students:

- Understand concepts of radioactivity, nuclear physics and X-rays.
- Study band theory of solid and get concept of superconductors.
- Understand relativity and its applications.

Course Contents:

UNIT I

Radioactivity: Recursion law of successive disintegration, radioactive Equilibrium, secular and transient equilibrium activity substance units of radioactivity. Theory of alpha -decay, alpha-ray spectra. beta-decay, beta-ray spectra neutrino hypothesis, conservation of nuclear energy modes of beta decay, beta-decay, position emission. Gamma-ray spectra, internal conversion. Nuclear reactions, Rutherford's Experiment Projectile, type of nuclear reactions conservation laws. Kinematics of nuclear reaction. Artificial radioactivity, production half life period, classification application of artificial radioactivity, Radiometric dating, radio carbon age, geological dating

UNIT II

Nuclear Physics: Nuclear constituents, proton electron hypothesis, proton-neutron hypothesis. Nuclear forces, heisenberg theory, yukawa theory. Nuclear spin angular momentum, magnetic moment: magnetic and electric properties of nucleus wave mechanical properties. Shell model and liquid drop model of nucleus. Cyclotron and betatron

UNIT III

Band theory of solid: Introduction bonds between atoms ionic covalent, vanderwall's hydrogen and metallic bonds. Free electron gas ohm's law, fermi gas effect of temperature, density of states. Hall effect measurement of hall voltage and coefficient hall mobility, importance of hall effect. Super conductivity, experimental study occurrence. Destruction of super conductivity by magnetic fields. BCS theory of super conductivity. Types of super conductors. Applications of high temperature of super conductors.

UNIT IV

X-Rays: Discovery production of X-rays by rintgen tube. Defects of ronregen tube. Coolidge x-ray tube. Properties of X-rays. The origin of X-rays. Mosley's law derivation of mosley law from Bohr's theory. Importance of mosley's law.X-rays spectrum continuous spectrum line spectrum.X-rays diffraction bragg's condition Bragg's X-ray spectrometer. Measurement of wavelength, lattice constraints. Crystal structure by X-rays. Crystallography by powder method, Industrial application and uses of X-rays.

UNIT V

Relativity: Introduction frames of reference. Galilean transformations. Invariance of equations. Concept of ether micheleson morley experiment, explanation of negative result. Einstein's special theory of relativity. Lorentz transformation. Time dilation and its verification. Length contraction and explanation of negative result of m.m experiment. Addition velocity, relativity of mass. Mass-Energy relation, energy momentum relation.

Reference Books:

1. A.S. VASUDAVAS , Modern Engineering Physics.

2. R.K.GOUR,S.L.GUPTA, Engineering Physics.
3. R.P GOYAL, Unified Physics for 3rd year classes

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) III SEMESTER
IC-303: Digital Electronics

Aim of Course: To understand basic concepts of digital logic, its operations, principles and applications.

Objectives:

The course is designed to make students:

- Understand number systems and codes, and Boolean Algebra
- Understand TTL and CMOS circuit characteristics, followed by logic devices such as flip-flops, code converters, counters, multiplexers, and registers.

Course Contents:

UNIT I

Binary Systems and logic circuits. Decimal, Binary, Octal, Hexadecimal numbers and their inter conversions. ASCII, Gray, Excess-3, 8-4-2-1, Error detecting and BCD codes. Logic Gates. Boolean algebra. Demorgan's theorem. Binary addition and subtraction. Unsigned Binary numbers, Signed binary numbers. 2's complement representation and its arithmetic.

UNIT II

Circuit analysis and design.

Boolean laws and theorems. Sum of Product and Product of Sum simplification. Two, three and four variable karnaugh map. NAND and NOR implementation. Other two level implementation. Don't care conditions.

UNIT III

Combinational circuits.

Design procedure. Half adder, full adder, adder-subtractor circuit. Code converters. Various logic circuits. Multilevel NAND circuit. Multilevel NOR circuit.

Data Processing circuits.

Multiplexers, demultiplexers, decoders and encoders. Binary parallel adder, look ahead carry generator, magnitude comparator, ROM, PROM, PLA.

UNIT IV

Sequential circuit.

Flip-flops, triggering of flip-flops. Analysis of clocked sequential circuits, state reduction and assignment, flip-flop excitation tables.

UNIT V

Registers, counters and integrated circuits.

Design of counters, registers, shift registers. Ripple counters, synchronous counters. IC logic families.

Reference Books:

1. M.Morris Mano , Digital Logic and Computer Design.
2. Malvino A.P. and Leach D.P, Digital Principles and Application.
3. Taub H. and Schilling D, Digital Integrated Electronics

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) III SEMESTER
IC-304: Data Structures with C++

Aim of Course: To develop proficiency in the specification, representation, and implementation of Data Types and Data Structures.

Objectives:

The course is designed to make students:

- Write programs using object-oriented design principles.
- Understand data structures such as linear lists, stacks, queues. Choose the appropriate data structure and algorithm design method for a specified application.,
- Be familiar with advanced data structures such as balanced search trees, hash tables, priority queues and graphs.
- To get a good understanding of sorting and searching techniques.

Course Contents:

UNIT I

Principles of Object-Oriented Programming: Beginning with C++, Functions in C++, Inline functions, Default arguments, Function overloading, Classes and objects. Visibility modifiers, Array of Objects, Pointer to objects, The This pointer, Friend Functions.

Constructors, Destructors and Inheritance basics: Parameterized constructors, Multiple constructors, constructors with default arguments, Dynamic initialization of objects, Copy constructor, Dynamic constructors, Destructors. Introduction to inheritance, various types of inheritance, Polymorphism, Dynamic Binding.

UNIT II

Introduction to Data Structure: Introduction to C++, Definition of data structures and abstract data types. Static and Dynamic implementations. Examples and real life applications, Data Structures: Arrays, Address calculation in a single and multi dimensional array. Sparse matrices

UNIT III

Stacks, Queues and Lists: Definition, Array based implementation of stacks, Linked List based implementation of stacks, Examples: Infix, postfix, prefix representation Definition, Array based implementation of stacks, Linked List based implementation of stacks, Examples: Infix, postfix, prefix representation

Applications: Mathematical expression Evaluation

Definition: Queues & Lists: Array based implementation of Queues / Lists, Linked List implementation of Queues / Lists, Circular implementation of Queues and Singly linked Lists, Straight / circular implementation of doubly linked Queues / Lists, Priority queues, Applications

UNIT IV

Sorting Searching Algorithm, Hashing: Introduction, Sorting by exchange, selection, insertions, Bubble sort, Selection sort, Insertion sort, Pseudo code algorithm and their C++ implementation, Efficiency of above algorithms, Merge sort, Merging of sorted arrays, merge sort algorithms. Quick sort algorithm, Heap sort algorithm, Radix sort

Straight Sequential Search, Array implementations, Linked List representations, Binary Search, non – recursive Algorithms, recursive Algorithms, Indexed Sequential Search, Hashing, Hash function, Collision Resolution Techniques, Hashing Applications

UNIT V

Trees & Graphs: Definition of trees and Binary trees, Properties of Binary trees and Implementation, Binary Traversal - preorder, post order, in order traversal, Binary Search Trees,

Implementations, Threaded trees, Balanced multi way search trees, AVL Trees, and their Applications.

Definition of Undirected and Directed Graphs and Networks, The Array based implementation of graphs, Adjacency matrix, path matrix implementation, The Linked List representation of graphs, Shortest path Algorithm, Graph Traversal – Breadth first Traversal, Depth first Traversal, Connectivity of graphs; Connected components of graphs, Weighted Graphs, Applications.

Reference Books:

1. E. Balagurusamy, Object – Oriented Programming with C++, Tata Mcgraw Hill.
2. A. M. Tenenbaum, Langsam, Moshe J. Augentem, Data Structures using C, PHI Publ.
3. A.V. Aho, J.E. Hopcroft and T.D. Ullman, Data Structures and Algorithms, Original edition, Addison-Wesley, 1999, Low Priced Edition.
4. Ellis Horowitz & Sartaj Sahni, Fundamentals of Data structures
5. Robert Kruse, Data Structures and Program Design in C, PHI Pub.
6. Willam J. Collins, Data Structure and the Standard Template library, Tata Mcgraw Hill.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) III SEMESTER
IC-305: Engineering Drawing

Aim of Course: To equip students with basic skills required in engineering drawings, electrical circuit diagrams, and communication

Objectives:

The course is designed to make students:

- To impart and inculcate proper understanding of the theory of projection.
- To improve the visualization skills.
- To enable the students with various concepts like dimensioning, conventions and standards related to working drawings in order to become professionally efficient.
- To learn basics of CAD/CAM software tools.

Course Contents:

UNIT I

Introduction: Drawing & Classification of drawings, Drawing Instruments and their uses, Indian standard for drawing. Geometrical Constructions; Polygon, Circle, Technical Lettering, Dimensioning.

UNIT II

Engineering Scales: Introduction – Engineering Scales, Graphical scale, Representative fraction, Types of scales – Plain, Diagonal, scale of chords.

UNIT III

Engineering Curves: Conic Section – Ellipse, Parabola, Hyperbola, Normal and Tangent to conic sections. Cycloidal Curves – Cycloid, Epi-cycloid, Hypo-cycloid, normal & tangent to Cycloidal curves. Involutes Curves – Involutes of circle, polygon, normal and tangents to involutes. Spirals Curves – Archimedean, Logarithmic, Tangents and Normal to spiral curves.

UNIT IV

Projections: Types: Parallel and non- parallel projections. Orthographic – First and Third angle Projections, convention used, Orthographic Projection of Simple solids, conversion of 3-D view to orthographic views. Isometric Projection– Simple Solids, Isometric view, Conversion of orthographic view to isometric view. Introduction to oblique projection and perspective projection.

UNIT V

Projection of Geometrical features: Points, Straight, lines, Planes and Solids.

Section of Solids: Sections of Prisms, Pyramids, cones and cylinders.

Development of Surfaces: Development of surfaces of Prisms, Pyramids, cones and Cylinders.

Introduction to Computer aided drawings CAD

Reference Books:

1. M. B. Shah & B. C. Rana , Engineering Drawing
2. N. D. Bhatt, Engineering Drawing

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

MCA (6 Years)

II SEMESTER

JANUARY – MAY 2013

Subject Code	Subject Name	Credits
IC-401	Accounting & Financial Management-I	4
IC-402	Linear Algebra	4
IC-403	Internet Tools	4
IC-404	Digital Computer Organization	4
IC-405	UNIX	4
IC-406	Database Programming	4
IC-407	Comprehensive Viva	4
IC-408	Lab -Viva	2

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE

MCA (6 Years) IV SEMESTER

IC-401: Accounting & Financial Management – I

Aim of Course: To understand the concepts and application of beginning accounting principles.

Objectives:

The course is designed to make students:

- Learn fundamental accounting concepts, elements of financial statements, and basic accounting vocabulary.
- Learn the concepts of journal, ledger, final accounts, various depreciation techniques, cash flow and fund flow.

Course Contents:

UNIT I

Introduction and purpose of accounting and uses of accounting information & basic accounting concepts.

UNIT II

Accounting Structure: Process of accounting, Journal, Ledger & Trial balance, based on double entry book keeping.

UNIT III

Practical system of accounting: Cash book, sales & purchase of goods. Bill of exchange bank reconciliation statements.

UNIT IV

Preparation of Financial Statements : Income statements , (Profit and Loss A/C),Statement of financial Position (Balance Sheet) and Adjustments. Valuation of Assets and Depreciation methods. Cash and fund flow. Analysis of financial statements- Financial Ratio.

UNIT V

Introduction to cost accounting : Elements of cost , Cost determination , Direct and Indirect cost , Cost centers & cost units , the behavior of cost.

Reference Books:

1. T.S. Grewal, Introduction to accountancy, S. Chand & co. Ltd.,
2. Rovect Anthony, Accounting Principles, Rich & Irvin.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6Years) IV SEMESTER
IC-402: Linear Algebra

Aim of Course: To introduce different algebraic Structures with special reference to linear space and its applications in geometry.

Objectives:

The course is designed to make students:

- Understand concepts and methods of linear algebra.
- Develop the ability to solve problems using linear algebra.
- To connect linear algebra to other fields both within and without mathematics.
- Develop abstract and critical reasoning by studying logical proofs and the axiomatic method as applied to linear algebra

Course Contents:

UNIT I

Composition Table, Revision of Group Structure, Extension of Group Structure. Ring, Integral Domain and Field structure, Detailed study of field structure Various examples of field.

UNIT II

Introduction of the algebraic structure for Linear space, Internal and External Compositions, Linear space. Properties of Linear Space. Sub Spaces, Criteria for sub spaces, examples of Sub-Spaces, Formation of Quotient Set, Binary Composition defines in Quotient Sets, Quotient Spaces—Examples of Quotient Space.

UNIT III

Linear combination of vectors over R and C, Linearly independent and dependent set of vectors over F, Concepts of Basis and Dimensions of Linear Space, Determination of Bases and Dimensions of VCF), coordinate representation of vectors over VCF).

UNIT IV

Linear Transformation, Isomorphism of linear spaces, properties, kernel of Linear transformation, Null space and range space, fundamental theorem of linear space, Homomorphism, Application of Linear transformation to theory of ordinary linear Differential equations. Matrix representation of linear transformation, Rank and Nullity of Linear transformation Eigen values and vectors of linear maps and matrices. Diagonalization of Matrices, Jordan Blocks and Applications, Inner Products – Inner product space. Norm of a vector in inner product space, Unit vectors. Schwartz's Inequality, Triangle inequality, angle between vectors in inner product space, orthogonal vectors Distance in an inner product space.

UNIT V

Orthogonalization of bases, Orthogonal basis Ortho-normal set, Orthonormalization of basis, Gram-Schmidt's process of orthonormalization of base. Quadratic forms, Reduction of quadratic form to Canonical forms. Application, Normal form concept of rank, Index and signature of normal form. Conversion of quadratic form to normal form and determination of rank, Index and signature. Classifications of curves and surfaces in 2 and 3 dim. Reduction and identification.

Reference Books:

1. Dr. H. K. Pathak , Text Book of Linear Algebra .
2. Krishnamurthy, Linear Algebra
3. Hottman & Kunze, Linear Algebra
4. Dr. K. P. Gupta, Linear Algebra

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) IV SEMESTER
IC-403: Internet Tools

Aim of Course: The aim of the course is to provide knowledge of internet tools and to introduce some of the basic technologies for creating and processing content on Internet web sites.

Objectives:

The course is designed to make students:

- Understand the fundamental concepts of working of internet.
- Design, format and link web pages.
- Write dynamic interfaces using JavaScript.
- Link databases to web sites.

Course Contents:

UNIT I

Introduction to computer networks: Introduction, Components, Standards, Transmission types, Topologies, Transmission mode, Categories, OSI Model, TCP/IP Model, Internet/Intranet/Extranet, Client/Server Architecture.

UNIT II

Internet Basics: Introduction, Internet Service Provider (ISP), Types of A/Cs, Internet Addressing: IP Address, e-mail address, Domain address, Uniform Resource Locator (URL), Internet Services: FTP, Telnet, E-mail (SMTP), WWW (HTTP), DNS.

UNIT III

Hypertext Markup Language (HTML): Web Terminologies, Web Characteristics, Effective web programming, Web Documents: Static, Dynamic, Active, Browser Architecture, Characteristics of HTML, Types of Tags, Basic Tags, List, Table.

Dynamic Hypertext Markup Language (DHTML): Introduction, Cascading Style Sheet (CSS): Introduction, Attributes, Types (Inline style, Style element, External Style Sheet), Class.

UNIT IV

Java Script: Introduction, Document Object Model (DOM), Variables, functions and events, Data Types and operators, Decision making with control structure and statements, Forms, Cookies and Security.

UNIT V

Server Side Programming: Introduction, Client/Server Architecture, Client-side scripting versus server-side scripting, creating server-side Applications, Database Connectivity.

Introduction to Extensible Markup Language (XML).

Reference Books:

5. Behrouz A. Forouzan, Data Communications and Networking, Tata McGrawHill.
6. Ivan Bayross, Web enabled commercial application, BPB publication
7. Herbert Schildt, HTML
8. Chris Bates, Web Programming

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) IV SEMESTER
IC-404: Digital Computer Organization

Aim of Course: To make students understand the organization of the computer, and the way the hardware components are connected together to form a computer system, and the development of the hardware for the computer taking into consideration a given set of specifications.

Objectives:

The course is designed to make students:

- Understand the various functional units of CPU.
- Study various units of ALU.
- Understand instruction formats and addressing modes.
- Understand interconnection and interfacing of various units of computer system.

Course Contents:

UNIT I

Introduction to computer organization, simple model of a computer. Memory organization: Memory hierarchy, main memory, auxiliary memory and virtual memory

UNIT II

Input output organization: Peripheral devices, i/o interface, Asynchronous data transfer, Models of transfer, DMA, I/O processor.

UNIT III

Buses and interface: Interconnecting system components, interfacing buses and their operations, interfacing of simple I/O devices such as keyboard and printer.

UNIT IV

Control Unit: Instruction word format, fetch and execution cycle, sequence of operation of control registers, control of arithmetic operations, microprogramming concepts.

UNIT V

CPU Organization: General register organization, stack organization and accumulator type organization. Instruction formats – three address instruction, two address, one address and zero address instructions, Instruction set selection. Addressing modes:- Immediate, direct, indirect, register, indexed etc.

Reference Books:

1. J.P.Hayes , Computer Architecture and Organization, 2nd edition , Tata McGraw-Hill
2. A.S.Tanenbaum , Structured Computer Organization, 3rd edition, Prentice Hall of India
3. M. Morris Mano , Computer System Architecture, 3rd edition, Prentice Hall of India

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) IV SEMESTER
IC-405: UNIX

Aim of Course: To develop an understanding of basic concepts of operating system with special reference to UNIX operating system.

Objectives:

The course is designed to make students:

- Understand UNIX as operating system.
- Learn to use UNIX shell.
- Learn to use UNIX commands.
- Send and receive electronic mail and learn its real-world limitations
- Learn File handling and shell programming.

Course Contents:

UNIT I

Introduction and familiarization: History of UNIX operating system, Architecture of Unix login and log out

UNIT II

UNIX file system: File system hierarchy: file name, attributes, access rights and their change, copying moving and removal of files.

File permission mask,/etc/passwd file, su, newgrp , chown , chgrp commands . Contents of file and file commands. Hard and Soft links, search in file system find command.

UNIT III

Filters , standard input and standard output , pipes , pipelines , simple text manipulation utilities , utilities for comparing text files. Regular expression grep , egrep, fgrep , programmable filters sed, awk. Back up of files and directories , tar , cpio, dd.

UNIT IV

UNIX shell : Basic UNIX user skill , shell as command language , interpreter , command line, shell file metacharacter, script writing, examples of script. Process, ps, shell as process, job control, signals. VI editor

UNIT V

Shell programming concept. Shell script control statements, loops, branching, return codes, test statements, shell parameters. (If time permits) UNIX administration.

Reference Books:

1. Sumitabha Das, UNIX: Concepts and application.
2. Maurice J. Bach, The design of the UNIX operating system.
3. Y. Kanetkar, UNIX shell programming
4. Kamran Hussain , Linux Unleashed, Tim Parker.
5. Christopher Vickery, UNIX shell programmer's Interactive Workbook.
6. Mark F. Komarinsk, Cary Colette , Linux system administration handbook.
7. Dent and Gaddis, Guide to using Linux

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) IV SEMESTER
IC-406: Database Programming

Aim of Course: To handle large database system and to be able to manipulate it efficiently and carry out analysis to design the database.

Objectives:

The course is designed to make students:

- To present necessary concepts for database designing.
- Design conceptual, logical database model and physical model.
- Evaluate set of query using SQL and algebra.
- Concepts of RDBMS, and learn Object oriented modeling

Course Contents:

UNIT I

Introduction, Purpose of Database System, View of data, Three Level -Architecture of DBMS, Data models - Physical Model, Logical Model, Conceptual Model, Hierarchical Model, Network Model, Object Oriented Model, Database Languages, Transaction Management, Storage Management, Database Administrator, Database Users, Overall System Structure.

UNIT II

Entity-Relationship Model:- Basic Concepts, Design Issues, Mapping Constraint, Keys, Entity-Relationship Diagram, Weak-Entity Sets, Design of an E-R Database Scheme, Reduction of an E-R Schema to Tables.

UNIT III

Structured Query Language:- Basic Structure, Set Operations, Aggregation Functions, Null Values, Nested Sub Queries, Joined Relation, Data Definition Language, Data Control Language, Data Transaction Language

Integrity Constraint:- Domain Constraint, Refrential Integrity, Assertion, Triggers, Functional Dependencies

UNIT IV

Relational Database Design:- Codd's 12 Rules, Pitfalls in Relational-Database Design, Decomposition, Normalization Using Functional Dependencies, Normalization Using Multivalued Dependencies, Normalization Using Join Dependencies

UNIT V

Query Processing:- Overview, Measure of Query Cost, Processing select, project and join operations, Database Programming with VB

Reference Books:

1. A Silberschatz, H.F Korth, Sudersan "Database System Concepts" , MGH Publication.
2. Modern Database Management (5th Edition) (Hardcover) by Fred R. McFadden, Jeffrey A. Hoffer, Mary B. Prescott
3. Elmasri & Navathe "Fundamentals of Database systems" – III ed.
4. B.C. Desai. "An introduction to Database systems" BPB.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
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MCA (6 Years)

IX SEMESTER

JULY-DECEMBER 2012

Sub. Code	Sub. Name	Credits
IC-901	Theory of Computation	4
IC-902	Object Oriented Analysis & Design	4
IC-903	Software testing & Quality & Assurance	4
IC-904	Managerial Economics	4
IC-905	Project Viva	6
IC-906	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) IX SEMESTER
IC-901: Theory of Computation

Aim of Course: To make students know about the basic concepts of Computation and learn to work with mathematical abstractions of computers called a model of computation.

Objectives:

The course is designed to make students:

- Understand regular expressions, which are used to specify string patterns in many contexts, from office productivity software to programming languages.
- Study finite automata, another formalism mathematically equivalent to regular expressions, Finite automata are used in circuit design and in some kinds of problem-solving.
- Learn Context-free grammars that used to specify programming language syntax.
- Understand computability theory and decision problems.

Course Contents:

UNIT I

Formal languages: Introduction to Computation & Languages: Natural Languages, Computer Programming Languages and Formal Languages. Language Concepts: alphabet, strings, properties of Strings, kleene closure. Properties of Formal Languages.

Grammar: Chomsky Hierarchy of grammar, languages represented by type 0,1,2,3 grammars.

UNIT II

Regular languages and finite automata-recursive definition, regular expression and corresponding languages, Pumping Lemma for non-regular languages. Finite automata, kleene's theorem, non-deterministic finite automata. Equivalence of FAs and NFAs. Minimal state finite automata, Mealy machine and Moore machine, Regular grammar and their equivalence to finite automata.

UNIT III

Context free languages Parsing, ambiguity, parse trees, parsing methods: Bottom up and top down, Simplification of grammar. Normal form of CFGs: Chomsky Normal Form and Greibach Normal Form, CKY algorithm, Closure Properties of CFLs

UNIT IV

Push Down Automata: definition, examples, deterministic PDA, non-deterministic PDA, Parsing and PDAs, PDA and Context Free Languages

UNIT V

Turing machines – models of computations, definition, Representation of Turing Machines, TMs as language acceptors, Techniques for TM construction, Church - Turing thesis, Universal Turing machines, Variants of Turing machine.

Unsolvable Decision Problems- Decidability, Decidable Languages, Undecidable Languages Halting Problem of Turing Machine.

Reference Books:

1. Hopcraft and Ullman, Introduction to Automata Theory, Languages and Computation, Narosa Publishing House.
2. K.L.P. Mishra, N. Chandrasekaran, Theory of Computer Science (Automata,

3. Languages and Computation), Prentice Hall of India.
4. Peter Linz, An Introduction to Formal Languages and Automata, Narosa Publishing House.
5. Cohen Daniel I.A., Introduction to Computer Theory, John Weley and Sons , inc New York
6. Martyn John C, Introduction to Languages and Theory of Computation, McGraw Hill, N.Y. (Internal Edition McGraw Hill)
7. Mandrioli Dino, Ghezzio Carlo, Theoretical Fundamentals of Computer Science, John Weley and Sons, Inc , New York.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) IX SEMESTER
IC-902: Object Oriented Analysis & Design

Aim of Course: To enable the students to have a thorough understanding of the activities in development projects using Object Oriented Analysis and Design techniques.

Objectives:

The course is designed to make students:

- Develop a working understanding of formal object-oriented analysis and design processes.
- Develop the skills to determine which processes and OOAD techniques should be applied to a given project.
- Develop an understanding of the application of OOAD practices from a software project management perspective

Course Contents:

UNIT I

Software engineering best practices. UML: its road map.

UNIT II

Introduction to the Rational Unified process: Workflow and Lifecycle.

Introduction to Object Orientations, using UML modeling mechanisms.

UNIT III

Requirements Management: key concepts, problem statement,

Glossary, use case model, supplementary specification.

UNIT IV

Analysis and design overview: architectural analysis-layers.

Use case Analysis- Responsibilities, attributes and association.

Architectural design.

UNIT V

Describe concurrency.

Describe distribution, Use case design, Subsystem Design, Class design.

Reference Books:

1. P.Kruchen, The Rational Unified Process: An Introduction, Pearson Education Asia, 2000.
2. G. Booch. I. Jacobson, J. Raumbaugh, The Unified Modeling Language- User's Guide, Addison Wesley, 1999.
3. W.Boggs and M. Boggs, Mastering UML with Rational Rose, BPB Publications, 1999.
4. G. Booch, Object oriented Analysis and Design with Applications, Addison Wesley, 1994.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) IX SEMESTER
IC-903: Software Testing & Quality Assurance

Aim of Course: To enable the students understand software testing process, planning, strategy, criteria, and testing methods, as well as software quality assurance concepts & control process.

Objectives:

The course is designed to make students:

- To study software testing and quality control concepts, principles, methodologies, management strategies and techniques.
- Understand test models, test design techniques (black box and white-box testing techniques), testing strategies and advanced testing techniques.

Course Contents:

UNIT I

SOFTWARE TESTING PRINCIPLES: Need for testing - Psychology of testing - Testing economics – Various software development Life cycles (SDLC) – Principles of testing

UNIT II

WHITE BOX TESTING: White box testing techniques - Statement coverage - Branch Coverage - Condition coverage - Decision/Condition coverage - Multiple condition coverage - Dataflow coverage - Mutation testing - Automated code coverage analysis

UNIT III

Black box testing techniques - Boundary value analysis - Robustness testing - Equivalence partitioning -Syntax testing - Finite state testing - Levels of testing – Unit testing- Integration Testing

UNIT IV

TESTING STATEGIES: System testing - Functional testing-non-Functional testing-acceptance testing- performance testing –Factors and Methodology for Performance testing, Regression testing-Methodology for Regression testing.

UNIT V

ADVANCE SOFTWARE TESTING METHOD (OBJECT ORIENTED TESTING): Syntax testing - Finite state testing - Levels of testing - Unit, Integration and System Testing.

Challenges - Differences from testing non-OO Software - Class testing strategies - State-based Testing

Reference Books:

1. Srinivasan Desikan & Gopalswamy Ramesh "Software testing Principles and Practices", Pearson education, 2006
2. R. Patton; Software Testing; Techmedia (SAMS) 2000
3. Glenford J.Myers, " The Art of Software Testing ", John Wiley & Sons
4. Boris Beizer, " Software Testing Techniques (2nd Edition) ", Van Nostrand Reinhold, 1990
5. Robert V.Binder, " Testing Object-Oriented Systems: Models Patterns and Tools ", Addison Wesley, 2000
6. Boris Beizer, Black-Box Testing: " Techniques for Functional Testing of Software and Systems ", John Wiley & Sons
7. William E.Perry, " Effective Methods for Software Testing (2nd Edition) ", John Wiley & Sons, 2000

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) IX SEMESTER
IC-904: Managerial Economics

Aim of Course: To provide students with a basic understanding of the economic theory that will have application in their professional life.

Objectives:

The course is designed to make students:

- Understanding economic concepts that have direct managerial applications.
- Sharpen analytical skills through integrating knowledge of the economic theory with decision making techniques.
- Students will learn to use economic models to isolate the relevant elements of a managerial problem, identify their relationships, and formulate them into a managerial model to which decision making tools can be applied.
- Learn a variety of techniques that will allow them to solve business problems relating to costs, prices, revenues, profits, and competitive strategies.

Course Contents:

UNIT I

Managerial Economics and its role in management, Economic Concepts such as Utility, Marginal Utility, Total Utility, Equimarginal Utility

UNIT II

Laws of Demand and Supply, Elasticity of Demand and Supply, Substitutions, Revenue and Cost, Laws of Returns, Return to Scale. Different market Structure: Perfect Competition, Price Output determination, Industry equilibrium, and Individual firm equilibrium.

UNIT III

Monopoly price determination, Discriminating monopoly, Monopolistic competition Meaning, price determination, Oligopolistic competition meaning, Price determination under different Oligopolistic market structures.

UNIT IV

Managerial theories of firm, Modern theory of profit, Theories of rent, Wages and Interest, Determinants of national income (GDP, GNP, NNP, PI, PDI)

UNIT V

Consumption, Saving, Investment, Inflation, Trade Cycles, Monetary Policy, Fiscal Policy, Application of Managerial Economics.

Reference Books:

1. H.C. Petersen, Managerial Economics
2. G.S. Gupta, Managerial Economics
3. R. L. Varsney, Managerial Economics
4. P.L. Mehta, Managerial Economics

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

MCA (6 Years)

V SEMESTER

JULY-DECEMBER 2012

Sub. Code	Sub. Name	Credit
IC-501	AFM-II	4
IC-502	Micro Processor and Assembly Language	4
IC-503	Computer Graphics	4
IC-504	System Programming	4
IC-505	Numerical Analysis and Design	4
IC-506	Computer Lab	2
IC-507	Electronics Lab	2
IC-508	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE

MCA (6 Years) V SEMESTER

IC-501: Accounting & Financial Management – II

Aim of Course: Aim of Course: To give an in-depth knowledge of all business transactions and how they should be recorded, classified & interpreted to get a meaningful judgment of viability & profitability of the industry.

Objectives:

The course is designed to make students:

- Be able to prepare a set of financial statements for various forms of businesses and non-profit entities.
- Develop an ability to apply accounting concepts, principles and practices.
- Be familiar with the basic tools for analyses of financial statements.

Course Contents:

UNIT I

Scope of Financial Management, Time value of money: Introduction to various sources of finance Leverages-Meaning of leverage, Significance of operating & financial Leverage.

UNIT II

Capital Structure: Meaning of capital Structure Different Capital Structure Theories.

UNIT III

Working Capital Management: Concept of Working Capital, Management of cash Management of Inventories, Management of Account Receivable Management, Accountants Payable Over Trading & Under Trading.

UNIT IV

Long term investment Decision: Capital Budgeting ,Cost Volume Profit Analysis.

UNIT V

Marginal Costing Introduction to marginal costing, Decision making in alternative. Choices. Dividend Policy in Practice

Reference Books:

1. Dr. S. N. Maheshwari , Financial Management: Principles & Practice

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) V SEMESTER
IC-502: Microprocessor & Assembly Language

Aim of Course: To introduce the basic concepts of microprocessor and assembly language programming.

Objectives:

The course is designed to make students:

- Develop an understanding of the operation of microprocessors.
- Learn assembly language programming.
- Learn the internal organization of some popular microprocessors.

Course Contents:

UNIT I

Microprocessor-Based Systems: Hardware and Interfacing: Microprocessors, Microcomputers and Assembly Language8085 Architecture & Memory Interfacing I/O Devices.

UNIT II

Instruction Set and Addressing modes: Data transfer, Arithmetic, Logical, Branch & Machine control instructions, related programs & Addressing modes.

Additional Programming Techniques and Stack Operations: Subroutine, Counters & time delay, Code conversion, BCD arithmetic, 16 bit data operation.

UNIT III

Interrupt & Interfacing some peripheral I/O: Interfacing data converters, Programmable Interface Devices: 8155 I/O and Timer, 8279 Keyboard / Display interface.

UNIT IV

General purpose programmable peripheral devices: 8255 (Bidirectional data transfer between two computer) 8254 (Programmable Interval Timer)8259A Interrupt Controller8237 DMA, Serial I/O Communication.

UNIT V

Other eight bit, sixteen-bit Microprocessor: Z80, MC 6800Introduction to advance Microprocessor: 8086,80286,80386Microcontroller 8051.

Reference Books:

1. R.S. Gaonkar, Microprocessor Architecture Programming and Application of 8085.
2. Shridhar and Ghosh, 0000 to 8085 Microprocessor.
3. Intel Corporation, Microprocessors and peripheral hand book.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) V SEMESTER
IC-503: Computer Graphics

Aim of Course: To provide a broad exposure to the computer graphics field and understand the development of computer graphics applications.

Objectives:

The course is designed to make students:

- Understand basics of computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends.
- Understand computer graphics techniques, and concepts including geometric transformations, geometric algorithms, 3D object models (surface, volume and implicit), morphing, and anti-aliasing.
- The interdisciplinary nature of computer graphics is emphasized in the wide variety of examples and applications.
- To provide a broad exposure to the computer graphics field and understand the development of computer graphics applications using multimedia tools and techniques.

Course Contents:

UNIT I

INTRODUCTION: Application of Computer graphics, Raster Graphics, Fundamentals: Scan Conversion, Pixel, Frame Buffer. **GRAPHICS PRIMITIVES:** Line algorithms, Circle algorithms, Ellipse, Character generation, Polygon representation, Inside test. Polygon filling algorithms, Antialiasing.

UNIT II

DEVICES: Display devices: Random scan and raster scan monitors. Color CRT monitor, Plasma panel, Hard copy devices: Printers and Plotter: Input devices Joysticks, Mouse, Digitizer, Scanner, Camera

UNIT III

WINDOWING & CLIPPING: Window, View port Line Clipping algorithms, Polygon clipping algorithms, Window & View port Transformation, Display file Concepts & Segmentation: Display file. Segment table, segment display file. **INTRACTIN:** Locator & Selector devices. Interactive picture construction techniques – modular Constraint, rubber band, gravity field.

UNIT IV

THREE DIMENSIONS: 3D Geometry, 3D Modeling techniques, #D Display Techniques: Parallel Projection, Perspective Projection. Transformation, Viewing Parameter. **HIDDEN SURFACE REMOVAL:** Back face Removal Algorithms, Z Buffers algorithms, scan line algorithms, Painter's algorithms.

UNIT V

SHADING AND COLOR MODELS. Diffuse illumination, Point source illumination Specular reflection, Refraction Shadows, Color models, Dithering, Half toning.

CURVES AND SURFACES: B_Spline, Bezier curves, Fractals

Reference Books:

1. Donald Hearn and M.Pauling Baker, Computer Graphics, Prentice Hall of India.
2. David F. Rogers, Procedural Element of Computer Graphics, McGraw Hill International.
3. William M. Newman Robert F. Sproull, Principles of interactive computer Graphics,

4. McGraw Hill International.
Foley, Computer Graphics, Addison Wesley Longman

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) V SEMESTER
IC-504: System Programming

Aim of Course: To enhance the understanding of the concepts of System Programming and to provide a basis for judgment in the design of System Software - Preprocessors, Compilers, Loaders, Debuggers, and Assemblers

Objectives:

The course is designed to make students:

- Understand basic concepts of system software and system programming.
- Learn the design of assemblers, compilers and preprocessors.
- Understand the working of loaders, linkers, editors, debuggers and other software tools used in programming development environment.

Course Contents:

UNIT I

Introduction to Software: System Software and Application Software, System Programming, Components of Language Processing System, Fundamentals of Language processing systems.

UNIT II

Assembler: Elements of Assembly Language programming, a simple Assembly Scheme, Pass Structures of Assemblers, Design of a Two-pass Assembler, A Single pass Assembler for IBM PC.

UNIT III

Macros and Macro Processors: Macro definition and call, macro expansions, nested macro calls, Advance Macro facilities, Design of Macro Preprocessor and macro Assembler.

UNIT IV

Compiler: Compiler and Translators, cross compilers, phases in compiler Design, design of Lexical analyzer.

UNIT V

Loaders and Linkers: Loader Schemes- Link and Go, Link-load and Go, General loader scheme, Absolute loaders, Subroutine linkage, Relocating loaders. Other loader schemes:- Binders, Linkers, loaders, Re-locatable and self-relocating programs.

Software Tools: Software tools for program development, Editors, Debugger, Programming Environments, User Interfaces, Co-routines and reentrant programs.

Reference Books:

1. D. M. Dhamdhere, System Programming and Operating System, 5th edition
2. John. J. Donovan, System Programming, Tata McGraw Hill.
3. Aho and Ullman , Principles of Compiler Design, Pearson Education.
4. Leland L. Beck, "System Software An Introduction to Systems Programming", Pearson Education 3rd Edition.
5. Dougles. V. Hall , "Microprocessors and Interfacing", Tata McGraw Hill.
6. Assembly Language Techniques for IBM PC, BPB Publication, Alan R. Millar

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) V SEMESTER
IC-505: Numerical Analysis & Design

Aim of Course: To teach basic numerical methods required for typical engineering and business applications.

Objectives:

The course is designed to make students:

- Understanding the properties of different numerical methods so as to be able to choose appropriate methods and interpret the results for engineering problems that they might encounter.
- Find numerical approximations to the roots of an equation by Newton method, Bisection Method, Secant Method, etc.
- Use finite differences for interpolation and learn various interpolation methods.
- Understand numerical integration and differentiation.

Course Contents:

UNIT I

Introduction: Types of error. Computer Arithmetic operation on floating point number, Solution of Transcendental and Algebraic equation, Zeros of a polynomial, Bisection method, False-Position method, Newton Raphson method.

UNIT II

Introduction to Interpolation:-Finite Differences, Forward, Backward and Central differences, Differences of a polynomial, Newton's formula for interpolation, Related numerical. and derivation, Gauss's central differences formula, Related numerical and derivation. Interpolation with unevenly spaced points. LaGrange's interpolation. derivation and numerical. Hermite's methods for interpolation. Derivation and numerical, divided differences and theirs properties, Newton's general interpolation formula, Inverse interpolation, Method of successive approximations, Extrapolation.

UNIT III

Numerical integration and Differentiation:- Introduction to Numerical Integration, Area bounded by a curve, General Formula for Integration, Trapezoidal rule, Simpson's 1/3 rule, Simpson's 3/8 rule.

UNIT IV

Numerical and C Programs based on above methods:- Geometrical interpretation of above methods. Newton-Cotes Integration formula. Gaussian Integration. Solution of differential equation, Runga Kutta methods.

UNIT V

C implementation of other methods:-Simultaneous Linear Equations, Solution of simultaneous linear equations, Gauss elimination and pivoting, Ill conditioned equation and refinement of solution. Gauss Seidal iterative Methods.

Reference Books:

1. S. S. Shastri, Numerical Methods (Text Book 1 for Numerical Methods)
2. Rama N. Reddy and Carol a.Ziegler, C77 (Text Book 2 for C)
3. V.Rajaraman, Computer Oriented Numerical Methods
4. Veda Murthi and Iyenger, Numerical methods.
5. Krishna Murthi, Numerical Analysis.

6. Gupta and Malik, Numerical Methods.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

MCA (6 Years)

VI SEMESTER

JANUARY – MAY 2013

Subject Code	Subject Name	Credits
IC-601	Principles & Practices of Management	4
IC-602	Data & Computer Communication	4
IC-603	Java-I	4
IC-604	System Analysis & Design	4
IC-605	Analog Electronics	4
IC-606	Project	3
IC-607	Lab	3
IC-608	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) VI SEMESTER
IC-601: Principles & Practices of Management

Aim of Course: To provide an opportunity for the participants to understand the various methods of management techniques and eventually develop skills in problem solving and decision-making.

Objectives:

The course is designed to make students:

- Understand basic functions of management: planning, organizing, leading, and controlling.
- Understand the theories of contemporary organizations from a conceptual, analytical, and pragmatic perspective.

Course Contents:

UNIT I

Introduction— What is Management, Definition of management, Functions of Management, Principles of Management, Is management Art or Science. Management Thoughts – The Classical School, the Human relation School, the Decision Theory School, The Management Science School, The System Theory School, The Contingency Theory School

UNIT II

Planning – The Concept, Nature, Type, Steps and Principles of Planning, Instruments of Planning, Strategies Rules, Procedures, Methods, Standards, Projects and Budgets. Decision Making- Nature, Theories, Types, Process of Decision Making, Group Decisions

UNIT III

Organizing & Directing Organization and Organization Structure, Process of Organizing, Departmentation, Line Staff & Lateral Relation, Directing or Actuating.

UNIT IV

Motivation and Communication Need Concept, theories of Motivation, Meaning, Importance, Process, Barriers and Strategies for Communication.

UNIT V

Leadership- Tasks of Leaders, Meaning, Approaches. Coordination & Control Concept, Nature, Types, Methods of Coordination, Management Control, Types, Principles, Techniques of Controlling

Reference Books:

1. Koontz, Management-A global Perspective
2. Dr. R D Agrawal , Organization and Management

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) VI SEMESTER
IC-602: Data & Computer Communication

Aim of Course: To gain an understanding of the fundamentals of data communications networks.

Objectives:

The course is designed to make students:

- Understand basic data communication components.
- Understand the fundamentals of signaling and data transmission.
- Study data link layer and data link protocols.
- Study Network layer, MAC sub layer, LAN and its standardsTo introduce the basic concepts of microprocessor and assembly language programming.

Course Contents:

UNIT I

Introduction & Overview of Communication Systems Use of Computer N/W, N/W Hardware.

Layered Network Architecture: N/W Software.

Review of ISO OSI Reference Model: OSI Model, The TCP/IP Model, Comparing and Contrasting the OSI & TCP/IP Model.

Basis for Data Communication:- Guided Transmission Media: Twisted Pair, Coaxial Pair, Fiber Optics. Multiplexing Techniques: FDM, WDM, TDM, STDM. Unguided Transmission Media: Wireless Communication, Cellular Radio, Satellite Communication

UNIT II

Data Encoding: Digital Data, Digital Signal: NRZL, NRZI, Bipolar AMI, Pseudo Ternary, Manchester, Differential Manchester, B8ZS, HDB3. Digital Data, Analog Signal: ASK, FSK, PSK. Analog Data, Digital Signal: PCM, PAM, DM, ADM. Analog Data, Analog Signal: AM, FM, PM

UNIT III

The Data Link Layer : DLL Design Issue: Framing, Character Count, Character Stuffing, Bit Stuffing, Physical Layer Coding Violation, Error Control, Flow Control, Error Correcting Codes, Error Detecting Codes, Hamming Codes, CRC Code. Data Link Protocols:- Stop & Wait Protocol: Unrestricted Stop & Wait Protocol, Simplex Stop & Wait Protocol, Protocol for Noisy Channel. Sliding Window Protocol: Go Back n, Selective Repeat, Verification using File State, HDLC Data Link Protocol, ISDN: Services, Architecture, Interfaces, Devices. ATM: Architecture, Cells, Headers, Layers.

UNIT IV

The Medium Access Sub Layer : The Medium Access Sub Layer: Channel Allocation, Static, Dynamic. Multiple Access Protocols: ALOHA, CSMA, Collision Free Protocols, Limited Connection Free Protocols, WDMA, Wireless LAN Protocols. Digital Cellular Radio.

Local Area Network :- IEEE Standards: IEEE Standard 802.3, IEEE Standard 802.4, IEEE Standard 802.5, Comparison of 802.3, 802.4 & 802.5, IEEE Standard 802.6, IEEE Standard 802.2

Bridges: Bridges from 802.x & 802.y, Transparent Bridge, Source Routing Bridges, Comparison of 802 Bridges, Remote Bridges. FDDI

UNIT V

Network Layer N/W Layer Design Issue: Organization, Virtual Circuit, Datagram Routing Algorithm: Shortest Path Algorithm, Flooding, Flow Based Routing, Distance Vector

Routing, Link State Routing, Hierarchical, Mobile Host. Broadcast & Multicast

Reference Books:

1. A.S. Tanenbaum, Computer Network (III Edition).
2. B.A. Forouzen, Data Communication and Networking (II Edition).
3. William Stalling, Data and Computer Communication.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) VI SEMESTER
IC-603: Programming in Java

Aim of Course: To learn the Java programming language fundamentals: its syntax, idioms, patterns, and styles with object oriented programming concepts.

Objectives:

The course is designed to make students:

- Write programs using the Java language. Basic topics considered are programs and program structure in general, and Java syntax, data types, flow of control, classes, methods, objects, arrays, exception handling, recursion, and graphical user interfaces (GUIs).
- Compile and execute them under the Sun Microsystems, Inc. Java 2 Platform, Standard Edition, or other Integrated Development Environments (IDEs) such as NetBeans. To provide a broad exposure to the computer graphics field and understand the development of computer graphics applications.

Course Contents:

UNIT I

Introduction to Java: Features of Java, Object-oriented programming overview, Introduction of Java Technologies, How to write simple Java programs, Data Types, Variables, Memory concepts, decision making operators, Naming Conventions Introduction to Class, Objects, Methods and Instance Variables, Primitive type Vs Reference Type, Initializing Objects with Constructors. Type conversion & casting, Operators, Control Statements (if Single-Selection Statement, if-else Double Selection), while Repetition Statement, for Repetition Statement, do-while Repetition Statements, switch Multiple-Selection Statement, break and continue Statements. Static Method, static field and Math Class, Method Call Stack and Activation Record, Argument Promotion and Casting, Scope of declaration and Method Overloading.

String Handling & Arrays: String Handling: The String constructors, String operators, Character Extraction, String comparison, String Buffer.

Arrays: Declaring and Creating Arrays, Enhanced for Statement, Passing Arrays to Method, Multidimensional Arrays, Variable-Length Argument lists, Using Command-line Arguments. final Instance Variables, this reference, static import, overloaded Constructors, Garbage collection and method finalize , Overloading methods, Parameter passing.

UNIT II

Inheritance & Polymorphism: Inheritance: Extending classes, protected Members, relationship between Superclasses and Subclasses, Using super, Constructor in Subclasses, The Object Class, Object Copying in Java

Polymorphism: Method overriding, upcasting, Dynamic Method Dispatch, final Method and classes, Abstract classes and Methods, instanceof operator, Downcasting, Class class, Runtime type Identification.

Packages and Interfaces: Packages: Defining a Package, Understanding CLASSPATH, Access Protection, Importing packages, creating own packages.

Interfaces: Defining an Interface, Properties of interface, advantages of interface, Achieving multiple inheritance through interfaces, Variables in Interfaces, Comparable interface.

UNIT III

Nested Classes & Exception Handling: Nested Classes: Overview of nested class and interfaces, static nested class and interfaces, non-static nested class and interfaces –member class, local

classes, anonymous classes

Exception Handling: Introduction, overview of doing it and keywords used, when to use it, Java Exception Hierarchy, finally block, chained exceptions, declaring new exception types, preconditions and post conditions.

Streams and Files: Introduction to Data Hierarchy, Files and Streams, Sequential-access Text Files, Object Serialization, Random-Access files, Java Stream class Hierarchy.

UNIT IV

Multithreading: What are threads, The java thread model, Thread priorities, Thread life cycle, Creating thread and executing thread, Thread Synchronization, producer-consumer problem without Synchronization. Producer-consumer problem with Synchronization, Other class and Interfaces in `java.util.concurrent`, Monitor and Monitor Locks, Thread Groups, Synchronization, Inter-thread Communication.

Introduction to GUI & Applets: Introduction To GUI : Introduction, Overview of swing Components, Displaying text and Images in a window, Introduction to Event Handling, Common GUI Event Type and Listener Interfaces, How Event Handling Works, Adapter Classes, Layout Managers

Applets: Applet basics, Applet Architecture, Applet life cycle methods, Applet HTML Tag and attributes, Executing applet in web browser and in the appletviewer, in Passing parameters to Applets, doing GUI programming in applet.

UNIT V

Generic & Collection: API Generic: Introduction, Motivation for Generic Methods, Generic Methods : Implementation and Compile- time Translation Issues, Overloading Generic Methods, Generic Classes, Raw Types, Generic and Inheritance

Collection API: Introduction, Collection overview, Interface Collection and class Collection, List- ArrayList, LinkedList, Vector, Stack Class.

Database connectivity: JDBC, The design of JDBC, Typical uses of JDBC, The Structured Query language, Basic JDBC Programming concepts, Executing Queries.

Reference Books:

1. Deitel & Deitel, JAVA How to Program, Pearson Education, Sixth Edition
2. Herbert Schildt , Java2 : The Complete Reference, Tata McGraw- Hill, 4th Edition
3. John Hubbard , Programming with Java (Schaum's Easy Outline)
4. JAVA 2 Black Book
5. Bruce Eckel , Thinking in Java, Prentice Hall
6. Gary Cornell, Cay Horstmann Core Java 1.2: Volume 1 Fundamentals, Prentice Hall
7. The Sun Microsystems Press Java Series
8. Janson Hunter, William Crawford, Java Servlet Programming, O'Reilly Pub.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) VI SEMESTER
IC-604: System Analysis & Design

Aim of Course: To introduce established and evolving methodologies for the analysis, design, and development of an information system.

Objectives:

The course is designed to make students:

- Understand system characteristics, project management, prototyping, and systems development life cycle phases.
- To analyze a problem and design an appropriate solution using a combination of tools and techniques

Course Contents:

UNIT I

Overview of system analysis and design: Systems concepts, Definition, Characteristics of a system, Elements of a system, Types of Systems: Physical or Abstract System. Open or Closed Systems. Man-Made Information Systems: Categories of Information, Formal Information Systems, Informal Information Systems.

UNIT II

System Development Life Cycle: Recognition of need, Feasibility study, Analysis, Design, Implementation, Post implementation and Maintenance, Project Termination, Prototyping, Role of the system Analyst: Definition, Skills, Academic and Personal Qualifications, The Multifaceted Role of The Analyst, The Analyst/User Interface.

UNIT III

System Analysis: Systems Planning and the Initial Investigation-Bases for Planning in System Analysis: Dimensions of Planning, Initial Investigation: Needs Identification, Strategies for Determining Information Requirements, Problem Definition and Project Initiation, Background Analysis: Fact- Finding, Fact Analysis, Determination of Feasibility.

Structured Analysis: Introduction, Tools of Structured Analysis: Dataflow Diagrams, Data Dictionaries, Decision Tables, Decision Trees, Structured English.

Feasibility study: Introduction, Feasibility Considerations, Feasibility Study Stages, Feasibility Report, Cost/Benefit Analysis.

UNIT IV

System Design: The Process and Stages of System Design: Introduction, The Process of Design: Logical and Physical Design, Design Methodologies: Structured Design, Form-Driven Methodology- The IPO Charts.

Input/Output and Forms Design: Introduction, Input Design, Output Design, Forms Design.

File Organization and Data Base Design: Introduction, File Structure, File Organization, Data Base Design, Views of Data, Data Structure.

UNIT V

System implementation, Post Implementation and Maintenance:

Introduction, Testing objectives, Test Data, System Testing, Types of System Tests, Quality Assurance: Quality Factors Specifications, Levels of Quality Assurance, Post Implementation and Maintenance, Project Scheduling , Project Management.

Reference Books:

1. Elias M. Awad , System Analysis and Design, GALGOTIA Publications.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) VI SEMESTER
IC-605: Analog Electronics

Aim of Course: To enable students understand operational amplifiers.

Objectives:

The course is designed to make students:

- Understand working of amplifiers.
- Understand amplifier circuits, feedback circuits, and oscillator circuits To teach basic numerical methods required for typical engineering and business applications..

Course Contents:

UNIT I

Amplifier Circuits: Overview of BJT DC biasing techniques: Fixed bias, emitter stabilized bias, voltage divider bias.BJT Small signal analysis: Common emitter fixed bias, voltage divider bias, emitter follower.

UNIT II

Frequency Effects: Frequency response of an amplifier: Input & Output coupling capacitor, emitter and collector bypass capacitor, Miller's theorem, decibel voltage gain, cascading of stages.

UNIT III

Operational Amplifier: Differential and common mode operation, Non-inverting and inverting amplifiers: summing amplifier, integrator, and differentiator. Op-Amp specifications: DC offset parameters, frequency parameters.

UNIT IV

Feedback circuits: Concept of feedback, Feedback connection types, effect of feedback on gain and bandwidth.

UNIT V

Oscillators circuits: Operation, Phase Shift, Wein Bridge, Tuned and Crystal oscillators

Reference Books:

1. Electronic Devices and Circuit theory by Robert Boylestad & Louis Nashelsky.
2. Electronic Principles by A. P Malvino.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

MCA (6 Years)

VII SEMESTER

JULY-DECEMBER 2012

Sub. Code	Sub. Name	Credit
IC-701	Computer Architecture	4
IC-702	Linear Systems	4
IC-703	Discrete Structure	4
IC-705A	Operating System	6
IC-708	Bio informatics	4
IC-707	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) VII SEMESTER
IC-701: Computer Architecture

Aim of Course: To understand the concepts of design and analysis of the hardware of a computer system and its components such as control unit, arithmetic and logical (ALU) unit, input/output, and memory unit.

Objectives:

The course is designed to make students:

- Learn concepts of microprogramming in the design of the central processing unit of a computer system.
- Understand various ways for interconnecting I/O devices to the system.
- Understand basic concepts of parallel processing

Course Contents:

UNIT I

Introduction and vocabulary, History of computer architecture, Overview of computer organization, Difference between Computer architecture & organization, Introduction to digital logic, von Neumann/Turing, IBM 360 series, Moore's law, Performance measurement: IPC, CPI, MIPS, Amdahl's law, CPU performance equation, Speeding it up, Performance Mismatch & Solutions, Instruction cycle, Interrupt cycle, Bus interconnections: Types, Arbitration, PCI, Future bus, Future bus+.

UNIT II

CPU Structure, Registers, User Visible Registers, General Purpose Registers, accumulator organization, general register organization, stack organization of CPU, High level issues in CPU design, Memory: Location, Capacity, Unit of transfer, Access method, Performance (Access, cycle, transfer rate), Physical type (semi conductor or magnetic), Physical characteristics (volatile, erasable etc.), Locality of references, Cache mapping techniques, Cache write policies, Cache initialization, External memory, RAID organization of hard disks.

UNIT III

Input/Output: Programmed I/O, Interrupt Driven I/O, Direct Memory Access. Representing information digitally, Byte Ordering: Big-Endian & Little-Endian. Instruction sets, Elements of an Instruction, Instruction Representation, Instruction types, Number of Addresses, Design Decisions [CISC/RISC], Addressing Modes, Large Register File in RISC.

Register and data flow design, data fetch and instruction fetch in indirect instruction cycle, CPU control unit, Functions of Control Unit, Micro-Operations, Micro Programmed Control and Hardwired control unit and their advantages-disadvantages.

UNIT IV

Instruction level parallelism: Pipeline design, Synchronous & Asynchronous Pipeline conflicts: Resource conflict, Data dependency, and Branch difficulties. Solutions to deal with pipelining: Hardware interlocks, operand forwarding, Delayed load, Pre fetch target instruction, Branch target buffer, Loop buffer, Branch prediction, and Delayed branch. Super scalar design; Super pipelining, and VLIW processors.

UNIT V

Parallel Processing, Flynn's classification: SISD, SIMD, MISD, MIMD. Vector processor, Array Processor, Symmetric multi processing, NUMA, Cache coherence in parallel computing,

Clusters, Supercomputing and architecture of CRAY-1. Distributed computing and its models, Ubiquitous computing.

Reference Books:

1. William Stallings, Computer Organization and Architecture: Design for performance 8th Ed., Pearson Education.
2. Rajkamal, Computer Architecture, ISP 2006, Tata McGraw HILL.
3. Andrew Tanenbaum, Structured computer organization, 4th Ed., Prentice – Hall, Upper Saddle River, NJ, 2000. (Alternate reference)
4. M. Morris Mano, Computer System Architecture, 3rd Ed., Pearson Education.
5. Kai Hwang, Computer Architecture

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) VII SEMESTER
IC-702: Linear System

Aim of Course: To introduce concepts of Linear System dynamics through integro-differential equations

Objectives:

Objectives:

The course is designed to make students:

- Understand linear system dynamics
- Understand dynamics in the multi-loop multi-task programming
- Learn concepts of calculation of Eigen values and Eigen Vectors

Course Contents:

UNIT I

δ -Functions definitions and its properties. Applications δ -Functions to signals, definition of a linear system and its impulse response. Response by convolution basic idea and some examples. Graphical Evaluation of convolution integral and determination of the limits of integration.

UNIT II

Laplace Transform: Laplace Transform Theorem, Note on the Inversion integral, Region of convergence definition of unilateral and bilateral Laplace transforms, techniques of inversion of unilateral and bilateral Laplace transforms with some examples. Properties of Laplace Transform, Applications to networks and mechanical Systems.

UNIT III

Z-Transform: Sampling process, Frequency- domain Analysis of sampling process, Definition of Z-Transform, Properties of Z-transform. Inversion Integral for Z-Transform and techniques of inversion, solving the difference equations by Z-transform.

UNIT IV

Modeling of systems into integro-differential equations, analog simulation, signal flow graph, force-voltage and force-current analogy, concept of state conversion of integro-differential equations into state dynamics.

UNIT V

Concept of calculations of eigen-values and eigen-vectors, solution of Linear Vector matrix differential equations, Examples and applications. Controllability and Observability in time and frequency domains, stability

Reference Books:

1. I. J. Nagrath and M. Gopal, Control Systems Engineering, (Third Edition)
2. K Ogata, Modern Control Engineering. Fourth Edition, PHI
3. R A Gabel and R.A. Roberts, Signals and linear systems, Wiley International, John Wiley Eastern Pub.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) VII SEMESTER
IC-703: Discrete Structures

Aim of Course: To familiarize the students with mathematical concepts that underline much of computer science, and to help them develop the skills to solve problems using them, whether they are in a more advance course, doing research, or working.

Objectives:

The course is designed to make students:

1. Enhance mathematical reasoning of students
2. To understand Discrete Structures such assets, permutations, relations, graphs, trees and finite-state machines.
3. Enhance algorithmic thinking of students

Course Contents:

UNIT I

Set theory, function and relations: Set theory: Introduction, sets and elements, universal set and empty set, subsets, Venn diagrams, set operations, algebra of sets, power sets, partitions, ordered pair, Cartesian product. Relations: Introduction to relations, pictorial representation of relations, domain and range, types of relations, n-ary relations, equivalence relations, partially ordered relations.

Functions: Introduction to functions, functions in terms of ordered pairs, pictorial representation of relations, types of functions: surjective, bijective, injective etc, Recurrence relations with applications to algorithm analysis

UNIT II

Logic, Boolean algebra and lattices: Propositions and logic operations, existential and universal quantifiers, tautologies.

Boolean algebra: Combinatorial circuits and their properties, Boolean functions and synthesis of circuits, Lattices: Ordered sets, chains and anti chains, hasse diagrams, different types of lattices, related theorems and applications

UNIT III

Graph Theory: Definition and applications, finite and infinite graphs, incidence and degree, isolated vertex, pendent vertex and null graph.

Paths and circuits: Sub graphs, isomorphism, walks, paths and circuits, connected and disconnected graphs, Euler graphs, Hamiltonian paths and circuits.

Trees: Trees, properties of trees, pendant vertices in a tree, distance and center, rooted and binary trees, spanning trees, fundamental circuits

UNIT IV

Graph theory-II: Cut sets and cut vertices: Cut sets and their properties , connectivity and separability, network flows, 1 and 2 isomorphism Matrix representation of graphs: Incidence and adjacency matrices, Planar graphs, Diagraphs and shortest path algorithms applications of graphs-a general discussion

UNIT V

Automata, grammars and languages: Finite state automata, pushdown automata. Regular expressions, Regular languages, Turing machines and computable functions.

Reference Books:

1. J.P.Tremblay and R. Manohar . Discrete mathematical structures with applications to computer science, Tata McGraw Hill Publication
2. C.L.Liu . Elements of Discrete Mathematics, Tata McGraw Hill Publication
3. Lipschutz and Lipson. Discrete Mathematics, Schaum's outline series, Tata McGraw Hill Publication
4. K.A.Ross . Discrete Mathematics.
5. Bernard Kolman & Robert C. Busby. Discrete mathematical structures for Computer Science

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) VII SEMESTER
IC-704: Bio – Informatics

Aim of Course: This course provides an introduction to the analysis of biological data using computational methods, as well as investigating problems in molecular and biology from a computational perspective.

Objectives:

The course is designed to make students:

- Develop an understanding of the basic principles of molecular and cell biology.
- Become familiar with existing tools and resources for computational analysis of biological data, including sequences, phylogenies, microarrays, ontologies, and bio-molecular interactions.
- 4. Understand basic abstractions and computational approaches used for analysis including data warehouses, data mining, programming languages.

Course Contents:

UNIT I

What is bioinformatics? Definitions and concepts, Objectives/goals of Bioinformatics, Importance of Bioinformatics , Genome projects, DNA, RNA,DNA fingerprinting , types of RNA, functions of mRNA, tRNA, and rRNA, Amino Acids, Proteins, Central Dogma of Molecular Biology, Gene Coding,& Expression ,Genetic disorder , cloning.

UNIT II

Molecular Biology, RNA, DNA , Protein structure, DNA Sequencing, Base Pairs,Mutations and its type, Sequence Alignment, Dot plots, Simple Alignment. Scoring Matrices. Algorithms Pair wise sequence alignment - NEEDLEMAN and Wunsch, Smith Waterman algorithms; Multiple sequence alignments - CLUSTAL, PRAS; Patterns, motifs and Profiles in sequences.

UNIT III

Biological Databanks, Data Mining, Data warehousing, data capture, data analysis; Introduction to Nucleic Acid and Protein Sequence Data banks; Nucleic acid sequence data banks: Genbank, EMBL nucleotide sequence data bank, Protein sequence data banks: NBRF-PIR, SWISSPROT, Signal peptide data bank; Database Similarity Searches: BLAST, FASTA, PSI-BLAST algorithms.

UNIT IV

Programming Languages, Programming in C: Pointers, pointers to functions, macro and programming in C, graphs, data structure– linked list, stack, queue, binary trees, threaded binary trees, File and exception handling in C.

PERL: Strings, Numbers, and Variables. Variable Interpolation, Basic Input and Output, File handles, Making Decisions, Conditional Blocks, Loops, Combining Loops with Input, Standard Input and Output, Finding the Length of a Sequence File, Pattern Matching, Extracting Patterns, Arrays, Arrays and Lists, Split and Join, Hashes, A Real-World Example, BioPERL; Applications.

UNIT V

Bioinformatics medicine, Preventative medicine , Gene therapy ,Drug development | Alternative energy sources, personalized medicine, crop improvement, forensics analysis, Biotechnology etc. Machine learning overview, Neural networks, , Phylogenetic trees

Reference Books:

1. Pierre Baldi and Søren Brunak, Bioinformatics, The Machine Learning Approach, second edition, MIT Press, Cambridge, MA, 2001.
2. Dan E. Krane, Michael L. Raymer , Fundamental Concepts of Bioinformatics.
3. James Tisdall, Beginning Perl for Bioinformatics.
4. Cynthia Gibas, Per Jambeck , Developing Bioinformatics Computer Skills.
5. Arthur M. Lesk , Database Annotation in Molecular Biology: Principles and Practice.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) VII SEMESTER
IC-705: Operating System

Aim of Course: Aim of Course: To make the students familiar with design of operating systems as resource manager of a computer system.

Objectives:

The course is designed to make students:

- To present basic concepts of operating system architecture
- Understand the concepts of processor management and memory management techniques
- Study deadlock handling and inter-process communication
- Study file systems and device management.

Course Contents:

UNIT I

Introduction to Operating System:- Objectives and functions and the services provided by OS.
Evolution of operating system:- Concepts of batch processing, multiprogrammed batched system, time-sharing systems, Parallel Systems, Distributed systems. Operating system structure:-System calls and system programs.

UNIT II

Process Management: -Process concept, Process states, Process scheduling , Operations on processes , Co-operating processes and IPC.

CPU scheduling: - Basic concept and scheduling criteria, Long term, short term medium term schedulers, Scheduling algorithms, Multi-Processors Scheduling, Measurement of performance of processor.

UNIT III

Process synchronization: - Critical section problem, Mutual exclusion and synchronization, Concept of semaphores, Classical IPC problems. Deadlocks: - Characterization of deadlock, Methods of handling prevention, detection and avoidance, Recovery from deadlock.

UNIT IV

Memory management:-Logical and physical address spaces, Swapping and paging, Contiguous, allocation and its drawbacks, Non-contiguous allocation. Virtual memory: - Demand paging and its need, Performance of demand paging, Page replacement and its need, Thrashing and allocation of frames.

File system interface: - File concept, access methods, Directory structure, protection and consistency. File system structure, Allocation methods, Free space management, Efficiency and performance, Coincidence, protection and sharing.

UNIT V

I/O system: - Various i/o devices, Device drivers, structure of I/O software, Transforming I/O request of h/w operation. Secondary storage structure:- Disk structure, Disk Scheduling, Disk management, Swap space management and Disk reliability.

Note:- Case study of windows and Unix operating system is to be done as assignment.

Reference Books:

1. Silberschatz Galvin, Operating System concept, 5th edition.
2. D. M. Dhamdhere, System Programming and operating system, Tata McGraw Hill, 2nd edition.
3. Milan Milenković, Operating System concept and design, Tata McGraw Hill.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

MCA (6 Years)

VIII SEMESTER

JANUARY – MAY 2013

Subject Code	Subject Name	Credits
IC-801A	Computer Networks	4
IC-802	Design & Analysis of Algorithm	4
IC-804B	Advanced Database Management Systems	4
IC-811	Software Engineering	4
IC-805	Control Systems	4
IC-806C	Project	6
IC-807	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) VIII SEMESTER
IC-801: Computer Networks

Aim of Course: To provide a theoretical foundation of computer network and equip the students with an in-depth knowledge of fundamental techniques involved in computer network, which helps the students to understand the actual working of computer network.

Objectives:

The course is designed to make students:

- Gain an understanding of the principles of operation of a wide variety of network technologies.
- Develop an appreciation of how network services are developed and knowledge of their uses.
- Apply knowledge of computers, software, networking technologies, and information assurance to an organization's management, operations, and requirements.
- Understand data compression and data security techniques.

Course Contents:

UNIT I

Introduction: - Computer Network, Goals and Applications, Reference models – OSI and TCP/IP. A Comparative study. Network hardware – LAN, MAN and WAN and topologies, Network Software –protocol hierarchies, design issues for the layers, Connection Oriented and connection less services, Switching Techniques – Circuit Switching, Message switching, Packet Switching.

UNIT II

Data Link Layer :- Design Issues : Framing, Error Control, Flow Control, , Elementary Data Link Protocols, Sliding window protocol, Example Data link protocols :HDLC, SLIP and PPP.

UNIT III

MAC Sub layer :- Multiple access protocols: Aloha, CSMA Protocols, Collision-Free Protocols, Binary Exponential Back-off algorithm ,Ethernet MAC Sub layer Protocols: IEEE802.3, IEEE802.4, IEEE802.5 , High speed LANs – Fast Ethernet, FDDI, Wireless LANs, Bridges.

UNIT IV

Network Layer :- Design issues, Routing Algorithms: OptimalityPrinciple, Shortest Path Routing, Flooding, Distance Vector Routing, LinkState Routing , Hierarchical Routing, Broadcasting Routing, MulticastRouting,Congestion control algorithms,Internetworking, The Network Layer in the Internet: Internet Protocol, Internet addressing and Internet Control protocols.

UNIT V

Transport Layer :- Services, The Internet Transport Protocols : TCP and UDP,performance issues

Application layer :- DNS Name Space, Name Servers, FTP, TELNET,WWW, SNMP, HTTP, SMTP , Network Security : Cryptography,Symmetric- key Algorithms, Public- key Algorithms, Digital Signatures,E-mail Security

Reference Books:

1. A.S. Tanenbaum, Computer Network (III Edition).
2. B.A. Forouzen, Data Communication and Networking (II Edition).
3. William Stallings, Data and Computer Communication.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE**MCA (6 Years) VIII SEMESTER****IC-802: Design & Analysis of Algorithm**

Aim of Course: Aim of Course: This course aims to introduce the classic algorithms in various domains, and techniques for designing efficient algorithms.

Objectives:

The course is designed to make students:

- Learn to analyze the running time of the algorithms
- Understand the application of algorithms and design techniques to solve problems.
- Learn to analyze the complexities of various problems in different domains and design efficient algorithms.
- Understand asymptotic notation to provide a rough classification of algorithms
- Study algorithms for fundamental problems in computer science and engineering work and compare with one another.
- Understand the problems for which it is unknown whether there exist efficient algorithms or even algorithm

Course Contents:**UNIT I**

Introduction to Algorithms: Definition, Algorithm Specification, Performance analysis. Review of Data Structures: Stacks, Queues, Trees and Graphs.

UNIT II

Divide and Conquer: General Method, Binary Search, Finding the Maximum and Minimum, Merge Sort, Quick Sort, Selection Sort, radix short.

Dynamic Programming:- The General Method, Matrix Chain Multiplication, Memoisation, Memoised Fibonacci series computation. 0/1 Knapsack, Traveling Salesperson Problem.

UNIT III

The Greedy Strategy: General Method, Knapsack Problem, Job Sequencing with deadlines, Minimum Cost Spanning Trees - Prim's Algorithm, Kruskal's Algorithm

UNIT IV

Basic Traversal and Search Techniques:- Techniques for Binary Trees and Graphs

Back Tracking:- The General Method, The 8-Queens Problem

Branch And Bound:- The General Method, Traveling Salesperson Problem.

UNIT V

NP-Hard and NP-Complete Problems:- The Basic Concepts, Non-Deterministic Algorithms, The Classes NP-Hard & NP-Complete.

Reference Books:

1. Thomas H. Cormen, Charles E. Leiserson, Donald L. Rivest. Introduction to Algorithms. Indian Edition Published.
2. [Ellis A. Horowitz, Sartaj Sahni](#), Fundamentals of Computer Algorithm, Computer Science Press.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) VIII SEMESTER
IC-803: Advanced Database Management System

Aim of Course: To learn advanced features of DBMS and build capacity to implement and maintain an efficient database system using emerging trends.

Objectives:

The course is designed to make students:

- Be able to master the concepts and design with proficiency databases under the relational model.
- Proficiency in the choice of DBMS platform to use for specific requirements
- Be proficient with a broad range of data management issues including data integrity and security, transaction processing and others.
- Be familiar with the fundamentals of distributed DBMS and object database management, data warehousing and data mining

Course Contents:

UNIT I

Introduction with DBMS and ER Model : Advantage of DBMS approach, various view of data, data independence, schema and sub-schema, primary concepts of data models, Database languages, transaction management, Storage management Database administrator and users, overall system architecture.

Basic concepts of ER model, design issues, mapping constraint, keys, ER diagram, weak and strong entity sets, specialization and generalization, aggregation, inheritance, design of ER schema.

UNIT II

Functional Dependencies and Normalization: Domains, relations, keys, super key, candidate, primary, alternate and foreign keys, Functional dependence, Full Functional dependence, trivial dependencies, transitive dependencies, Mutual independence, closure set of dependencies, non loss decomposition, FD diagram. Introduction to normalization, first, second, third Normal forms, dependency preservation, BCNF, Multivalued dependencies and fourth normal form.

UNIT III

Relational Algebra & SQL: Relational algebra with extended operations, modifications of Database, Relational database, basic idea of SQL, data types, data definition language, Data manipulation language, Transaction control and data control language, Operators in SQL, Arithmetic operators, Comparison operators, Logical operators, set operators, Temporary tables, null values, Joins and Sub queries, views.

UNIT IV

Database Integrity, Transaction, concurrency and Recovery: Basic idea of Database Integrity, Integrity rules, assertions, integrity Constraints, triggers.

Basic concepts of Transaction, ACID properties, Transaction states, implementation of atomicity and durability, concurrent executions, Serializability, Conflict serializability, View serializability, basic idea of concurrency control, Concept of locking, types of locks, basic idea of deadlock, failure classification, storage structure types, stable storage implementation, data access, basic idea of recovery.

UNIT V

Distributed Database and Emerging Fields in DBMS: Basic idea of Distributed database, distributed data storage, data replication, data fragmentation- horizontal vertical and mixed

fragmentation.

Object oriented Databases-basic idea and the model, object structure, object class, inheritance, multiple inheritance, object identity.

Data warehousing- terminology, definitions, characteristics, data mining and it's overview, Database on www, multimedia Databases- introduction, similarity based retrieval, continuous media data, multimedia data formats, video servers.

Reference Books:

1. A Silberschatz, H.F Korth, Sudersan “Database System Concepts” , MGH Publication.
2. Modern Database Management (5th Edition) (Hardcover) by Fred R. McFadden, Jeffrey A. Hoffer, Mary B. Prescott
3. Elmasri & Navathe “Fundamentals of Database systems” – III ed.
4. B.C. Desai. “An introduction to Database systems” BPB.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) VIII SEMESTER
IC-804: Software Engineering

Aim of Course: To gain a broad understanding of the discipline of software engineering and its application to the development of and management of software systems.

Objectives:

The course is designed to make students:

- Understand the various activities undertaken for a software development project.
- Develop and write a software project proposal
- Develop and write a Software Requirements Specification and design document.
- Learn to work within a team and understand team dynamics
- Be able to effectively communicate the work (Presentation skills)

Course Contents:

UNIT I

Introduction to Software Engineering: Software problem, Software engineering problem, Software engineering approach, Software characteristics and Applications.

Software Processes: Software processes and its components, characteristics of software processes, Software development processes: Linear Sequential model, Prototyping model, RAD model, Iterative Enhancement model, Spiral model, Component based development, Comparative study of various development models

UNIT II

Project management process: The people, product, process and project, Phases of project management process, the W5HH principle. Software configuration management process, Process management process: Capability Maturity Model (CMM).

UNIT III

Software Requirement Analysis and Specification: Software requirements, Problem analysis, Requirements specifications, Validation and Verification, Metrics.

Project Planning: Project estimation (Size & Cost), Project Scheduling, Staffing and personnel planning, Software configuration management plans, Quality assurance plans, Project monitoring plans, Risk management.

UNIT IV

Software Design: Design principles: Problem partitioning and hierarchy, Abstraction, Modularity, Top-down and Bottom-up strategies. Effective Modular design: functional independency, Cohesion, Coupling. Structured design methodology.

UNIT V

Software Quality Assurance: Quality concept, Quality management system, movements and assurance, Software reviews: formal and technical, Formal approaches to SQA, Statistical software quality assurance, Software reliability, ISO 9000, SQA plan.

Software Testing: Software testing techniques: Testing fundamentals, White box testing, Black box testing, testing for specialized environments, architectures and applications. Software testing strategies: A strategic approach to software testing, Strategic issues, Unit testing, Integration testing, Validation testing and system testing, the art of debugging

Reference Books:

1. Ian Sommerville, Software engineering, Ninth edition Pearson.

2. Pankaj Jalote, An Integrated Approach to Software Engineering, Narosa Publishing House.
3. R. S. Pressman, Software Engineering-A practitioner's approach, Tata McGraw-Hill International Editions, New York.
4. Richard E. Fairly, Software Engineering Concepts, Tata McGraw Hill Inc. New York.
5. W. S. Jawadekar, Software Engineering: Principle & Practice, Tata McGraw-Hill, New York
6. Rajib Mall, Fundamentals of Software Engineering, PHI, New Delhi.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) VIII SEMESTER
IC-805: Control Systems

Aim of Course: Aim of Course: To study mathematical modeling of physical control systems in form of differential equations and transfer functions.

Objectives:

The course is designed to make students:

- To study the concept of time response and frequency response of the system
- To understand the basics of stability analysis of the system
- To learn basic control system design methods, including root locus diagrams and frequency response methods.
- Understand the principles and objectives underlying feedback control.

Course Contents:

UNIT I

Open loop and closed loop control systems, criteria specification of closed loop systems and methods to solve them. Fundamental concepts of servomechanisms Missile launching and guidance system automatic aircraft landing systems and rocket autopilot system.

UNIT II

Mathematical modeling standard and state space analysis of mechanical and electrical systems Transient and steady state response of systems. Effects of proportional integral and derivative control actions on system performance. Steady state error in unity feedback control systems

UNIT III

Control system design using root locus method. Bode diagram ; all pass and minimum phase systems. Polar plots log magnitude Vs phase plots experimental determination of transfer function.

Correlation between time and frequency response. Nyquist stability criterion and assessment of relative stability gain margin and phase margin

UNIT IV

Realization of basic compensators cascade compensation time domain and in frequency domain tuning of PID controllers

UNIT V

Fundamentals of digital control systems the Z transform and its applications in digital control system.

Reference Books:

1. I. J. Nagrath and M. Gopal, Control Systems Engineering, (Third Edition)
2. K Ogata, Modern Control Engineering. Fourth Edition, PHI

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

MCA (6 Years)

X SEMESTER

JANUARY – MAY 2013

Subject Code	Subject Name	Credits
IC-1001	Simulation and Modeling	4
IC-1002	Artificial Intelligence	4
IC-1003	Compiler Design	4
IC-1004	Parallel Processing	4
IC-1005	Enterprise computing Techniques	6
IC-1106	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) X SEMESTER
IC-1001: Simulation & Modeling

Aim of Course:- The aim of the course is to provide basic concepts of organizational behavior and management decisions..

Objectives:

The course is designed to make students:

- Understand the complexities of real-life situations and to use different Simulated Models to forecast and suggest probable line of action to management to take proper decisions.
- Understand and prepare programs for complex Real Life Problems using available Simulation Software.
- Learn to prepare programs for different Managerial problems related to waiting-line situations and Inventory Analysis.

Course Contents:

UNIT I

Organisational behaviour and management. Product-Mix organizations. Role of Manager. Models Meaning and classifications. Principles of O.R. Models

UNIT II

Simulation: -Meaning scope and Limitations Advantages of Simulation. Models over classical techniques of O.R.

Random Number Generation. Computer based generation of Random Nos. C-program for Mid-Square and Mixed congruence Arithmetic method.

Monte-Carlo method of manual calculations using R. Nos. to handle. Problems related to Waiting Line, Inventory Control and Demand

UNIT III

System Analysis: -Meaning of a system, State of system, Entity, Attributes, Activities.

Examples. Types of Systems: -Discrete and continuous. Discrete -Event -Simulation. Time-Advance mechanism.

Next-Event Time Advance mechanism for single server Q-system, Numerical examples and manual calculations of Q (t) and B (t). Components and organization of discrete event simulation model using Next event time advance mechanism. Flow of control.

C-program :-Organization of Next-Event time advance simulation models. Framework for sound simulation study.

UNIT IV

Simulation Software: -comparison with general-purpose languages. Necessity of Simulation Software. Detailed study of GPSS languages with special reference to GPSS-V. Coding and Programming for simulation of Manufacturing systems, Super-Markets and Inventory Systems

UNIT V

Building Valid, Credible and appropriately detailed Simulation Models. Principles for valid Simulation Models. Techniques used for verification of Simulated Computer Program.

Experimental Designs and sensitivity Analysis.

Reference Books:

1. Dr. S.D. Sharma, Text Book of Operations Research.
2. Law And Kelton , Simulation Modeling And Analysis.
3. Geoffrey Gordon , System Simulation.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) X SEMESTER
IC-1002: Artificial Intelligence

Aim of Course: To familiarize students with techniques of representing knowledge required to build intelligent machines capable of taking decision like human beings.

Objectives:

The course is designed to make students:

- To familiarize students with techniques of solving problems that need human intelligence.
- To enable students to formulate Artificial Intelligence problems
- To enable students to use heuristic techniques to solve the AI problem.

Course Contents:

UNIT I

Introduction to AI & Problem Solving in AI: What is AI, AI Techniques, Defining the problem in AI, Problem Spaces, Problem Characteristics, Production System and its Characteristics?

UNIT II

Heuristic Search Techniques: Heuristic Search, Criteria for Search, Various Search Techniques- Generate and Test, Depth-first Search, Breadth-first Search, Hill Climbing, Best-First Search, A* and AO* algorithm, Constraint Satisfaction, Means-Ends Analysis etc.

UNIT III

Knowledge Representation and Issues: Types of Knowledge, Representation and Mappings, Approaches and Issues in Knowledge Representation, Predicate Logic – Representation of simple facts, computable functions; Resolution, Logic Programming, Matching, Control Knowledge etc.

UNIT IV

Prolog Programming: Introduction and Applications, Facts, Objects and Predicates. Linguistic variables, Rules, Input-Output operations, Controlling Execution: Recursion, Fail, Cut; Arithmetic operation, compound objects, List and various operations on Lists; Dynamic Databases; Expert-System design etc.

UNIT V

KR Techniques & Advance Artificial Intelligence: Slot and Filler Structure – Introduction, Weak and Strong Structures, Semantic Nets, Frames, Conceptual Dependency and Frames; Fuzzy logic Expert Systems – Concepts and Design.

Reference Books:

1. Rich & Knight, Artificial Intelligence, Second Edition, Tata Mcgraw Hill
2. Russel and Norvig, Artificial Intelligence A Modern Approach, Prentice Hall
3. Dan Patterson, AI & Expert System, Prentice Hall of India
4. Ivan Bratko, Prolog Programming for Artificial Intelligence, Pearson Education, III Edition
5. Carl Townsend, Introduction to Turbo Prolog, BPB Publication
6. Patrick Winston, Artificial Intelligence, Pearson Education India

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) X SEMESTER
IC-1003: Compiler Design

Aim of Course: The course aims at understanding the working of compiler in detail so as to have knowledge of whole spectrum of language processing technology.

Objectives:

The course is designed to make students:

- Understand various phases of compilers theoretically as well as practically so as to have the actually feeling of its working.
- Understand some aspects of computation should be covered in course as parsing is of the most important issue in compiler.
- Learn the concepts of symbol table management, syntax-Directed definition and translations along with the code optimization and generation and error handling have to cover to complete the aim.

Course Contents:

UNIT I

Translators, interpreters, assemblers, Compilers, Types of Compilers, Model of a compiler. Analysis of source program, The phases of a compiler, Cousins of the compilers.

UNIT II

Finite automata, non-deterministic and deterministic finite automata, Acceptance of strings by NDFA and DFA, Transforming NDFA to DFA, minimization/optimization of a DFA, related algorithm. Regular sets and regular expression. Obtaining regular expression from finite automata.

Lexical analyzer design, The role of Lexical Analyzer, Input Buffering, Specification of tokens, and Recognition of tokens.

UNIT III

Syntax analysis, CFG, derivation of a parse tree, elimination of left recursion Regular grammar, Right linear and left linear grammar. Parsing, Top-Down and Bottom Up parsing, general parsing strategies.

Top-down Parsing techniques: Brute-force approach, recursive descent parser and algorithms, Simple LL (1) grammar, LL (1) with null and without null rules grammars, predictive parsing.

Bottom-up parsing- Handle of a right sentential form, Shift-reduce parsers, operator precedence parsing, LR parsing.

UNIT IV

Symbol table contents Organization for block structured languages-stack symbols tables. Stack implemented hash structured symbol tables. Symbol table organization for Object Oriented Programming Languages.

Intermediates code generation, translation schemes for programming language constructs.

Code Optimization: - Definition, Local code optimization techniques, Elimination of local and global common sub Expressions, loop optimization.

UNIT V

Code Generation: - Definition, machine model, simple code generation method. Peephole optimization.

Error Handling: - Error recovery, recovery from various phase and parsing.

Reference Books:

1. Alfred V. Aho, Ravi Sethi, Jeffery D. Ullman, Compilers: Principles, Techniques, and Tools, Addison Wesley Longman.
2. Jean Paul Tremblay, Paul G. Sorenson , The Theory & Practice of Compiler Writing.
3. Barrett, Bates, Gustafson, Couch , Compiler Construction Theory & Practice.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) X SEMESTER
IC-1004: Parallel Processing

Aim of Course: To make students acquainted with parallel processing machines and programming techniques for effective use of them.

Objectives:

The course is designed to make students:

- Learning fundamental parallel processing concepts
- Learning parallel machine structure.
- Learning parallel algorithm design.
- Learning of interconnecting networks for parallel machine
- Programming using threads.
- Data flow and Wave front system

Course Contents:

UNIT I

Introduction to Parallel Processing: Parallelism in uni-processor System, Parallel Computer Structures, Architectural Classification Schemes, Parallel Processing Applications (Assignment).

Program and Network Properties: Conditions of Parallelism, Program Partitioning and Scheduling, Program Flow Mechanisms , System Interconnection Architecture

UNIT II

Pipeline Computers and Vectorization Methods: Vector Super Computers , Early Vector Processors, Recent Vector Processors, Vector Processing Requirements.

UNIT III

Structures and Algorithms for Array Processors: SIMD Array Processors , SIMD Interconnection networks, Parallel Algorithms for Array Processors , Associative Array Processors, Massively Parallel Processors, Performance Enhancement Methods

UNIT IV

Multiprocessor Architecture and Programming: Interconnection Networks, Functional Structures, Parallel memory Organization, Multiprocessor Operating System, Exploiting Concurrency for Multiprocessing.

UNIT V

Multiprocessing Control and Algorithms: Interprocesses Communication Mechanisms, System Deadlocks and Protection, Multiprocessor Scheduling Strategies, Parallel Algorithms for Multiprocessors

Reference Books:

1. Kai Hwang & A. Briggs, Computer Architecture and Parallel Processing, McGraw Hill [TB1]
2. Kai Hwang, Advanced computer Architecture-Parallelism, Scalability, Programmability, McGraw Hill [TB2]
3. Michel J. Quinn, Parallel Computing-Theory and Practice, McGraw Hill
4. J.M. Crichton , An Introduction to Distributed and Parallel computing, Prentice Hall
5. A.S. Tanenbaum, Modern Operating System, Prentice Hall.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) X SEMESTER
IC-1005: Enterprise Component Technology

Aim of the course: To enable the students understand the concepts of EJB and build web-based and/or enterprise-based applications that incorporate EJB technology.

Objectives:

The course is designed to make students:

- Implement business-tier functionality using EJB technology
- Learn the concepts and implementation of RMI and JNDI
- Get an overview of EJB fundamentals.
- Learn the concepts and implementation of Entity and Session beans..

Course Contents:

UNIT I

RMI: Object Serialization, Developing Applications with RMI, and the RMI security manager, Parameters passing in RMI.

UNIT II

JNDI: Naming services, Directory services, Benefits of JNDI, JNDI Architecture, JNDI concepts

UNIT III

Overview & EJB Fundamentals: Motivation for EJB, Component architecture, Various roles in J2EE architecture, Type of Beans, Distributed object & Middleware, Constituents of enterprise beans: Enterprise beans class, EJB Object, Home object, Local interfaces, Deployment description, Vendor specific files.

UNIT IV

Session Beans: Stateless session beans, statefull session beans, characteristics of statefull session beans, lifecycle diagram for session beans. JMS, Integrating JMS with EJB, Developing message driver beans.

UNIT V

Entity Beans: Persistence concepts, Features of entity beans, Bean managed Persistent entity beans, and Container managed persistent entity beans, Life cycle Diagrams, BMP and CMP relationships.

Reference Books:

1. Ed Roman "Mastering Enterprise Java Beans", Wiley Publishing, 2005, 3rd Edition
2. Kal Ahmed "Professional JAVA server programming", SPD, 2005
3. J2EE Tutorial from www.java.sun.com

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

MCA (6 Years)

XI SEMESTER

JULY-DECEMBER 2012

Sub. Code	Sub. Name	Credit
IC-1105	VLSI Design	4
IC-1107	Research in Computing	4
IC-1108	Mobile & Wireless Computing	4
IC-1109	Data Mining & Warehousing	4
IC-1104	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) XI SEMESTER
IC-1101: VLSI Design

Aim of Course:- Aim of Course: The course is designed to give the student an understanding of the different design steps required to carry out a complete digital VLSI (Very-Large-Scale Integration) design in silicon.

Objectives:

The course is designed to make students:

- Understand and Experience VLSI Design Flow
- Learn Transistor-Level CMOS Logic Design
- Understand VLSI Fabrication and Experience CMOS
- Visualize CMOS Digital Chip Design.

Course Contents:

UNIT I

Overview: Overview of VLSI design methodology, VLSI design flow, design hierarchy, CAD tools at various design levels, concept of regularity, modularity and locality, VLSI design styles, design quality, packaging technology.

UNIT II

Introduction to CMOS technology: MOS Transistors, MOS transistors as switches, CMOS Logic, MOS transistor theory-introduction, MOS device design equations, Complementary CMOS inverter-DC characteristic.

UNIT III

Circuit characterization: Switching characterization: Rise time, Fall time and Delay time. Power dissipation:- Static dissipation, Dynamic dissipation, Short-circuit dissipation, Total power dissipation, Power economy.

UNIT IV

VLSI Technology: Crystal growth and wafer preparation-introduction, Electronic grade silicon, Lithography-Photomasking process, Ten-step process, X-ray exposure system, Electron beam exposure system.

UNIT V

VHDL & Introduction to PLDs: Introduction to VHDL, Levels of abstraction, Basic building blocks, Language elements, Concurrent statements, Sequential statements, Structural modeling, Simulation concept, Synthesis concept and test bench. PLD architecture, Xilinx, CPLD & FPGA architecture, Comparison of CPLD and FPGA. Xilinx development tools.

Reference Books:

1. Neil H.E. Waste, Kamran Eshraghian : Principles of CMOS VLSI design, Pearson Education, 2e.
2. Sung-Mo Kang, Yusuf Leblebici: CMOS Digital Integrated Circuits Analysis and Design, TMH 3e.
3. Peter Van Zant: Microchip fabrication, Mc-Graw Hill, 4e
4. S.M. Sze : VLSI Technology
5. David Pellerin, Michael Holley: Practical design using programmable Logic, Prentice Hall.
6. J.Bhaskar: VHDL Premier

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) XI SEMESTER
IC-1102: Mobile & Wireless Computing

Aim of Course: To familiarize students with recent wireless technology, working of wireless systems, mobility supported, and infrastructure for mobile systems.

Objectives:

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Objectives:

The course is designed to make students:

- Introduction to communication systems & their applications.
- Understanding of Wireless transmission techniques, infrastructure and devices.
- Understanding mobile network and mobile wireless LAN.
- Concepts of video broadcasting, Wireless LAN topologies

Course Contents:

UNIT I

Introduction to wireless, Cellular, Digital, PCS mobile radio, Wireless transmission- signal, Antennas, signal propagation. Multiplexing -SDM, FDM, TDM, CDM. Modulation –ASK, FSK,PSK, MSK, QPSK, MCM. Spread spectrum- DSSS, FHSS. Cellular Systems.

UNIT II

Media Access Control- SDMA, FDMA, TDMA, DAMA, PRMA, MACA, CDMA- SAMA
Comparison of S/T/F/CDMA. Telecom System – GSM (System architecture, radio interface, protocols, handover), DECT(System architecture, protocol architecture)

UNIT III

Satellite System- Applications, Basics, GEO, LEO, routing, localization, Handover. Broadcast System Wireless LAN- Infrared Vs radio transmission, Infrastructure and ad hoc network. IEEE802-11, Blue tooth, Ad hoc Network

UNIT IV

Mobile Network layer: Mobile IP- Goals, Assumptions and requirements, IP packet delivery, Agent discovery, Registration, Tunneling and encapsulation, optimizations, reverse tunneling, Ipv6 DHCP(Dynamic host configuration protocol)

Mobile ad-hoc networks- Routing, Destination sequence distance vector routing, alternative metrics.

UNIT V

Mobile Transport layer- Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Time out freezing, Selective transmission, Transaction oriented TCP.

Support for mobility- file system, World wide web, Wireless application protocol.

Reference Books:

1. J. Schiller, Mobile Communication, Addison Wiley
2. William C.Y. Lee, Mobile Comm. Design Fundamental. John Wiley.
3. Dr. Kamilo Feher, Wireless Digital Communication, PHI.
4. Mark Ceampa, Design & Implementation of Wireless LANs, Thomson Learning.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) XI SEMESTER
IC-1109: Data Mining & Data Warehousing

Aim of Course: To understand data warehouses and data Mining with recent trends and development and trends in the field.

Objectives:

The course is designed to make students:

- Understand basic concepts of data warehousing and data mining.
- To make students understand On Line Analytical Processing (OLAP)
- To learn data mining techniques and understand various algorithms.
- To get familiarize with data mining tools and ETL tools.

Course Contents:

UNIT I

Data Warehouse, Evolution, Definition, Very large database, Application, Multidimensional Data Model, OLTP V/s Data Warehouse, Warehouse Schema, Data Warehouse Architecture. Data Warehouse Server, Data Warehouse Implementation, Metadata, Data Warehouse Backend Process: Data Extraction, Data Cleaning, Data Transformation, Data Reduction, Data loading and refreshing. ETL and Data warehouse, Metadata.

UNIT II

Structuring/Modeling Issues, Derived Data, Schema Design, Dimension Tables, Fact Table, Star Schema, Snowflake schema, Fact Constellation, De-normalization, Data Partitioning, Data Warehouse and Data Marts. OLAP, Strengths of OLAP, OLTP V/s OLAP, Multidimensional Data, Slicing and Dicing, Roll-up and Drill Down, OLAP queries, Successful Warehouse, Data Warehouse Pitfalls, DW and OLAP Research Issues, Tools.

UNIT III

Fundamentals of data mining, Data Mining definitions, KDD V/s Data Mining, Data Mining Functionalities, From Data Warehousing to Data Mining, DBMS V/s DM, Issues and challenges in Data Mining. Data Mining Primitives, Data Mining Query Languages. Data Mining applications-Case studies.

UNIT IV

Association rules: Methods to discover association rules. Various algorithms to discover association rules like A Priori, partition, Pincer search, Dynamic Itemset Counting Algorithm etc.

UNIT V

Decision Trees, Web Mining, Web content mining, Web Structure mining, Text mining, Temporal Mining and Spatial Data Mining.

Reference Books:

1. ARUN K PUJARI, Data Mining Techniques, University Press
2. JIAWEI HAN & MICHELINE KAMBER, Data Mining – Concepts and Techniques, Harcourt India
3. W. H. Inmon, Building the Data Warehouse, Wiley Dreamtech India Pvt. Ltd
4. RALPH KIMBALL, The Data Warehouse Life cycle Tool kit, WILEY STUDENT EDITION

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

M. Tech. (IT) 5½ Years

I SEMESTER

JULY-DECEMBER 2013

Sub. Code	Subject Name	Credit
IT-901	Artificial Intelligence	4
IT-902	Principles of Optimization	4
IT-903	Component Technology	4
IT-904	Object Oriented Analysis & Design	4
IT-905	Project	6
IT-906	Comprehensive Viva	4

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE
M. Tech. (IT) 5½ Yrs. I SEMESTER
IT-101: Mathematics-I**

Aim of Course: To provide a course on elementary mathematical techniques and familiarize students with basics of differentiation and integral calculus.

Objectives:

- Understand basic concepts of Partial differentiation, Maxima & Minima of the function, convergence and divergence of the series.
- Solve mathematical problems based on the course material.
- To develop mathematical skills and methods appropriate for students in the computer science.
- To prepare students for more advanced mathematical courses.

Course Contents:

UNIT I

Review of the basic concepts of calculus: Introduction, concepts of function of one variable, Idea of limit, continuity and differentiability of the function.

UNIT II

Successive differentiation: Successive differentiation, Rolle's Theorem, Mean value theorem, Taylor's theorem, Taylor's and Mac Lauren series, Intermediate forms.

Application of differentiation: Tangents and normals, Curvature, Maxima and Minima of the function sketching of curves (Cartesian and polar form) Asymptotes.

UNIT III

Integration: integration of Rational, irrational, and Transcendental function, Reduction formula, Integral as the limit of the sum, summation of series.

UNIT IV

Partial Differentiation: Partial Differentiation function of several variable, limit continuity and differentiability, partial derivatives, Euler's theorem, Mean value theorem, Taylor's theorem

UNIT V

Maxima and Minima: Maxima and minima of function of two and three variables.

Convergence Divergence: Convergence and Divergence of series, Definition and various tests.

Reference Books:

1. Shanti Narayan, Differential Calculus.
2. Gorakh Prasad, Integral Calculus.
3. R.B. Thakur, Advanced Calculus.
4. H.K. Pathak, Calculus For IInd Yr.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES,
DEVI AHILYA UNIVERSITY, INDORE
M. Tech. (IT) 5½ Yrs. I SEMESTER
IT-102: Statistical Methods-I**

Aim of Course: The aim of this course is to make student aware about the statistical methods, which help them to build their logics.

Objectives:

- Understand basic concepts of statistical methods, probability and distribution.
- Learn to effectively display the information in data sets graphically.
- Provide a curriculum that combines the statistical knowledge in theory, practice and various applications.

Course Contents:

UNIT I

Variable and Graph statistics: Population and sample, Discrete and continuous variables, Graphs. Frequency distributions: Histogram, frequency polygons, cumulative- frequency curve (ogive).Measures of central tendency: the arithmetic mean, weighted arithmetic mean, median, mode, harmonic mean, geometric mean, quartiles, deciles and percentiles.

UNIT II

Measures of dispersion: The range, Semi-interquartile range, Mean deviation, Root mean square deviation, Standard Deviation, Coefficient of variation. Moments, moments of various types, relation between moments. Sheppard's correction of moments. Skewness and Kurtosis.

UNIT III

Elementary probability theory: Sample Space, events. Classical definition of probability, Relative frequency definition of probability. Theorem of total and compound probability, Independent and dependent events. Mutually exclusive events.

UNIT IV

Theoretical Distribution: Discrete and continuous probability distributions. Mathematical expectations, Moment generating functions. Application of degenerate, Bernoulli , Binomial distribution , Geometric, negative binomial, Hyper geometric distribution, Poisson distribution, Normal distribution.

UNIT V

Curve fitting and method of least squares: Curve fitting, fitting of parabola, straight line, Correlation thory, linear correlation, Measures of Correlation, Rank Correlation Regression, properties of regression coefficients Theory of attributes, Consistency of data, Association of attributes, coefficient of association, Contingency tables

Reference Books:

1. S.C. Gupta & V. K. Kapoor: Fundamentals of mathematical statistics, S.Chand sons.
2. Spiegel. M.R. : Statistics Schaum's outline series.
3. A.M.Gun, M.K.Gupta, B.Dasgupta: An outline of statistical theory (volume 1)
4. Kapoor & Saxena: Mathematical statistics. S. Chand and sons.
5. S.P. Gupta : Statistical methods
6. P.N. Arora : Statistics for Management. Shrivastava and Shenoy : Quantitative techniques

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES,
DEVI AHILYA UNIVERSITY, INDORE
M. Tech. (IT) 5½ Yrs. I SEMESTER
IT-103: Physics-I**

Aim of Course: To make students aware about basic concepts of physics such as circuit elements, resistance, electromagnetic induction, capacitors and some laws related to passive elements.

Objectives:

- Develop and apply knowledge and understanding of physics.
- Develop the knowledge and skills for more advanced learning in physics.

Course Contents:

UNIT I

Charge, coulomb's law, electric field Intensity, dipole and quadruple fields. Electric potential, flux of electric field, gauss's law and its applications, steady current, current density non-steady current and continuity equation, Torque on a dipole in uniform electric field

UNIT II

Ohm's law, resistance, factors affecting resistance, colour code, variable resistors, power and energy, Kirchhoff's law and analysis of multiloop circuits, Rise and decay of current in R-L and R-C circuits, decay constants, AC currents RL, RC and LC circuits, series and parallel resonant circuits, Q factor and band width, power consumed in an AC circuit delta – star transformations

UNIT III

Capacitors, factors affecting capacity, type of capacitors, series and parallel connection of capacitors, Dielectrics and dielectric polarization, vector and relation between D,E, &j P, capacity of capacitor when dielectric is filled partially, energy stored in a capacitor, redistribution of charge when two conductors are connected by a conductor wire.

UNIT IV

Electromagnetic Induction, faraday's law, self induction and Mutual inductions Maxwell's displacement current, Maxwell's equations, wave equation satisfied by E & B plane electromagnetic waves in vacuum and in dielectric.

UNIT V

Force on moving charge, Lorenz force and definition of B force on a conductor carrying current in a uniform magnetic field, magnetic dipole moment, angular momentum and gyro-magnetic ratio, Bio and Savier's law calculation of B in simple geometrical situations, Ampere's law, Laplace and Poisson's equation

Reference Books:

1. B. L. Tharej, Basic Electrical Circuit Volume-I.
2. Resnick and Halliday – Physics part –II
3. R.P. Goyal, Unified Physics part –I

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES,
DEVI AHILYA UNIVERSITY, INDORE
M. Tech. (IT) 5½ Yrs. I SEMESTER
IT-104: C Programming**

Aim of Course: To develop logic of problem solving and learn basics of programming methodologies
Objectives:

- Develop the logic for the given problem
- Recognize and understand the syntax and construction of C code
- To gain experience of procedural language programming
- Know the steps involved in compiling, linking and debugging C code
- Apply all the concepts that have been covered in the theory course

Course Contents:

UNIT I

Introduction to Programming Language & Problem solving Approach: Development of flow charts & Algorithms, Why Programming Language? Program development steps, Programming language classification, Translators, Program design techniques.

History of C Language, Feature of C Language, Why is C Language Popular? Structure of C Program, A Sample C Language Program. Errors, Compilation and Execution of C Programs and Exercise.

UNIT II

Useful terms of Language: Data types, The C character set, Constants, Variables, Keywords, C Instructions, Type Modifier, Storage class specifies, Storage classes in C and Exercises. Operator Expressions and Assignment Statements : Arithmetic Operators, Relational and Logical Operators, Increment and decrement Operators, Assignment Operators and Expressions, Conditional Expression, Precedence and order of Evaluation and Exercises.

UNIT III

Control Structure in C : Decision Control Structures, Loop Control Structures, Conditional Statements and Exercises, break Statement, The continue Statement.

Console Input and Output: Introduction to Input/Output, Unformatted and Formatted Input/Output Function.

UNIT IV

Array : Introduction to Array, One Dimensional Array, Multidimensional Array, Initialization, Declaration, Storage and Access Mechanisms on Array and Exercises. String Manipulation: Introduction to Strings, Two Dimensional Array of characters.

Function : Introduction to Functions, Function Declaration and Prototypes, Function Definition, Call by Value and Call by Reference, return statement, exit() function, Function with arguments, Calling Function with Array, Command Line, Arguments, Recursion in Function

UNIT V

Structure : Structure Definition, Giving Values to members, Structure initialization, Comparison of Structure variables, Array of Structure, Array within Structures, Structures within Structures, Passing Structures to Functions, Why use Structure, Features and Uses of Structures. Union : Union Definition and Declaration, Accessing a union Member, Union of Structures, Initialization of a Union Variable, Use of Union, Use of User Defined Type Declarations

Reference Books:

1. Y.P. Kanitkar, Let us C, B.P.B. Publications

2. C -The Complete Reference, Tata Mcgraw Hill
3. Deitel & Deitel, C-How to Program.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES,
DEVI AHILYA UNIVERSITY, INDORE
M. Tech. (IT) 5½ Yrs. I SEMESTER
IT-105: PC Software**

Aim of Course: To make students understand basics of computer and its working.

Objectives:

- To make students aware of basic units and model of computer.
- To understand number system for data representation in computer.
- Understand basics of Operating system and DBMS.
- Learn working with MS Office and Internet.

Course Contents:

UNIT I

Introduction to Computer: Definition, Characteristics, functions and applications of a Computer, Components of a Computer: Hardware and Software, Block diagram of a computer: Input devices, Output devices, CPU, Memory. Classification of computer, generation of computer. Data representation and computer software: Number system-Binary, Decimal, Octal, Hexadecimal and its conversion. Computer software: system software and application software. Computer languages: Machine, Assembly, High level and Fourth generation languages

UNIT II

Introduction to Operating System: Definition and functions of an Operating System, Type and classification of Operating Systems. MSDOS: DOS features, External and Internal Commands, Managing disks, advanced command techniques, working with batch programs. Microsoft Windows and its environment. Introduction to Data Base Management System: Introduction, Quality of information, What is Database, DBMS? Why a database, DBMS? Types of DBMS

UNIT III

Microsoft office environment: Microsoft Word: Working with Word, Typing and Editing, Formatting Text, Page design and layout, adding tables, using graphs, mail merge Microsoft Excel: Working with excel, entering data, formatting, customizing workplace, calculation in worksheet, adding charts, advanced features of excel. Microsoft–PowerPoint: Working with PowerPoint, Adding Text, Including Multimedia, Customize PowerPoint, Microsoft Access: Creating database, addition and deletion of records, searching, sorting and indexing the records, creating tables and records, advance features of Access.

UNIT IV

Internet and World Wide Web: Introduction, Internet access, Internet basics, Internet protocols, Internet addressing, Web pages and HTML, Web browser and search engines, Electronic mail. Computer Security: Physical access restriction, Passwords, Firewalls, Cryptography, Computer virus, Bombs and worms. Antivirus software.

UNIT V

Introduction to Multimedia: Introduction, Multimedia in entertainment, Multimedia in software training, Multimedia in education training, Multimedia server and databases, Multimedia tools

Reference Books:

1. Alexis Leon, Introduction to Computer.
2. Alexis Leon, Introduction to Information Technology.
3. Peter Norton, Introduction to Computer, Galgotia Publications

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES,
DEVI AHILYA UNIVERSITY, INDORE
M. Tech. (IT) 5½ Yrs. I SEMESTER
IT-106: English**

Aim of Course: The aim of this courses is to enable students to improve both their ability to communicate and linguistic competence in English language.

Objectives:

- To give students knowledge of correct usage of English with an emphasis on reading and writing skills.
- To practice writing skills at sentence and paragraph levels with correct grammatical structures.
- To practice and learn English speaking skills to communicate in daily situations effectively.

Course Contents:

UNIT I

Anthem – Ayn Rand

The Third Wave – Alivn Tofler: First three chapters

UNIT II

Common errors in the use of articles, prepositions, number, pronoun and all parts of speech.
Writing skills: Writing simple paragraphs, Developing a simple data, Writing simple letters and applications

UNIT III

Vocabulary: The knowledge of atleast 50 words. Their meaning, pronunciation and their usages, Synonyms, Antonyms, one word substitution, idioms and phrases, proverbs.

UNIT IV

Imaginative literature: film – Mary Poppins, life is beautiful – The elements of the novel are to be discussed

UNIT V

Poetry recitation: Elegy written in country church yard (for stress , intonation, tone & pitch)

Communication, Elements of good and effective communication, Modes of communication.

Reference Books:

1. Ayn Rand, Anthem.
2. Alwyn Tofler, The Third Wave
3. Krishna Mohan & Meera Banerji, Developing Communication skills
4. W.S.Allen, Living English Structure.
5. Thomson and Mar, A Practical English Grammar.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

M. Tech. (IT) 5 ½ Years

II SEMESTER

JANUARY – MAY 2013

Sub. Code	Subject Name	Credit
IT-202	Statistical Methods-II	4
IT-203	Physics-II	4
IT-204	Basic Electronics	4
IT-205	Programming with C++	4
IT-206	Comp Lab Viva	2
IT-207	Electronics Lab Viva	2
IT-208	Comprehensive Viva	4

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE
M. Tech. (IT) 5 ½ Years II SEMESTER
IT-201: Mathematics-II**

Aim of Course: To familiarize the students with advanced mathematical concepts and techniques.

Objectives:

- Understand basic concepts of curve tracing, rectification, groups, cosets, homomorphism and isomorphism.
- Solve mathematical problems based on the course material.
- To develop mathematical skills and methods appropriate for students in the computer science.

Course Contents:

UNIT I

Curve tracing: Introduction, pre-requisites, for the curve tracing, maxima & minima, concavity and convexity of the curve, Singular points, asymptotes, symmetry, tangents, Main points of tracing the curve in Cartesian and polar form, some problems on curve tracing.

Improper integral: Improper Integral definition, types of the improper integral, their convergence, Beta Gamma function and their properties, some important deductions followed by some numerical problems

UNIT II

Rectification: Methods and formula for finding out the length of curve in Cartesian and polar form, numerical, intrinsic equation. Derivation of formula for finding the area under plane curve, followed by some problem solving.

Multiple integrals: Integration of function of two and three variables. Double and triple integral. Dirichlet integral. Change of order of integration. Use of double and triple integral in finding the area and volumes of Cartesian curves.

UNIT III

Groups and their general properties : Binary Operation, algebraic structure, definition and example of groups, examples. Order of an element in a group. General properties of a group. Modulo System. Subgroup, complex subgroup, definition and examples, algebra of complexes. Criterion for a complex to be a subset of a group. Union and intersection of subgroups. Cyclic group and subgroups generated by a subset of a group. Theorems generating system of a group

UNIT IV

Coset and coset decomposition : Coset definition, properties of cosets. Cosets decomposition. Partitioning of a group. Relation of congruency modulo in subgroups. Lagrange theorem with its corollaries. Index of a subgroup in a group. Fermat and Euler theorems. Multiplication of two subgroups. Order of the product of subgroup of finite order.

Normal subgroup & quotient group: Definition, example and theorems on normal subgroup quotient groups. Center and normalize of a group. Conjugate, self-conjugate elements of different groups.

UNIT V

Homomorphism and isomorphism of groups : Definition of homomorphism of groups, examples, various types of homomorphism, auto-homomorphism, inner automorphism, theorem, maximal normal subgroup. Permutation, Transformation groups and Cayley's thermo.

Ring and integral domain : Definition, examples and properties of ring. Types of rings, sub rings, Ideal, Types of ideals and their properties, Euclidean ring. Homomorphism and isomorphism of rings, Kernel of a ring homomorphism. Theorems on ring homomorphism, Quotient ring fundamental theorem on ring homomorphism.

Integral domain : Integral domain, subdomain, ordered integral domain, theorems. The characteristics of the integral domain, definition and theorems.

Reference Books:

1. Shanti Narayan, Differential Calculus.
2. Gorakh Prasad, Integral Calculus.
3. R.B. Thakur, Advanced Calculus.
4. H.K. Pathak, Calculus For IInd Yr.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE
M. Tech. (IT) 5 ½ Years II SEMESTER
IT-202: Statistical Methods-II**

Aim of Course: The aim of this course is to make student aware about the statistical methods for research and real life data analysis.

Objectives:

- Understand basic concepts of statistical methods for data analysis.
- Learn Hypothesis testing.
- Learn the application of different tests such as Chi-square, T & F-statistic.

Course Contents:

UNIT I

Estimation: Unbiased-ness, consistency, efficiency and sufficiency, minimum variance unbiased estimator. Cramer-Rao inequality and its application. Maximum likelihood estimator.

Testing of Hypothesis: Simple and composite hypothesis. Test of significance for samples; test for single proportion and for difference of proportion. Test of significance for single mean, test of significance for difference of means.

UNIT II

Interval estimation: Confidence Interval and confidence limits, confidence limits for large samples.

Tests of significance: Procedure for testing of hypothesis. Test of significance for large samples. Test for single proportion and for difference of proportions. Test of significance for single mean, test of significance for difference of means

UNIT III

Test of significance for small samples: Concept of Chi-square, t & F-statistic, test for Chi-square distribution, to test goodness of fit, to test independence of attributes, to test the homogeneity of correlation coefficients.

Test based on t-distribution: t-test for single mean, difference of means , paired t-test, t-test for testing significance of an observed sample correlation coefficient

UNIT IV

Test based on F-distribution: Test for equality of population variance. Test for testing the significance of an observed multiple correlation coefficient.

Non parametric test: Sign-test, median test, run test, Wilcoxon signed rank test.

UNIT V

Analysis of variance and design of experiments: One-way & two-way classification with one observation per cell. Design of experiments, completely randomized design randomized block design and Latin square design.

Reference Books:

1. S.C. Gupta & V. K. Kapoor: Fundamentals of mathematical statistics, S.Chand sons.
2. S.C. Gupta & V. K. Kapoor: Fundamentals of Applied Statistics, S.Chand sons.
3. A.M.Gun, M.K.Gupta, B.Dasgupta: An outline of statistical theory (volume 1)
4. Kapoor & Saxena: Mathematical statistics. S. Chand and sons.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE
M. Tech. (IT) 5 ½ Years II SEMESTER
IT-203: Physics-II**

Aim of Course: To make students aware of atomic theory and semiconductors.

Objectives:

- Develop and apply knowledge and understanding of physics.
- Develop and understand atomic models, semiconductors and their properties.

Course Contents:

UNIT I

Failure of classical mechanics for explaining photoelectric effect, black-body radiation, Compton effect. Plank's hypothesis and radiation law, properties of photons, explanation of photoelectric effect and black-body radiation on the basis of Plank's theory. Wave particle duality, de-boglie's concept of matter waves, properties of matter waves, Davision and Germers electron diffraction experiment, G.P. Thompson experiment, Heisenberg's uncertainty principle, time-dependent and time-independent Shrodinger wave equation, stationary state solution of shrodinger wave equation, solution of shrodinger wave equation for particle in a box.

UNIT II

Atomic model, Rutherford's Experiment on particle scattering, Rutherford's nuclear atomic model. Bohr's atomic model, Bohr's theory of atom. Electron energy levels in hydrogen atom, special series of hydrogen atom spectrum, Bohr's quantum condition for De-Broglie hypothesis, short comings of Bohr's theory, Sommerfield's correction for atomic model, vector atom model, quantum numbers associated with vector atom model, Pauli's exclusion principle, types of spectra.

UNIT III

Band theory in metals, Intrinsic Semiconductors, electrons and holes, Fermi level, temperature dependence of electron and hole concentrations, Extrinsic semiconductors, doping, N and P type semiconductors, conductivity, mobility, P-N junction diode, biasing of diode, Zener and Tunnel diodes, light emitting diode, Metal-semiconductor junction, transistor and its characteristics in CB and CE mode.

UNIT IV

Power supply: diode as a circuit element, load line concept, half wave, full wave and bridge rectifier, ripple factor, filter circuits such as series inductor and shunt capacitor, Zener diode as voltage regulation, regulated power supply, h-parameters of transistor, field effect transistor N-channel and P-channel, FET characteristics and its constants

UNIT V

Interference of light: the principle of superposition of waves, two slit interference, coherent sources, conditions for interference, fringe width of interference fringes, diffraction of light, half period zone method, zone plate and its multiple foci, polarization, Brewster's law, double refraction , Quarter and half wave plates, Principle of Laser, population inversion, optical pumping, Ruby and He-Ne laser.

Reference Books:

1. W.D. Stanley "Electronic Devices, Circuits and Applications"
2. B.G Stretman "Solid State Electronic Devices"
3. R.P. Goyal "Unified Physics part-II and part-III"
4. D.P. Khandelwal "Optics and Atomic Physics"
5. A.K.Ghatak "Quantum Mechanics"

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE
M. Tech. (IT) 5 ½ Years II SEMESTER
IT-204: Basic Electronics

Aim of Course: To introduce students with basic concepts of electronics.

Objectives:

- Understand basic components of circuits.
- Understand the use of diodes as power supply rectifiers.
- Understand the operation of transistors as switching circuits.

Course Contents:

UNIT I

Basic Components: Circuit Symbols, Working Principle, Classification according to construction, Specification, and applications of passive components-Resistors & Color coding, Inductors, Transformers, Switches, Relays (Electromagnetic), Thermistor, LDR, Microphone and Loudspeakers.

UNIT II

Capacitors:- Capacitance, Capacitor Specifications, Classification of Capacitor-Fixed(Mica, Paper, Ceramic, Plastic, Electrolytic etc), Variable capacitor (Trimmer, Padder, Gang), Stray capacitance, Leakage Resistance, Testing of Condenser, Area of Application, Problem related to Electrical Energy Storage.

UNIT III

Semiconductors: Conductors, Semiconductors and Insulators, Classification on the basis of Band Theory, Intrinsic and Extrinsic Semiconductors, Diode current equation (Derivation not required), Drift & Diffusion.

UNIT IV

P-N Junction-Forward and reverse bias of Diode. Concept of recombination of carriers, Temperature variation of Forward and Reverse Current through the P-N Junction. Characteristics of Forward & Reverse Bias Diode, Dynamic and Statics Resistances, Voltage dependent Junction Capacitance of a P-N Junction

UNIT V

Special Diodes: Zener Diode, its construction and characteristics, Temperature coefficient of Zener Diode, Zener Diode as Voltage Regulator, Schottky Diode, Power Diode, Tunnel Diode, LED, Solar Cell, Photodiodes.

Reference Books:

1. Malvino A.P., Electronics principal
2. B.L. Theraja, Electrical Technology
3. V.K. Mehta Principal of electronics.
4. Boylestad, Electronics devices and circuit theory.
5. Milliman J. Halkias C, Integrated electronics

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE
M. Tech. (IT) 5 ½ Years II SEMESTER
IT-205: Programming with C++

Aim of Course: The aim of course is to help students to gain a better understanding of OO design and program implementation by using OO language features.

Objectives:

- Understand object-oriented programming features in C++,
- Apply these features to program design and implementation,
- Understand object-oriented concepts and how they are supported by C++,
- Gain some practical experience of C++,
- Understand implementation issues related to object-oriented techniques,
- Build good quality software using object-oriented techniques

Course Contents:

UNIT I

Principle of Object Oriented Programming and Introduction of C++ : Object-Oriented Terminology, OOP Paradigm, Basic concept of OOP, Benefits of OOP, Application of OOP. Introduction of C++: Tokens, Keywords, Identifier and constants, Operator, Data Type, Variable Manipulator, Expression and Control structure.

UNIT II

Classes and Function in C++ :

Class: Defining Classes in C++, Classes and Encapsulation, Member functions, Instantiating and Using Classes, Access specifiers, Static Class Members.

Constructor and Destructor: Use of Constructors, Multiple Constructors, Types of constructor, Using Destructors to Destroy Instances.

Function: Function Introduction, Main function, Function Prototyping, inline function, friend function.

UNIT III

Inheritance & Polymorphism: Overview of Inheritance, Defining Base and Derived Classes, Constructor and Destructor Calls, Virtual base classes, Abstract classes.

Overview of Polymorphism

Operator & Function Overloading: Operator Overloading, Working with Overloaded Operator Methods, Introduction to Function overloading.

UNIT IV

Pointer and Virtual Function : Introduction of Pointer, Dynamic memory allocation, Pointers to object, this pointer, Pointers to derived classes, Virtual Functions, Pure virtual function.

UNIT V

Working with files in C++, Exceptions Handling and Templates:

Files: Standard Streams, Manipulators, Unformatted Input and Output, File Input and Output.

Exceptions: Basics of Exception handling, Exception handling mechanism.

Templates: Template Overview, Customizing a Template Method, Standard Template Library Containers.

Reference Books:

1. E. Balagurusamy, Object-Oriented Programming with C++
2. Yashwant Kanitkar ,Let us C++.
3. The Complete Reference - C++, Tata Mcgraw Hill

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

M. Tech. (IT) 5½ Years

III SEMESTER

JULY-DECEMBER 2013

Sub. Code	Subject Name	Credit
IT-301	Mathematics-III	4
IT-302	Internet Tools	4
IT-303	Digital Electronics	4
IT-304	DS with C++	4
IT-305	Engineering Drawing	4
IT-306	Digital Elex. Lab	2
IT-307	Computer Lab	2
IT-308	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE

M. Tech. (IT) 5½ Yrs. III SEMESTER

IT-301: Mathematics – III

Aim of Course: To make the students familiar with different methods of solving ordinary and partial differential equations and their application in real life situation.

Objectives:

The course is designed to make students:

- Understand mathematical modeling for practical problems related to Management Science and Technology in terms of differential equations.
- Learn the skill of solving differential equations.

Course Contents:

UNIT I

Differential equations: Meaning of differential equation, formation from primitive, examples. First order linear differential equations, method of solution, separation of variables, homogenous form, and examples. Equations reducible to homogenous form, linear form, reducible to linear form. First order exact differential equations. Condition for exactness, method of solution.

UNIT II

Integrating factor. Rules for determining I.F., examples. Diff Equation of 1st order and higher degree solvable for p, y . Equations solvable for pie, clairauts form. Trajection , orthology trajectory in Cartesian and polar form.

Linear diff equation with constant coefficients. Standard form. Homogenous linear diff equation with variable coefficient. Exact differential equation of higher order condition for exactness.

UNIT III

Method for solving exact diff equators, example. Diff equators of particular forms method of solution when part of c.f. is known. 2nd order linear diff equator with variable coeff method of solution when part of c.f. ic known example. Solution by factorization of operators. Method of variation of. Method of undetermined coeff. Simultaneous linear doff equators with constant coeff.

UNIT IV

Symmetrical form. Total diff equators conditions of inheritability, method of solution. Initial and boundary value problem, approximation by picards method. Series solution of diff Equator simple cases. Solution about single point.Partial diff equations formation of p.d.e

UNIT V

Solution of pdf lagrange method. Standard form I ,II. Standard form III IV. linear partial differential equation with constant coeff, homogenous form.Non homogenous with constant coeff . Non-homogenous Linear Partial differential Equations.

Reference Books:

1. Dr. N.M. Kapoor, Text book of differential equations.
2. P.N. Wartikar, Text book of Applied Maths.
3. Dr. G. Paria, Ordinary diff equations with laplace transform.
4. R.K. Gupta , J.N. Sharma, Differential equations.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5½ Yrs. III SEMESTER
IT-302: Internet Tools

Aim of Course: The aim of the course is to provide knowledge of internet tools and to introduce some of the basic technologies for creating and processing content on Internet web sites.

Objectives:

The course is designed to make students:

- Understand the fundamental concepts of working of internet.
- Design, format and link web pages.
- Write dynamic interfaces using JavaScript.
- Link databases to web sites.

Course Contents:

UNIT I

Introduction to computer networks: Introduction, Components, Standards, Transmission types, Topologies, Transmission mode, Categories, OSI Model, TCP/IP Model, Internet/Intranet/Extranet, Client/Server Architecture.

UNIT II

Internet Basics: Introduction, Internet Service Provider (ISP), Types of A/Cs, Internet Addressing: IP Address, e-mail address, Domain address, Uniform Resource Locator (URL), Internet Services: FTP, Telnet, E-mail (SMTP), WWW (HTTP), DNS.

UNIT III

Hypertext Markup Language (HTML): Web Terminologies, Web Characteristics, Effective web programming, Web Documents: Static, Dynamic, Active, Browser Architecture, Characteristics of HTML, Types of Tags, Basic Tags, List, Table.

Dynamic Hypertext Markup Language (DHTML): Introduction, Cascading Style Sheet (CSS): Introduction, Attributes, Types (Inline style, Style element, External Style Sheet), Class.

UNIT IV

Java Script: Introduction, Document Object Model (DOM), Variables, functions and events, Data Types and operators, Decision making with control structure and statements, Forms, Cookies and Security.

UNIT V

Server Side Programming: Introduction, Client/Server Architecture, Client-side scripting versus server-side scripting, creating server-side Applications, Database Connectivity.

Introduction to Extensible Markup Language (XML).

Reference Books:

1. Behrouz A. Forouzan, Data Communications and Networking, Tata McGrawHill.
2. Ivan Bayross, Web enabled commercial application, BPB publication
3. Herbert Schildt, HTML
4. Chris Bates, Web Programming

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5½ Yrs. III SEMESTER
IT-303: Digital Electronics

Aim of Course: To understand basic concepts of digital logic, its operations, principles and applications.

Objectives:

The course is designed to make students:

- Understand number systems and codes, and Boolean Algebra
- Understand TTL and CMOS circuit characteristics, followed by logic devices such as flip-flops, code converters, counters, multiplexers, and registers.

Course Contents:

UNIT I

Binary Systems and logic circuits. Decimal, Binary, Octal, Hexadecimal numbers and their inter conversions. ASCII, Gray, Excess-3, 8-4-2-1, Error detecting and BCD codes. Logic Gates. Boolean algebra. Demorgan's theorem. Binary addition and subtraction. Unsigned Binary numbers, Signed binary numbers. 2's complement representation and its arithmetic.

UNIT II

Circuit analysis and design.

Boolean laws and theorems. Sum of Product and Product of Sum simplification. Two, three and four variable karnaugh map. NAND and NOR implementation. Other two level implementation. Don't care conditions.

UNIT III

Combinational circuits.

Design procedure. Half adder, full adder, adder-subtractor circuit. Code converters. Various logic circuits. Multilevel NAND circuit. Multilevel NOR circuit.

Data Processing circuits.

Multiplexers, demultiplexers, decoders and encoders. Binary parallel adder, look ahead carry generator, magnitude comparator, ROM, PROM, PLA.

UNIT IV

Sequential circuit.

Flip-flops, triggering of flip-flops. Analysis of clocked sequential circuits, state reduction and assignment, flip-flop excitation tables.

UNIT V

Registers, counters and integrated circuits.

Design of counters, registers, shift registers. Ripple counters, synchronous counters. IC logic families.

Reference Books:

1. M.Morris Mano , Digital Logic and Computer Design.
2. Malvino A.P. and Leach D.P, Digital Principles and Application.
3. Taub H. and Schilling D, Digital Integrated Electronics

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE

M. Tech. (IT) 5½ Yrs. III SEMESTER

IT-304: Data Structures with C++

Aim of Course: To develop proficiency in the specification, representation, and implementation of Data Types and Data Structures.

Objectives:

The course is designed to make students:

- Write programs using object-oriented design principles.
- Understand data structures such as linear lists, stacks, queues. Choose the appropriate data structure and algorithm design method for a specified application.,
- Be familiar with advanced data structures such as balanced search trees, hash tables, priority queues and graphs.
- To get a good understanding of sorting and searching techniques.

Course Contents:

UNIT I

Principles of Object-Oriented Programming: Beginning with C++, Functions in C++, Inline functions, Default arguments, Function overloading, Classes and objects. Visibility modifiers, Array of Objects, Pointer to objects, The This pointer, Friend Functions.

Constructors, Destructors and Inheritance basics: Parameterized constructors, Multiple constructors, constructors with default arguments, Dynamic initialization of objects, Copy constructor, Dynamic constructors, Destructors. Introduction to inheritance, various types of inheritance, Polymorphism, Dynamic Binding.

UNIT II

Introduction to Data Structure: Introduction to C++, Definition of data structures and abstract data types. Static and Dynamic implementations. Examples and real life applications, Data Structures: Arrays, Address calculation in a single and multi dimensional array. Sparse matrices

UNIT III

Stacks, Queues and Lists: Definition, Array based implementation of stacks, Linked List based implementation of stacks, Examples: Infix, postfix, prefix representation Definition, Array based implementation of stacks, Linked List based implementation of stacks, Examples: Infix, postfix, prefix representation

Applications: Mathematical expression Evaluation

Definition: Queues & Lists: Array based implementation of Queues / Lists, Linked List implementation of Queues / Lists, Circular implementation of Queues and Singly linked Lists, Straight / circular implementation of doubly linked Queues / Lists, Priority queues, Applications

UNIT IV

Sorting Searching Algorithm, Hashing: Introduction, Sorting by exchange, selection, insertions, Bubble sort, Selection sort, Insertion sort, Pseudo code algorithm and their C++ implementation, Efficiency of above algorithms, Merge sort, Merging of sorted arrays, merge sort algorithms.

Quick sort algorithm, Heap sort algorithm, Radix sort

Straight Sequential Search, Array implementations, Linked List representations, Binary Search, non – recursive Algorithms, recursive Algorithms, Indexed Sequential Search, Hashing, Hash function, Collision Resolution Techniques, Hashing Applications

UNIT V

Trees & Graphs: Definition of trees and Binary trees, Properties of Binary trees and Implementation, Binary Traversal - preorder, post order, in order traversal, Binary Search Trees,

Implementations, Threaded trees, Balanced multi way search trees, AVL Trees, and their Applications.

Definition of Undirected and Directed Graphs and Networks, The Array based implementation of graphs, Adjacency matrix, path matrix implementation, The Linked List representation of graphs, Shortest path Algorithm, Graph Traversal – Breadth first Traversal, Depth first Traversal, Connectivity of graphs; Connected components of graphs, Weighted Graphs, Applications.

Reference Books:

1. E. Balagurusamy, Object – Oriented Programming with C++, Tata Mcgraw Hill.
2. A. M. Tenenbaum, Langsam, Moshe J. Augentem, Data Structures using C, PHI Publ.
3. A.V. Aho, J.E. Hopcroft and T.D. Ullman, Data Structures and Algorithms, Original edition, Addison-Wesley, 1999, Low Priced Edition.
4. Ellis Horowitz & Sartaj Sahni, Fundamentals of Data structures
5. Robert Kruse, Data Structures and Program Design in C, PHI Pub.
6. Willam J. Collins, Data Structure and the Standard Template library, Tata Mcgraw Hill.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5½ Yrs. III SEMESTER
IT-305: Engineering Drawing

Aim of Course: To equip students with basic skills required in engineering drawings, electrical circuit diagrams, and communication

Objectives:

The course is designed to make students:

- To impart and inculcate proper understanding of the theory of projection.
- To improve the visualization skills.
- To enable the students with various concepts like dimensioning, conventions and standards related to working drawings in order to become professionally efficient.
- To learn basics of CAD/CAM software tools.

Course Contents:

UNIT I

Introduction: Drawing & Classification of drawings, Drawing Instruments and their uses, Indian standard for drawing. Geometrical Constructions; Polygon, Circle, Technical Lettering, Dimensioning.

UNIT II

Engineering Scales: Introduction – Engineering Scales, Graphical scale, Representative fraction, Types of scales – Plain, Diagonal, scale of chords.

UNIT III

Engineering Curves: Conic Section – Ellipse, Parabola, Hyperbola, Normal and Tangent to conic sections. Cycloidal Curves – Cycloid, Epi-cycloid, Hypo-cycloid, normal & tangent to Cycloidal curves. Involutes Curves – Involutes of circle, polygon, normal and tangents to involutes. Spirals Curves – Archimedean, Logarithmic, Tangents and Normal to spiral curves.

UNIT IV

Projections: Types: Parallel and non- parallel projections. Orthographic – First and Third angle Projections, convention used, Orthographic Projection of Simple solids, conversion of 3-D view to orthographic views. Isometric Projection– Simple Solids, Isometric view, Conversion of orthographic view to isometric view. Introduction to oblique projection and perspective projection.

UNIT V

Projection of Geometrical features: Points, Straight, lines, Planes and Solids.

Section of Solids: Sections of Prisms, Pyramids, cones and cylinders.

Development of Surfaces: Development of surfaces of Prisms, Pyramids, cones and Cylinders.

Introduction to Computer aided drawings CAD

Reference Books:

1. M. B. Shah & B. C. Rana , Engineering Drawing
2. N. D. Bhatt, Engineering Drawing

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

M. Tech. (IT) 5 ½ Years

IV SEMESTER

JANUARY – MAY 2013

Sub. Code	Subject Name	Credit
IT-401	Accounting & Financial Management - I	4
IT-402	Linear Algebra	4
IT-403	Database Programming	4
IT-404	Digital Computer Organization	4
IT-405	UNIX	4
IT-406	Comprehensive Viva	4
IT-407	Computer Lab	2

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE

M. Tech. (IT) 5 ½ Years IV SEMESTER

IT-401: Accounting & Financial Management – I

Aim of Course: To understand the concepts and application of beginning accounting principles.

Objectives:

The course is designed to make students:

- Learn fundamental accounting concepts, elements of financial statements, and basic accounting vocabulary.
- Learn the concepts of journal, ledger, final accounts, various depreciation techniques, cash flow and fund flow.

Course Contents:

UNIT I

Introduction and purpose of accounting and uses of accounting information & basic accounting concepts.

UNIT II

Accounting Structure: Process of accounting, Journal, Ledger & Trial balance, based on double entry book keeping.

UNIT III

Practical system of accounting: Cash book, sales & purchase of goods. Bill of exchange bank reconciliation statements.

UNIT IV

Preparation of Financial Statements : Income statements , (Profit and Loss A/C),Statement of financial Position (Balance Sheet) and Adjustments. Valuation of Assets and Depreciation methods. Cash and fund flow. Analysis of financial statements- Financial Ratio.

UNIT V

Introduction to cost accounting : Elements of cost , Cost determination , Direct and Indirect cost , Cost centers & cost units , the behavior of cost.

Reference Books:

1. T.S. Grewal, Introduction to accountancy, S. Chand & co. Ltd.,
2. Rovect Anthony, Accounting Principles, Rich & Irvin.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years IV SEMESTER
IT-402: Linear Algebra

Aim of Course: To introduce different algebraic Structures with special reference to linear space and its applications in geometry.

Objectives:

The course is designed to make students:

- Understand concepts and methods of linear algebra.
- Develop the ability to solve problems using linear algebra.
- To connect linear algebra to other fields both within and without mathematics.
- Develop abstract and critical reasoning by studying logical proofs and the axiomatic method as applied to linear algebra

Course Contents:

UNIT I

Composition Table, Revision of Group Structure, Extension of Group Structure. Ring, Integral Domain and Field structure, Detailed study of field structure Various examples of field.

UNIT II

Introduction of the algebraic structure for Linear space, Internal and External Compositions, Linear space. Properties of Linear Space. Sub Spaces, Criteria for sub spaces, examples of Sub-Spaces, Formation of Quotient Set, Binary Composition defines in Quotient Sets, Quotient Spaces—Examples of Quotient Space.

UNIT III

Linear combination of vectors over R and C, Linearly independent and dependent set of vectors over F, Concepts of Basis and Dimensions of Linear Space, Determination of Bases and Dimensions of VCF), coordinate representation of vectors over VCF).

UNIT IV

Linear Transformation, Isomorphism of linear spaces, properties, kernel of Linear transformation, Null space and range space, fundamental theorem of linear space, Homomorphism, Application of Linear transformation to theory of ordinary linear Differential equations. Matrix representation of linear transformation, Rank and Nullity of Linear transformation Eigen values and vectors of linear maps and matrices. Diagonalization of Matrices, Jordan Blocks and Applications, Inner Products – Inner product space. Norm of a vector in inner product space, Unit vectors. Schwartz's Inequality, Triangle inequality, angle between vectors in inner product space, orthogonal vectors Distance in an inner product space.

UNIT V

Orthogonalization of bases, Orthogonal basis Ortho-normal set, Orthonormalization of basis, Gram-Schmidt's process of orthonormalization of base. Quadratic forms, Reduction of quadratic form to Canonical forms. Application, Normal form concept of rank, Index and signature of normal form. Conversion of quadratic form to normal form and determination of rank, Index and signature. Classifications of curves and surfaces in 2 and 3 dim. Reduction and identification.

Reference Books:

1. Dr. H. K. Pathak , Text Book of Linear Algebra .
2. Krishnamurthy, Linear Algebra
3. Hottman & Kunze, Linear Algebra
4. Dr. K. P. Gupta, Linear Algebra

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years IV SEMESTER
IT-403: Database Programming

Aim of Course: To handle large database system and to be able to manipulate it efficiently and carry out analysis to design the database.

Objectives:

The course is designed to make students:

- To present necessary concepts for database designing.
- Design conceptual, logical database model and physical model.
- Evaluate set of query using SQL and algebra.
- Concepts of RDBMS, and learn Object oriented modeling

Course Contents:

UNIT I

Introduction, Purpose of Database System, View of data, Three Level -Architecture of DBMS, Data models - Physical Model, Logical Model, Conceptual Model, Hierarchical Model, Network Model, Object Oriented Model, Database Languages, Transaction Management, Storage Management, Database Administrator, Database Users, Overall System Structure.

UNIT II

Entity-Relationship Model:- Basic Concepts, Design Issues, Mapping Constraint, Keys, Entity-Relationship Diagram, Weak-Entity Sets, Design of an E-R Database Scheme, Reduction of an E-R Schema to Tables.

UNIT III

Structured Query Language:- Basic Structure, Set Operations, Aggregation Functions, Null Values, Nested Sub Queries, Joined Relation, Data Definition Language, Data Control Language, Data Transaction Language

Integrity Constraint:- Domain Constraint, Refrential Integrity, Assertion, Triggers, Functional Dependencies

UNIT IV

Relational Database Design:- Codd's 12 Rules, Pitfalls in Relational-Database Design, Decomposition, Normalization Using Functional Dependencies, Normalization Using Multivalued Dependencies, Normalization Using Join Dependencies

UNIT V

Query Processing:- Overview, Measure of Query Cost, Processing select, project and join operations, Database Programming with VB

Reference Books:

1. A Silberschatz, H.F Korth, Sudersan "Database System Concepts" , MGH Publication.
2. Modern Database Management (5th Edition) (Hardcover) by Fred R. McFadden, Jeffrey A. Hoffer, Mary B. Prescott
3. Elmasri & Navathe "Fundamentals of Database systems" – III ed.
4. B.C. Desai. "An introduction to Database systems" BPB.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE

M. Tech. (IT) 5 ½ Years IV SEMESTER

IT-404: Digital Computer Organization

Aim of Course: To make students understand the organization of the computer, and the way the hardware components are connected together to form a computer system, and the development of the hardware for the computer taking into consideration a given set of specifications.

Objectives:

The course is designed to make students:

- Understand the various functional units of CPU.
- Study various units of ALU.
- Understand instruction formats and addressing modes.
- Understand interconnection and interfacing of various units of computer system.

Course Contents:

UNIT I

Introduction to computer organization, simple model of a computer. Memory organization: Memory hierarchy, main memory, auxiliary memory and virtual memory

UNIT II

Input output organization: Peripheral devices, i/o interface, Asynchronous data transfer, Models of transfer, DMA, I/O processor.

UNIT III

Buses and interface: Interconnecting system components, interfacing buses and their operations, interfacing of simple I/O devices such as keyboard and printer.

UNIT IV

Control Unit: Instruction word format, fetch and execution cycle, sequence of operation of control registers, control of arithmetic operations, microprogramming concepts.

UNIT V

CPU Organization: General register organization, stack organization and accumulator type organization. Instruction formats – three address instruction, two address, one address and zero address instructions, Instruction set selection. Addressing modes:- Immediate, direct, indirect, register, indexed etc.

Reference Books:

1. J.P.Hayes , Computer Architecture and Organization, 2nd edition , Tata McGraw-Hill
2. A.S.Tanenbaum , Structured Computer Organization, 3rd edition, Prentice Hall of India
3. M. Morris Mano , Computer System Architecture, 3rd edition, Prentice Hall of India

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years IV SEMESTER
IT-405: UNIX

Aim of Course: To develop an understanding of basic concepts of operating system with special reference to UNIX operating system.

Objectives:

The course is designed to make students:

- Understand UNIX as operating system.
- Learn to use UNIX shell.
- Learn to use UNIX commands.
- Send and receive electronic mail and learn its real-world limitations
- Learn File handling and shell programming.

Course Contents:

UNIT I

Introduction and familiarization: History of UNIX operating system, Architecture of Unix login and log out

UNIT II

UNIX file system: File system hierarchy: file name, attributes, access rights and their change, copying moving and removal of files.

File permission mask,/etc/passwd file, su, newgrp , chown , chgrp commands . Contents of file and file commands. Hard and Soft links, search in file system find command.

UNIT III

Filters , standard input and standard output , pipes , pipelines , simple text manipulation utilities , utilities for comparing text files. Regular expression grep , egrep, fgrep , programmable filters sed, awk. Back up of files and directories , tar , cpio, dd.

UNIT IV

UNIX shell : Basic UNIX user skill , shell as command language , interpreter , command line, shell file metacharacter, script writing, examples of script. Process, ps, shell as process, job control, signals. VI editor

UNIT V

Shell programming concept. Shell script control statements, loops, branching, return codes, test statements, shell parameters. (If time permits) UNIX administration.

Reference Books:

1. Sumitabha Das, UNIX: Concepts and application.
2. Maurice J. Bach, The design of the UNIX operating system.
3. Y. Kanetkar, UNIX shell programming
4. Kamran Hussain , Linux Unleashed, Tim Parker.
5. Christopher Vickery, UNIX shell programmer's Interactive Workbook.
6. Mark F. Komarinsk, Cary Colette , Linux system administration handbook.
7. Dent and Gaddis, Guide to using Linux

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

M. Tech. (IT) 5½ Years

IX SEMESTER

JULY-DECEMBER 2013

Sub. Code	Subject Name	Credit
IT-101	Mathematics-I	4
IT-102	Statistics Methods-I	4
IT-103	Physics-I	4
IT-104	C Programming	4
IT-105	PC Software	4
IT-106	English	4
IT-107	Lab Viva	2
IT-108	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years IX SEMESTER
IT-901: Artificial Intelligence

Aim of Course: To familiarize students with techniques of representing knowledge required to build intelligent machines capable of taking decision like human beings.

Objectives:

The course is designed to make students:

- To familiarize students with techniques of solving problems that need human intelligence.
- To enable students to formulate Artificial Intelligence problems
- To enable students to use heuristic techniques to solve the AI problem.

Course Contents:

UNIT I

Introduction to AI & Problem Solving in AI: What is AI, AI Techniques, Defining the problem in AI, Problem Spaces, Problem Characteristics, Production System and its Characteristics?

UNIT II

Heuristic Search Techniques: Heuristic Search, Criteria for Search, Various Search Techniques- Generate and Test, Depth-first Search, Breadth-first Search, Hill Climbing, Best-First Search, A* and AO* algorithm, Constraint Satisfaction, Means-Ends Analysis etc.

UNIT III

Knowledge Representation and Issues: Types of Knowledge, Representation and Mappings, Approaches and Issues in Knowledge Representation, Predicate Logic – Representation of simple facts, computable functions; Resolution, Logic Programming, Matching, Control Knowledge etc.

UNIT IV

Prolog Programming: Introduction and Applications, Facts, Objects and Predicates. Linguistic variables, Rules, Input-Output operations, Controlling Execution: Recursion, Fail, Cut; Arithmetic operation, compound objects, List and various operations on Lists; Dynamic Databases; Expert-System design etc.

UNIT V

KR Techniques & Advance Artificial Intelligence: Slot and Filler Structure – Introduction, Weak and Strong Structures, Semantic Nets, Frames, Conceptual Dependency and Frames; Fuzzy logic Expert Systems – Concepts and Design.

Reference Books:

1. Rich & Knight, Artificial Intelligence, Second Edition, Tata Mcgraw Hill
2. Russel and Norvig, Artificial Intelligence A Modern Approach, Prentice Hall
3. Dan Patterson, AI & Expert System, Prentice Hall of India
4. Ivan Bratko, Prolog Programming for Artificial Intelligence, Pearson Education, III Edition
5. Carl Townsend, Introduction to Turbo Prolog, BPB Publication
6. Patrick Winston, Artificial Intelligence, Pearson Education India

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years IX SEMESTER
IT-902: Principles of Optimization

Aim of Course: The principle aim of this course is to make the students aware of organizational behavior of management-process and importance of decision-making in real life situations.

Objectives:

The course is designed to make students:

- Understand different techniques of optimization, which help in analyzing the process of decision-making.
- To learn problem formulation of optimization.
- To realize the methods of optimization.
- To know the applications of optimization.
- Understand basic concepts of Linear programming and Dynamic Programming

Course Contents:

UNIT I

Organizational behavior and management. Introduction to O.R. Techniques. Models: - Meaning and classifications.

UNIT II

Linear Programming Problems (L.P.P.), Graphical solutions, Simplex algorithm, Principle of Duality, post optimality analysis. Transportation problem, Initial basic feasible solutions, MODI'S optimality analysis, Degeneracy.

UNIT III

Assignment Problem, traveling Salesmen problem, Branch and Bound techniques. Integer program: - Necessity of Integer programming, use of Branch and Bound Technology for solving Integer Programming problem.

UNIT IV

Queue-theory: - Importance of waiting-line in networking Q-models. Dynamic programming problems.

UNIT V

Theory of Games: - Introduction, pay-off matrix, Minimum-Maximum principle, Saddle-point principle of Dominance. Introduction to Inventory Analysis

Reference Books:

1. Dr. S.D. Sharma, Text Book of Operations Research.
2. N.D. Vora, Quantitative Techniques in management.
3. Kanti Swarup, P.K. Gupta and M.M. Singh , Operations Research..
4. H.A. Taha, Introduction to Operations Research.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years IX SEMESTER
IT-903: Component Technology

Aim of the course: To enable the students understand the concepts of EJB and build web-based and/or enterprise-based applications that incorporate EJB technology.

Objectives:

The course is designed to make students:

- Implement business-tier functionality using EJB technology
- Learn the concepts and implementation of RMI and JNDI
- Get an overview of EJB fundamentals.
- Learn the concepts and implementation of Entity and Session beans..

Course Contents:

UNIT I

RMI: Object Serialization, Developing Applications with RMI, and the RMI security manager, Parameters passing in RMI.

UNIT II

JNDI: Naming services, Directory services, Benefits of JNDI, JNDI Architecture, JNDI concepts

UNIT III

Overview & EJB Fundamentals: Motivation for EJB, Component architecture, Various roles in J2EE architecture, Type of Beans, Distributed object & Middleware, Constituents of enterprise beans: Enterprise beans class, EJB Object, Home object, Local interfaces, Deployment description, Vendor specific files.

UNIT IV

Session Beans: Stateless session beans, statefull session beans, characteristics of statefull session beans, lifecycle diagram for session beans. JMS, Integrating JMS with EJB, Developing message driver beans.

UNIT V

Entity Beans: Persistence concepts, Features of entity beans, Bean managed Persistent entity beans, and Container managed persistent entity beans, Life cycle Diagrams, BMP and CMP relationships.

Reference Books:

1. Ed Roman "Mastering Enterprise Java Beans", Wiley Publishing, 2005, 3rd Edition
2. Kal Ahmed "Professional JAVA server programming", SPD, 2005
3. J2EE Tutorial from www.java.sun.com

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years IX SEMESTER
IT-904: Object Oriented Analysis and Design

Aim of Course: To enable the students to have a thorough understanding of the activities in development projects using Object Oriented Analysis and Design techniques.

Objectives:

The course is designed to make students:

- Develop a working understanding of formal object-oriented analysis and design processes.
- Develop the skills to determine which processes and OOAD techniques should be applied to a given project.
- Develop an understanding of the application of OOAD practices from a software project management perspective

Course Contents:

UNIT I

Software engineering best practices. UML: its road map.

UNIT II

Introduction to the Rational Unified process: Workflow and Lifecycle.

Introduction to Object Orientations, using UML modeling mechanisms.

UNIT III

Requirements Management: key concepts, problem statement,

Glossary, use case model, supplementary specification.

UNIT IV

Analysis and design overview: architectural analysis-layers.

Use case Analysis- Responsibilities, attributes and association.

Architectural design.

UNIT V

Describe concurrency.

Describe distribution, Use case design, Subsystem Design, Class design.

Reference Books:

1. P.Kruchen, The Rational Unified Process: An Introduction, Pearson Education Asia, 2000.
2. G. Booch. I. Jacobson, J. Raumbaugh, The Unified Modeling Language- User's Guide, Addison Wesley, 1999.
3. W.Boggs and M. Boggs, Mastering UML with Rational Rose, BPB Publications, 1999.
4. G. Booch, Object oriented Analysis and Design with Applications, Addison Wesley, 1994.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

M. Tech. (IT) 5½ Years

V SEMESTER

JULY-DECEMBER 2013

Sub. Code	Subject Name	Credit
IT-501	AFM-II	4
IT-502	Micro Processor and Assembly Language	4
IT-503	Computer Graphics	4
IT-504	System Programming	4
IT-505	Numerical Analysis and Design	4
IT-506	Computer Lab	2
IT-507	Electronics Lab	2
IT-508	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years V SEMESTER
IT-501: Accounting & Financial Management – II

Aim of Course: To give an in-depth knowledge of all business transactions and how they should be recorded, classified & interpreted to get a meaningful judgment of viability & profitability of the industry.

Objectives:

The course is designed to make students:

- Be able to prepare a set of financial statements for various forms of businesses and non-profit entities.
- Develop an ability to apply accounting concepts, principles and practices.
- Be familiar with the basic tools for analyses of financial statements.

Course Contents:

UNIT I

Scope of Financial Management, Time value of money: Introduction to various sources of finance Leverages-Meaning of leverage, Significance of operating & financial Leverage.

UNIT II

Capital Structure: Meaning of capital Structure Different Capital Structure Theories.

UNIT III

Working Capital Management: Concept of Working Capital, Management of cash Management of Inventories, Management of Account Receivable Management, Accountants Payable Over Trading & Under Trading.

UNIT IV

Long term investment Decision: Capital Budgeting ,Cost Volume Profit Analysis.

UNIT V

Marginal Costing Introduction to marginal costing, Decision making in alternative. Choices. Dividend Policy in Practice

Reference Books:

1. Dr. S. N. Maheshwari , Financial Management: Principles & Practice

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE

M. Tech. (IT) 5 ½ Years V SEMESTER

IT-502: Microprocessor & Assembly Language

Aim of Course: To introduce the basic concepts of microprocessor and assembly language programming.

Objectives:

The course is designed to make students:

- Develop an understanding of the operation of microprocessors.
- Learn assembly language programming.
- Learn the internal organization of some popular microprocessors.

Course Contents:

UNIT I

Microprocessor-Based Systems: Hardware and Interfacing: Microprocessors, Microcomputers and Assembly Language8085 Architecture & Memory Interfacing I/O Devices.

UNIT II

Instruction Set and Addressing modes: Data transfer, Arithmetic, Logical, Branch & Machine control instructions, related programs & Addressing modes.

Additional Programming Techniques and Stack Operations: Subroutine, Counters & time delay, Code conversion, BCD arithmetic, 16 bit data operation.

UNIT III

Interrupt & Interfacing some peripheral I/O: Interfacing data converters, Programmable Interface Devices: 8155 I/O and Timer, 8279 Keyboard / Display interface.

UNIT IV

General purpose programmable peripheral devices: 8255 (Bidirectional data transfer between two computer) 8254 (Programmable Interval Timer)8259A Interrupt Controller8237 DMA, Serial I/O Communication.

UNIT V

Other eight bit, sixteen-bit Microprocessor: Z80, MC 6800Introduction to advance Microprocessor: 8086,80286,80386Microcontroller 8051.

Reference Books:

1. R.S. Gaonkar, Microprocessor Architecture Programming and Application of 8085.
2. Shridhar and Ghosh, 0000 to 8085 Microprocessor.
3. Intel Corporation, Microprocessors and peripheral hand book.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years V SEMESTER
IT-503: Computer Graphics & Multimedia

Aim of Course: Aim of Course: To provide a broad exposure to the computer graphics field and understand the development of computer graphics applications using multimedia tools and techniques.

Objectives:

The course is designed to make students:

- Understand basic concepts, terms, and techniques of computer graphics.
- Understand principles and concepts of multimedia, animation and media.
- Identify and describe the major media elements that may be integrated to produce a multimedia product
- Learn basics of 2D and 3D animations.
- Develop multimedia projects using Flash.

Course Contents:

UNIT I

Introduction & Application of Computer Graphics: Overview of Graphics System: Input devices, Display Devices, Raster Scan display, Random scan displays, Color CRT monitors. Shading: Diffuse & specular reflection, Halftoning.

UNIT II

Multimedia: Introduction and Application: Definition, Media & Data streams: Types of media, Information unit, Traditional data streams. Applications: Media communication: Tele service, Video Conferencing, MIME, Media Consumption: Kiosks, Tele shopping, Media Entertainment: Virtual reality, Interactive video, Interactive audio.

UNIT III

Multimedia Components: Image and Graphics: Digital Image Representation, Image format, Graphic Format, Color models: CMY, HSV, RGB. Computer Image Processing: Image Synthesis, Dynamics in Graphics. Image analysis: Image recognition, Image Transmission.

Computer representation of sound, Audio Format, Music: MIDI basic concepts, MIDI devices, MIDI messages & software.

Color models in video, Computer video format, Television: Conventional system, Enhanced definition System, High definition system.

UNIT IV

Multimedia Documents: Hypertext and hypermedia, Document architecture SGML, Networked multimedia, MDBMS.

Computer based Animation (Design): Basic concepts , Animation design techniques, animation design using Macromedia flash MX: Drawing overview, Symbols, layers, Types, Buttons, sound creating animation, Publishing flash movies.

UNIT V

Animation Programming (Macromedia flash MX Action Script): Frame actions, Button actions, Variables and data types, Basic actions, Conditionals and operators, loops handling events, sound programming, color programming

Reference Books:

1. Donald Hearn and M.Pauling Baker, Computer Graphics, Prentice Hall of India.
2. David F. Rogers, Procedural Element of Computer Graphics, McGraw Hill

- International.
- 3. William M. Newman Robert F. Sproull, Principles of interactive computer Graphics,
McGraw Hill International.
- 4. Foley, Computer Graphics, Addison Wesley Longman

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years V SEMESTER
IT-504: System Programming

Aim of Course: To enhance the understanding of the concepts of System Programming and to provide a basis for judgment in the design of System Software - Preprocessors, Compilers, Loaders, Debuggers, and Assemblers

Objectives:

The course is designed to make students:

- Understand basic concepts of system software and system programming.
- Learn the design of assemblers, compilers and preprocessors.
- Understand the working of loaders, linkers, editors, debuggers and other software tools used in programming development environment.

Course Contents:

UNIT I

Introduction to Software: System Software and Application Software, System Programming, Components of Language Processing System, Fundamentals of Language processing systems.

UNIT II

Assembler: Elements of Assembly Language programming, a simple Assembly Scheme, Pass Structures of Assemblers, Design of a Two-pass Assembler, A Single pass Assembler for IBM PC.

UNIT III

Macros and Macro Processors: Macro definition and call, macro expansions, nested macro calls, Advance Macro facilities, Design of Macro Preprocessor and macro Assembler.

UNIT IV

Compiler: Compiler and Translators, cross compilers, phases in compiler Design, design of Lexical analyzer.

UNIT V

Loaders and Linkers: Loader Schemes- Link and Go, Link-load and Go, General loader scheme, Absolute loaders, Subroutine linkage, Relocating loaders. Other loader schemes:- Binders, Linkers, loaders, Re-locatable and self-relocating programs.

Software Tools: Software tools for program development, Editors, Debugger, Programming Environments, User Interfaces, Co-routines and reentrant programs.

Reference Books:

1. D. M. Dhamdhere, System Programming and Operating System, 5th edition
2. John. J. Donovan, System Programming, Tata McGraw Hill.
3. Aho and Ullman , Principles of Compiler Design, Pearson Education.
4. Leland L. Beck, “System Software An Introduction to Systems Programming”, Pearson Education 3rd Edition.
5. Dougles. V. Hall , “Microprocessors and Interfacing”, Tata McGraw Hill.
6. Assembly Language Techniques for IBM PC, BPB Publication, Alan R. Millar

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years V SEMESTER
IT-505: Numerical Analysis & Design

Aim of Course: To teach basic numerical methods required for typical engineering and business applications.

Objectives:

The course is designed to make students:

- Understanding the properties of different numerical methods so as to be able to choose appropriate methods and interpret the results for engineering problems that they might encounter.
- Find numerical approximations to the roots of an equation by Newton method, Bisection Method, Secant Method, etc.
- Use finite differences for interpolation and learn various interpolation methods.
- Understand numerical integration and differentiation.

Course Contents:

UNIT I

Introduction: Types of error. Computer Arithmetic operation on floating point number, Solution of Transcendental and Algebraic equation, Zeros of a polynomial, Bisection method, False-Position method, Newton Raphson method.

UNIT II

Introduction to Interpolation:-Finite Differences, Forward, Backward and Central differences, Differences of a polynomial, Newton's formula for interpolation, Related numerical. and derivation, Gauss's central differences formula, Related numerical and derivation. Interpolation with unevenly spaced points. LaGrange's interpolation. derivation and numerical. Hermite's methods for interpolation. Derivation and numerical, divided differences and theirs properties, Newton's general interpolation formula, Inverse interpolation, Method of successive approximations, Extrapolation.

UNIT III

Numerical integration and Differentiation:- Introduction to Numerical Integration, Area bounded by a curve, General Formula for Integration, Trapezoidal rule, Simpson's 1/3 rule, Simpson's 3/8 rule.

UNIT IV

Numerical and C Programs based on above methods:- Geometrical interpretation of above methods. Newton-Cotes Integration formula. Gaussian Integration. Solution of differential equation, Runga Kutta methods.

UNIT V

C implementation of other methods:-Simultaneous Linear Equations, Solution of simultaneous linear equations, Gauss elimination and pivoting, Ill conditioned equation and refinement of solution. Gauss Seidal iterative Methods.

Reference Books:

1. S. S. Shastri, Numerical Methods (Text Book 1 for Numerical Methods)
2. Rama N. Reddy and Carol a.Ziegler, C77 (Text Book 2 for C)
3. V.Rajaraman, Computer Oriented Numerical Methods
4. Veda Murthi and Iyenger, Numerical methods.
5. Krishna Murthi, Numerical Analysis.
6. Gupta and Malik, Numerical Methods.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

M. Tech. (IT) 5 ½ Years

VI SEMESTER

JANUARY – MAY 2013

Sub. Code	Subject Name	Credit
IT-601	Principles & Practices of Management	4
IT-602	Data & Computer Communication	4
IT-603	Java-I	4
IT-604	System Analysis & Design	4
IT-605	Analog Electronics	4
IT-606	Project	3
IT-607	Computer Lab	3
IT-608	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE

M. Tech. (IT) 5 ½ Years VI SEMESTER

IT-601: Principles & Practices of Management

Aim of Course: To provide an opportunity for the participants to understand the various methods of management techniques and eventually develop skills in problem solving and decision-making.

Objectives:

The course is designed to make students:

- Understand basic functions of management: planning, organizing, leading, and controlling.
- Understand the theories of contemporary organizations from a conceptual, analytical, and pragmatic perspective.

Course Contents:

UNIT I

Introduction— What is Management, Definition of management, Functions of Management, Principles of Management, Is management Art or Science. Management Thoughts – The Classical School, the Human relation School, the Decision Theory School, The Management Science School, The System Theory School, The Contingency Theory School

UNIT II

Planning – The Concept, Nature, Type, Steps and Principles of Planning, Instruments of Planning, Strategies Rules, Procedures, Methods, Standards, Projects and Budgets. Decision Making- Nature, Theories, Types, Process of Decision Making, Group Decisions

UNIT III

Organizing & Directing Organization and Organization Structure, Process of Organizing, Departmentation, Line Staff & Lateral Relation, Directing or Actuating.

UNIT IV

Motivation and Communication Need Concept, theories of Motivation, Meaning, Importance, Process, Barriers and Strategies for Communication.

UNIT V

Leadership- Tasks of Leaders, Meaning, Approaches. Coordination & Control Concept, Nature, Types, Methods of Coordination, Management Control, Types, Principles, Techniques of Controlling

Reference Books:

1. Koontz, Management-A global Perspective
2. Dr. R D Agrawal , Organization and Management

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years VI SEMESTER
IT-602: Data & Computer Communication

Aim of Course: To gain an understanding of the fundamentals of data communications networks.

Objectives:

The course is designed to make students:

- Understand basic data communication components.
- Understand the fundamentals of signaling and data transmission.
- Study data link layer and data link protocols.
- Study Network layer, MAC sub layer, LAN and its standardsTo introduce the basic concepts of microprocessor and assembly language programming.

Course Contents:

UNIT I

Introduction & Overview of Communication Systems Use of Computer N/W, N/W Hardware.

Layered Network Architecture: N/W Software.

Review of ISO OSI Reference Model: OSI Model, The TCP/IP Model, Comparing and Contrasting the OSI & TCP/IP Model.

Basis for Data Communication:- Guided Transmission Media: Twisted Pair, Coaxial Pair, Fiber Optics. Multiplexing Techniques: FDM, WDM, TDM, STDM. Unguided Transmission Media: Wireless Communication, Cellular Radio, Satellite Communication

UNIT II

Data Encoding: Digital Data, Digital Signal: NRZL, NRZI, Bipolar AMI, Pseudo Ternary, Manchester, Differential Manchester, B8ZS, HDB3. Digital Data, Analog Signal: ASK, FSK, PSK. Analog Data, Digital Signal: PCM, PAM, DM, ADM. Analog Data, Analog Signal: AM, FM, PM

UNIT III

The Data Link Layer : DLL Design Issue: Framing, Character Count, Character Stuffing, Bit Stuffing, Physical Layer Coding Violation, Error Control, Flow Control, Error Correcting Codes, Error Detecting Codes, Hamming Codes, CRC Code. Data Link Protocols:- Stop & Wait Protocol: Unrestricted Stop & Wait Protocol, Simplex Stop & Wait Protocol, Protocol for Noisy Channel. Sliding Window Protocol: Go Back n, Selective Repeat, Verification using File State, HDLC Data Link Protocol, ISDN: Services, Architecture, Interfaces, Devices. ATM: Architecture, Cells, Headers, Layers.

UNIT IV

The Medium Access Sub Layer : The Medium Access Sub Layer: Channel Allocation, Static, Dynamic. Multiple Access Protocols: ALOHA, CSMA, Collision Free Protocols, Limited Connection Free Protocols, WDMA, Wireless LAN Protocols. Digital Cellular Radio.

Local Area Network :- IEEE Standards: IEEE Standard 802.3, IEEE Standard 802.4, IEEE Standard 802.5, Comparison of 802.3, 802.4 & 802.5, IEEE Standard 802.6, IEEE Standard 802.2

Bridges: Bridges from 802.x & 802.y, Transparent Bridge, Source Routing Bridges, Comparison of 802 Bridges, Remote Bridges. FDDI

UNIT V

Network Layer N/W Layer Design Issue: Organization, Virtual Circuit, Datagram Routing Algorithm: Shortest Path Algorithm, Flooding, Flow Based Routing, Distance Vector

Routing, Link State Routing, Hierarchical, Mobile Host. Broadcast & Multicast

Reference Books:

1. A.S. Tanenbaum, Computer Network (III Edition).
2. B.A. Forouzen, Data Communication and Networking (II Edition).
3. William Stalling, Data and Computer Communication.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years VI SEMESTER
IT-603: Programming in Java

Aim of Course: To learn the Java programming language fundamentals: its syntax, idioms, patterns, and styles with object oriented programming concepts.

Objectives:

The course is designed to make students:

- Write programs using the Java language. Basic topics considered are programs and program structure in general, and Java syntax, data types, flow of control, classes, methods, objects, arrays, exception handling, recursion, and graphical user interfaces (GUIs).
- Compile and execute them under the Sun Microsystems, Inc. Java 2 Platform, Standard Edition, or other Integrated Development Environments (IDEs) such as NetBeans. To provide a broad exposure to the computer graphics field and understand the development of computer graphics applications.

Course Contents:

UNIT I

Introduction to Java: Features of Java, Object-oriented programming overview, Introduction of Java Technologies, How to write simple Java programs, Data Types, Variables, Memory concepts, decision making operators, Naming Conventions Introduction to Class, Objects, Methods and Instance Variables, Primitive type Vs Reference Type, Initializing Objects with Constructors. Type conversion & casting, Operators, Control Statements (if Single-Selection Statement, if-else Double Selection), while Repetition Statement, for Repetition Statement, do-while Repetition Statements, switch Multiple-Selection Statement, break and continue Statements. Static Method, static field and Math Class, Method Call Stack and Activation Record, Argument Promotion and Casting, Scope of declaration and Method Overloading.

String Handling & Arrays: String Handling: The String constructors, String operators, Character Extraction, String comparison, String Buffer.

Arrays: Declaring and Creating Arrays, Enhanced for Statement, Passing Arrays to Method, Multidimensional Arrays, Variable-Length Argument lists, Using Command-line Arguments. final Instance Variables, this reference, static import, overloaded Constructors, Garbage collection and method finalize , Overloading methods, Parameter passing.

UNIT II

Inheritance & Polymorphism: Inheritance: Extending classes, protected Members, relationship between Superclasses and Subclasses, Using super, Constructor in Subclasses, The Object Class, Object Copying in Java

Polymorphism: Method overriding, upcasting, Dynamic Method Dispatch, final Method and classes, Abstract classes and Methods, instanceof operator, Downcasting, Class class, Runtime type Identification.

Packages and Interfaces: Packages: Defining a Package, Understanding CLASSPATH, Access Protection, Importing packages, creating own packages.

Interfaces: Defining an Interface, Properties of interface, advantages of interface, Achieving multiple inheritance through interfaces, Variables in Interfaces, Comparable interface.

UNIT III

Nested Classes & Exception Handling: Nested Classes: Overview of nested class and interfaces, static nested class and interfaces, non-static nested class and interfaces –member class, local

classes, anonymous classes

Exception Handling: Introduction, overview of doing it and keywords used, when to use it, Java Exception Hierarchy, finally block, chained exceptions, declaring new exception types, preconditions and post conditions.

Streams and Files: Introduction to Data Hierarchy, Files and Streams, Sequential-access Text Files, Object Serialization, Random-Access files, Java Stream class Hierarchy.

UNIT IV

Multithreading: What are threads, The java thread model, Thread priorities, Thread life cycle, Creating thread and executing thread, Thread Synchronization, producer-consumer problem without Synchronization. Producer-consumer problem with Synchronization, Other class and Interfaces in `java.util.concurrent`, Monitor and Monitor Locks, Thread Groups, Synchronization, Inter-thread Communication.

Introduction to GUI & Applets: Introduction To GUI : Introduction, Overview of swing Components, Displaying text and Images in a window, Introduction to Event Handling, Common GUI Event Type and Listener Interfaces, How Event Handling Works, Adapter Classes, Layout Managers

Applets: Applet basics, Applet Architecture, Applet life cycle methods, Applet HTML Tag and attributes, Executing applet in web browser and in the appletviewer, in Passing parameters to Applets, doing GUI programming in applet.

UNIT V

Generic & Collection: API Generic: Introduction, Motivation for Generic Methods, Generic Methods : Implementation and Compile- time Translation Issues, Overloading Generic Methods, Generic Classes, Raw Types, Generic and Inheritance

Collection API: Introduction, Collection overview, Interface Collection and class Collection, List- ArrayList, LinkedList, Vector, Stack Class.

Database connectivity: JDBC, The design of JDBC, Typical uses of JDBC, The Structured Query language, Basic JDBC Programming concepts, Executing Queries.

Reference Books:

1. Deitel & Deitel, JAVA How to Program, Pearson Education, Sixth Edition
2. Herbert Schildt , Java2 : The Complete Reference, Tata McGraw- Hill, 4th Edition
3. John Hubbard , Programming with Java (Schaum's Easy Outline)
4. JAVA 2 Black Book
5. Bruce Eckel , Thinking in Java, Prentice Hall
6. Gary Cornell, Cay Horstmann Core Java 1.2: Volume 1 Fundamentals, Prentice Hall
7. The Sun Microsystems Press Java Series
8. Janson Hunter, William Crawford, Java Servlet Programming, O'Reilly Pub.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years VI SEMESTER
IT-604: System Analysis & Design

Aim of Course: To introduce established and evolving methodologies for the analysis, design, and development of an information system.

Objectives:

The course is designed to make students:

- Understand system characteristics, project management, prototyping, and systems development life cycle phases.
- To analyze a problem and design an appropriate solution using a combination of tools and techniques

Course Contents:

UNIT I

Overview of system analysis and design: Systems concepts, Definition, Characteristics of a system, Elements of a system, Types of Systems: Physical or Abstract System. Open or Closed Systems. Man-Made Information Systems: Categories of Information, Formal Information Systems, Informal Information Systems.

UNIT II

System Development Life Cycle: Recognition of need, Feasibility study, Analysis, Design, Implementation, Post implementation and Maintenance, Project Termination, Prototyping, Role of the system Analyst: Definition, Skills, Academic and Personal Qualifications, The Multifaceted Role of The Analyst, The Analyst/User Interface.

UNIT III

System Analysis: Systems Planning and the Initial Investigation-Bases for Planning in System Analysis: Dimensions of Planning, Initial Investigation: Needs Identification, Strategies for Determining Information Requirements, Problem Definition and Project Initiation, Background Analysis: Fact- Finding, Fact Analysis, Determination of Feasibility.

Structured Analysis: Introduction, Tools of Structured Analysis: Dataflow Diagrams, Data Dictionaries, Decision Tables, Decision Trees, Structured English.

Feasibility study: Introduction, Feasibility Considerations, Feasibility Study Stages, Feasibility Report, Cost/Benefit Analysis.

UNIT IV

System Design: The Process and Stages of System Design: Introduction, The Process of Design: Logical and Physical Design, Design Methodologies: Structured Design, Form-Driven Methodology- The IPO Charts.

Input/Output and Forms Design: Introduction, Input Design, Output Design, Forms Design.

File Organization and Data Base Design: Introduction, File Structure, File Organization, Data Base Design, Views of Data, Data Structure.

UNIT V

System implementation, Post Implementation and Maintenance:

Introduction, Testing objectives, Test Data, System Testing, Types of System Tests, Quality Assurance: Quality Factors Specifications, Levels of Quality Assurance, Post Implementation and Maintenance, Project Scheduling , Project Management.

Reference Books:

1. Elias M. Awad , System Analysis and Design, GALGOTIA Publications.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years VI SEMESTER
IT-605: Analog Electronics

Aim of Course: To enable students understand operational amplifiers.

Objectives:

The course is designed to make students:

- Understand working of amplifiers.
- Understand amplifier circuits, feedback circuits, and oscillator circuits To teach basic numerical methods required for typical engineering and business applications..

Course Contents:

UNIT I

Amplifier Circuits: Overview of BJT DC biasing techniques: Fixed bias, emitter stabilized bias, voltage divider bias.BJT Small signal analysis: Common emitter fixed bias, voltage divider bias, emitter follower.

UNIT II

Frequency Effects: Frequency response of an amplifier: Input & Output coupling capacitor, emitter and collector bypass capacitor, Miller's theorem, decibel voltage gain, cascading of stages.

UNIT III

Operational Amplifier: Differential and common mode operation, Non-inverting and inverting amplifiers: summing amplifier, integrator, and differentiator. Op-Amp specifications: DC offset parameters, frequency parameters.

UNIT IV

Feedback circuits: Concept of feedback, Feedback connection types, effect of feedback on gain and bandwidth.

UNIT V

Oscillators circuits: Operation, Phase Shift, Wein Bridge, Tuned and Crystal oscillators

Reference Books:

1. Electronic Devices and Circuit theory by Robert Boylestad & Louis Nashelsky.
2. Electronic Principles by A. P Malvino.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

M. Tech. (IT) 5½ Years

VII SEMESTER

JULY-DECEMBER 2012

Sub. Code	Subject Name	Credit
IT-701	Computer Architecture	4
IT-702	Linear Systems	4
IT-703	Discrete Structure	4
IT-705A	Operating System	6
IT-708	Bio-Informatics	4
IT-707	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years VII SEMESTER
IT-701: Computer Architecture

Aim of Course: To understand the concepts of design and analysis of the hardware of a computer system and its components such as control unit, arithmetic and logical (ALU) unit, input/output, and memory unit.

Objectives:

The course is designed to make students:

- Learn concepts of microprogramming in the design of the central processing unit of a computer system.
- Understand various ways for interconnecting I/O devices to the system.
- Understand basic concepts of parallel processing

Course Contents:

UNIT I

Introduction and vocabulary, History of computer architecture, Overview of computer organization, Difference between Computer architecture & organization, Introduction to digital logic, von Neumann/Turing, IBM 360 series, Moore's law, Performance measurement: IPC, CPI, MIPS, Amdahl's law, CPU performance equation, Speeding it up, Performance Mismatch & Solutions, Instruction cycle, Interrupt cycle, Bus interconnections: Types, Arbitration, PCI, Future bus, Future bus+.

UNIT II

CPU Structure, Registers, User Visible Registers, General Purpose Registers, accumulator organization, general register organization, stack organization of CPU, High level issues in CPU design, Memory: Location, Capacity, Unit of transfer, Access method, Performance (Access, cycle, transfer rate), Physical type (semi conductor or magnetic), Physical characteristics (volatile, erasable etc.), Locality of references, Cache mapping techniques, Cache write policies, Cache initialization, External memory, RAID organization of hard disks.

UNIT III

Input/Output: Programmed I/O, Interrupt Driven I/O, Direct Memory Access. Representing information digitally, Byte Ordering: Big-Endian & Little-Endian. Instruction sets, Elements of an Instruction, Instruction Representation, Instruction types, Number of Addresses, Design Decisions [CISC/RISC], Addressing Modes, Large Register File in RISC.

Register and data flow design, data fetch and instruction fetch in indirect instruction cycle, CPU control unit, Functions of Control Unit, Micro-Operations, Micro Programmed Control and Hardwired control unit and their advantages-disadvantages.

UNIT IV

Instruction level parallelism: Pipeline design, Synchronous & Asynchronous Pipeline conflicts: Resource conflict, Data dependency, and Branch difficulties. Solutions to deal with pipelining: Hardware interlocks, operand forwarding, Delayed load, Pre fetch target instruction, Branch target buffer, Loop buffer, Branch prediction, and Delayed branch. Super scalar design; Super pipelining, and VLIW processors.

UNIT V

Parallel Processing, Flynn's classification: SISD, SIMD, MISD, MIMD. Vector processor, Array Processor, Symmetric multi processing, NUMA, Cache coherence in parallel computing,

Clusters, Supercomputing and architecture of CRAY-1. Distributed computing and its models, Ubiquitous computing.

Reference Books:

1. William Stallings, Computer Organization and Architecture: Design for performance 8th Ed., Pearson Education.
2. Rajkamal, Computer Architecture, ISP 2006, Tata McGraw HILL.
3. Andrew Tanenbaum, Structured computer organization, 4th Ed., Prentice – Hall, Upper Saddle River, NJ, 2000. (Alternate reference)
4. M. Morris Mano, Computer System Architecture, 3rd Ed., Pearson Education.
5. Kai Hwang, Computer Architecture

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years VII SEMESTER
IT-702: Linear System

Aim of Course: To introduce concepts of Linear System dynamics through integro-differential equations

Objectives:

Objectives:

The course is designed to make students:

- Understand linear system dynamics
- Understand dynamics in the multi-loop multi-task programming
- Learn concepts of calculation of Eigen values and Eigen Vectors

Course Contents:

UNIT I

δ -Functions definitions and its properties. Applications δ -Functions to signals, definition of a linear system and its impulse response. Response by convolution basic idea and some examples. Graphical Evaluation of convolution integral and determination of the limits of integration.

UNIT II

Laplace Transform: Laplace Transform Theorem, Note on the Inversion integral, Region of convergence definition of unilateral and bilateral Laplace transforms, techniques of inversion of unilateral and bilateral Laplace transforms with some examples. Properties of Laplace Transform, Applications to networks and mechanical Systems.

UNIT III

Z-Transform: Sampling process, Frequency-domain Analysis of sampling process, Definition of Z-Transform, Properties of Z-transform. Inversion Integral for Z-Transform and techniques of inversion, solving the difference equations by Z-transform.

UNIT IV

Modeling of systems into integro-differential equations, analog simulation, signal flow graph, force-voltage and force-current analogy, concept of state conversion of integro-differential equations into state dynamics.

UNIT V

Concept of calculations of eigen-values and eigen-vectors, solution of Linear Vector matrix differential equations, Examples and applications. Controllability and Observability in time and frequency domains, stability

Reference Books:

1. I. J. Nagrath and M. Gopal, Control Systems Engineering, (Third Edition)
2. K Ogata, Modern Control Engineering. Fourth Edition, PHI
3. R A Gabel and R.A. Roberts, Signals and linear systems, Wiley International, John Wiley Eastern Pub.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE

M. Tech. (IT) 5 ½ Years VII SEMESTER

IT-703: Discrete Structures

Aim of Course: To familiarize the students with mathematical concepts that underline much of computer science, and to help them develop the skills to solve problems using them, whether they are in a more advance course, doing research, or working.

Objectives:

The course is designed to make students:

1. Enhance mathematical reasoning of students
2. To understand Discrete Structures such assets, permutations, relations, graphs, trees and finite-state machines.
3. Enhance algorithmic thinking of students

Course Contents:

UNIT I

Set theory, function and relations: Set theory: Introduction, sets and elements, universal set and empty set, subsets, Venn diagrams, set operations, algebra of sets, power sets, partitions, ordered pair, Cartesian product. Relations: Introduction to relations, pictorial representation of relations, domain and range, types of relations, n-ary relations, equivalence relations, partially ordered relations.

Functions: Introduction to functions, functions in terms of ordered pairs, pictorial representation of relations, types of functions: surjective, bijective, injective etc, Recurrence relations with applications to algorithm analysis

UNIT II

Logic, Boolean algebra and lattices: Propositions and logic operations, existential and universal quantifiers, tautologies.

Boolean algebra: Combinatorial circuits and their properties, Boolean functions and synthesis of circuits, Lattices: Ordered sets, chains and anti chains, hasse diagrams, different types of lattices, related theorems and applications

UNIT III

Graph Theory: Definition and applications, finite and infinite graphs, incidence and degree, isolated vertex, pendent vertex and null graph.

Paths and circuits: Sub graphs, isomorphism, walks, paths and circuits, connected and disconnected graphs, Euler graphs, Hamiltonian paths and circuits.

Trees: Trees, properties of trees, pendant vertices in a tree, distance and center, rooted and binary trees, spanning trees, fundamental circuits

UNIT IV

Graph theory-II: Cut sets and cut vertices: Cut sets and their properties , connectivity and separability, network flows, 1 and 2 isomorphism Matrix representation of graphs: Incidence and adjacency matrices, Planar graphs, Diagraphs and shortest path algorithms applications of graphs-a general discussion

UNIT V

Automata, grammars and languages: Finite state automata, pushdown automata. Regular expressions, Regular languages, Turing machines and computable functions.

Reference Books:

1. J.P.Tremblay and R. Manohar . Discrete mathematical structures with applications to computer science, Tata McGraw Hill Publication
2. C.L.Liu . Elements of Discrete Mathematics, Tata McGraw Hill Publication
3. Lipschutz and Lipson. Discrete Mathematics, Schaum's outline series, Tata McGraw Hill Publication
4. K.A.Ross . Discrete Mathematics.
5. Bernard Kolman & Robert C. Busby. Discrete mathematical structures for Computer Science

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE

M. Tech. (IT) 5 ½ Years VII SEMESTER

IT-704: Bio – Informatics

Aim of Course: This course provides an introduction to the analysis of biological data using computational methods, as well as investigating problems in molecular and biology from a computational perspective.

Objectives:

The course is designed to make students:

- Develop an understanding of the basic principles of molecular and cell biology.
- Become familiar with existing tools and resources for computational analysis of biological data, including sequences, phylogenies, microarrays, ontologies, and bio-molecular interactions.
- 4. Understand basic abstractions and computational approaches used for analysis including data warehouses, data mining, programming languages.

Course Contents:

UNIT I

What is bioinformatics? Definitions and concepts, Objectives/goals of Bioinformatics, Importance of Bioinformatics , Genome projects, DNA, RNA,DNA fingerprinting , types of RNA, functions of mRNA, tRNA, and rRNA, Amino Acids, Proteins, Central Dogma of Molecular Biology, Gene Coding,& Expression ,Genetic disorder , cloning.

UNIT II

Molecular Biology, RNA, DNA , Protein structure, DNA Sequencing, Base Pairs,Mutations and its type, Sequence Alignment, Dot plots, Simple Alignment. Scoring Matrices. Algorithms Pair wise sequence alignment - NEEDLEMAN and Wunsch, Smith Waterman algorithms; Multiple sequence alignments - CLUSTAL, PRAS; Patterns, motifs and Profiles in sequences.

UNIT III

Biological Databanks, Data Mining, Data warehousing, data capture, data analysis; Introduction to Nucleic Acid and Protein Sequence Data banks; Nucleic acid sequence data banks: Genbank, EMBL nucleotide sequence data bank, Protein sequence data banks: NBRF-PIR, SWISSPROT, Signal peptide data bank; Database Similarity Searches: BLAST, FASTA, PSI-BLAST algorithms.

UNIT IV

Programming Languages, Programming in C: Pointers, pointers to functions, macro and programming in C, graphs, data structure– linked list, stack, queue, binary trees, threaded binary trees, File and exception handling in C.

PERL: Strings, Numbers, and Variables. Variable Interpolation, Basic Input and Output, File handles, Making Decisions, Conditional Blocks, Loops, Combining Loops with Input, Standard Input and Output, Finding the Length of a Sequence File, Pattern Matching, Extracting Patterns, Arrays, Arrays and Lists, Split and Join, Hashes, A Real-World Example, BioPERL; Applications.

UNIT V

Bioinformatics medicine, Preventative medicine , Gene therapy ,Drug development | Alternative energy sources, personalized medicine, crop improvement, forensics analysis, Biotechnology etc. Machine learning overview, Neural networks, , Phylogenetic trees

Reference Books:

1. Pierre Baldi and Søren Brunak, Bioinformatics, The Machine Learning Approach, second edition, MIT Press, Cambridge, MA, 2001.
2. Dan E. Krane, Michael L. Raymer , Fundamental Concepts of Bioinformatics.
3. James Tisdall, Beginning Perl for Bioinformatics.
4. Cynthia Gibas, Per Jambeck , Developing Bioinformatics Computer Skills.
5. Arthur M. Lesk , Database Annotation in Molecular Biology: Principles and Practice.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years VII SEMESTER
IT-705: Operating System

Aim of Course: Aim of Course: To make the students familiar with design of operating systems as resource manager of a computer system.

Objectives:

The course is designed to make students:

- To present basic concepts of operating system architecture
- Understand the concepts of processor management and memory management techniques
- Study deadlock handling and inter-process communication
- Study file systems and device management.

Course Contents:

UNIT I

Introduction to Operating System:- Objectives and functions and the services provided by OS.
Evolution of operating system:- Concepts of batch processing, multiprogrammed batched system, time-sharing systems, Parallel Systems, Distributed systems. Operating system structure:-System calls and system programs.

UNIT II

Process Management: -Process concept, Process states, Process scheduling , Operations on processes , Co-operating processes and IPC.

CPU scheduling: - Basic concept and scheduling criteria, Long term, short term medium term schedulers, Scheduling algorithms, Multi-Processors Scheduling, Measurement of performance of processor.

UNIT III

Process synchronization: - Critical section problem, Mutual exclusion and synchronization, Concept of semaphores, Classical IPC problems. Deadlocks: - Characterization of deadlock, Methods of handling prevention, detection and avoidance, Recovery from deadlock.

UNIT IV

Memory management:-Logical and physical address spaces, Swapping and paging, Contiguous, allocation and its drawbacks, Non-contiguous allocation. Virtual memory: - Demand paging and its need, Performance of demand paging, Page replacement and its need, Thrashing and allocation of frames.

File system interface: - File concept, access methods, Directory structure, protection and consistency. File system structure, Allocation methods, Free space management, Efficiency and performance, Coincidence, protection and sharing.

UNIT V

I/O system: - Various i/o devices, Device drivers, structure of I/O software, Transforming I/O request of h/w operation. Secondary storage structure:- Disk structure, Disk Scheduling, Disk management, Swap space management and Disk reliability.

Note:- Case study of windows and Unix operating system is to be done as assignment.

Reference Books:

1. Silberschatz Galvin, Operating System concept, 5th edition.
2. D. M. Dhamdhere, System Programming and operating system, Tata McGraw Hill, 2nd edition.
3. Milan Milenković, Operating System concept and design, Tata McGraw Hill.

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

M. Tech. (IT) 5 ½ Years

VIII SEMESTER

JANUARY – MAY 2013

Sub. Code	Subject Name	Credit
IT-801A	Computer Networks	4
IT-802	Design & Analysis of Algorithm	4
IT-803	Advanced Database Management Systems	4
IT-802A	Software Engineering	4
IT-805	Control Systems	4
IT-807	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years VIII SEMESTER
IT-801: Computer Networks

Aim of Course: To provide a theoretical foundation of computer network and equip the students with an in-depth knowledge of fundamental techniques involved in computer network, which helps the students to understand the actual working of computer network.

Objectives:

The course is designed to make students:

- Gain an understanding of the principles of operation of a wide variety of network technologies.
- Develop an appreciation of how network services are developed and knowledge of their uses.
- Apply knowledge of computers, software, networking technologies, and information assurance to an organization's management, operations, and requirements.
- Understand data compression and data security techniques.

Course Contents:

UNIT I

Introduction: - Computer Network, Goals and Applications, Reference models – OSI and TCP/IP. A Comparative study. Network hardware – LAN, MAN and WAN and topologies, Network Software – protocol hierarchies, design issues for the layers, Connection Oriented and connection less services, Switching Techniques – Circuit Switching, Message switching, Packet Switching.

UNIT II

Data Link Layer :- Design Issues : Framing, Error Control, Flow Control, , Elementary Data Link Protocols, Sliding window protocol, Example Data link protocols :HDLC, SLIP and PPP.

UNIT III

MAC Sub layer :- Multiple access protocols: Aloha, CSMA Protocols, Collision-Free Protocols, Binary Exponential Back-off algorithm ,Ethernet MAC Sub layer Protocols: IEEE802.3, IEEE802.4, IEEE802.5 , High speed LANs – Fast Ethernet, FDDI, Wireless LANs, Bridges.

UNIT IV

Network Layer :- Design issues, Routing Algorithms: Optimality Principle, Shortest Path Routing, Flooding, Distance Vector Routing, Link State Routing , Hierarchical Routing, Broadcasting Routing, Multicast Routing,Congestion control algorithms, Internetworking, The Network Layer in the Internet: Internet Protocol, Internet addressing and Internet Control protocols.

UNIT V

Transport Layer :- Services, The Internet Transport Protocols : TCP and UDP, performance issues

Application layer :- DNS Name Space, Name Servers, FTP, TELNET, WWW, SNMP, HTTP, SMTP , Network Security : Cryptography, Symmetric- key Algorithms, Public- key Algorithms, Digital Signatures, E-mail Security

Reference Books:

1. A.S. Tanenbaum, Computer Network (III Edition).
2. B.A. Forouzen, Data Communication and Networking (II Edition).
3. William Stallings, Data and Computer Communication.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE**M. Tech. (IT) 5 ½ Years VIII SEMESTER****IT-802: Design & Analysis of Algorithm**

Aim of Course: Aim of Course: This course aims to introduce the classic algorithms in various domains, and techniques for designing efficient algorithms.

Objectives:

The course is designed to make students:

- Learn to analyze the running time of the algorithms
- Understand the application of algorithms and design techniques to solve problems.
- Learn to analyze the complexities of various problems in different domains and design efficient algorithms.
- Understand asymptotic notation to provide a rough classification of algorithms
- Study algorithms for fundamental problems in computer science and engineering work and compare with one another.
- Understand the problems for which it is unknown whether there exist efficient algorithms or even algorithm

Course Contents:**UNIT I**

Introduction to Algorithms: Definition, Algorithm Specification, Performance analysis. Review of Data Structures: Stacks, Queues, Trees and Graphs.

UNIT II

Divide and Conquer: General Method, Binary Search, Finding the Maximum and Minimum, Merge Sort, Quick Sort, Selection Sort, radix short.

Dynamic Programming:- The General Method, Matrix Chain Multiplication, Memoisation, Memoised Fibonacci series computation. 0/1 Knapsack, Traveling Salesperson Problem.

UNIT III

The Greedy Strategy: General Method, Knapsack Problem, Job Sequencing with deadlines, Minimum Cost Spanning Trees - Prim's Algorithm, Kruskal's Algorithm

UNIT IV

Basic Traversal and Search Techniques:- Techniques for Binary Trees and Graphs

Back Tracking:- The General Method, The 8-Queens Problem

Branch And Bound:- The General Method, Traveling Salesperson Problem.

UNIT V

NP-Hard and NP-Complete Problems:- The Basic Concepts, Non-Deterministic Algorithms, The Classes NP-Hard & NP-Complete.

Reference Books:

1. Thomas H. Cormen, Charles E. Leiserson, Donald L. Rivest. Introduction to Algorithms. Indian Edition Published.
2. [Ellis A. Horowitz, Sartaj Sahni](#), Fundamentals of Computer Algorithm, Computer Science Press.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years VIII SEMESTER
IT-803: Advanced Database Management System

Aim of Course: To learn advanced features of DBMS and build capacity to implement and maintain an efficient database system using emerging trends.

Objectives:

The course is designed to make students:

- Be able to master the concepts and design with proficiency databases under the relational model.
- Proficiency in the choice of DBMS platform to use for specific requirements
- Be proficient with a broad range of data management issues including data integrity and security, transaction processing and others.
- Be familiar with the fundamentals of distributed DBMS and object database management, data warehousing and data mining

Course Contents:

UNIT I

Introduction with DBMS and ER Model : Advantage of DBMS approach, various view of data, data independence, schema and sub-schema, primary concepts of data models, Database languages, transaction management, Storage management Database administrator and users, overall system architecture.

Basic concepts of ER model, design issues, mapping constraint, keys, ER diagram, weak and strong entity sets, specialization and generalization, aggregation, inheritance, design of ER schema.

UNIT II

Functional Dependencies and Normalization: Domains, relations, keys, super key, candidate, primary, alternate and foreign keys, Functional dependence, Full Functional dependence, trivial dependencies, transitive dependencies, Mutual independence, closure set of dependencies, non loss decomposition, FD diagram. Introduction to normalization, first, second, third Normal forms, dependency preservation, BCNF, Multivalued dependencies and fourth normal form.

UNIT III

Relational Algebra & SQL: Relational algebra with extended operations, modifications of Database, Relational database, basic idea of SQL, data types, data definition language, Data manipulation language, Transaction control and data control language, Operators in SQL, Arithmetic operators, Comparison operators, Logical operators, set operators, Temporary tables, null values, Joins and Sub queries, views.

UNIT IV

Database Integrity, Transaction, concurrency and Recovery: Basic idea of Database Integrity, Integrity rules, assertions, integrity Constraints, triggers.

Basic concepts of Transaction, ACID properties, Transaction states, implementation of atomicity and durability, concurrent executions, Serializability, Conflict serializability, View serializability, basic idea of concurrency control, Concept of locking, types of locks, basic idea of deadlock, failure classification, storage structure types, stable storage implementation, data access, basic idea of recovery.

UNIT V

Distributed Database and Emerging Fields in DBMS: Basic idea of Distributed database, distributed data storage, data replication, data fragmentation- horizontal vertical and mixed

fragmentation.

Object oriented Databases-basic idea and the model, object structure, object class, inheritance, multiple inheritance, object identity.

Data warehousing- terminology, definitions, characteristics, data mining and it's overview, Database on www, multimedia Databases- introduction, similarity based retrieval, continuous media data, multimedia data formats, video servers.

Reference Books:

1. A Silberschatz, H.F Korth, Sudersan “Database System Concepts” , MGH Publication.
2. Modern Database Management (5th Edition) (Hardcover) by Fred R. McFadden, Jeffrey A. Hoffer, Mary B. Prescott
3. Elmasri & Navathe “Fundamentals of Database systems” – III ed.
4. B.C. Desai. “An introduction to Database systems” BPB.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years VIII SEMESTER
IT-804: Software Engineering

Aim of Course: To gain a broad understanding of the discipline of software engineering and its application to the development of and management of software systems.

Objectives:

The course is designed to make students:

- Understand the various activities undertaken for a software development project.
- Develop and write a software project proposal
- Develop and write a Software Requirements Specification and design document.
- Learn to work within a team and understand team dynamics
- Be able to effectively communicate the work (Presentation skills)

Course Contents:

UNIT I

Introduction to Software Engineering: Software problem, Software engineering problem, Software engineering approach, Software characteristics and Applications.

Software Processes: Software processes and its components, characteristics of software processes, Software development processes: Linear Sequential model, Prototyping model, RAD model, Iterative Enhancement model, Spiral model, Component based development, Comparative study of various development models

UNIT II

Project management process: The people, product, process and project, Phases of project management process, the W5HH principle. Software configuration management process, Process management process: Capability Maturity Model (CMM).

UNIT III

Software Requirement Analysis and Specification: Software requirements, Problem analysis, Requirements specifications, Validation and Verification, Metrics.

Project Planning: Project estimation (Size & Cost), Project Scheduling, Staffing and personnel planning, Software configuration management plans, Quality assurance plans, Project monitoring plans, Risk management.

UNIT IV

Software Design: Design principles: Problem partitioning and hierarchy, Abstraction, Modularity, Top-down and Bottom-up strategies. Effective Modular design: functional independency, Cohesion, Coupling. Structured design methodology.

UNIT V

Software Quality Assurance: Quality concept, Quality management system, movements and assurance, Software reviews: formal and technical, Formal approaches to SQA, Statistical software quality assurance, Software reliability, ISO 9000, SQA plan.

Software Testing: Software testing techniques: Testing fundamentals, White box testing, Black box testing, testing for specialized environments, architectures and applications. Software testing strategies: A strategic approach to software testing, Strategic issues, Unit testing, Integration testing, Validation testing and system testing, the art of debugging

Reference Books:

1. Ian Sommerville, Software engineering, Ninth edition Pearson.

2. Pankaj Jalote, An Integrated Approach to Software Engineering, Narosa Publishing House.
3. R. S. Pressman, Software Engineering-A practitioner's approach, Tata McGraw-Hill International Editions, New York.
4. Richard E. Fairly, Software Engineering Concepts, Tata McGraw Hill Inc. New York.
5. W. S. Jawadekar, Software Engineering: Principle & Practice, Tata McGraw-Hill, New York
6. Rajib Mall, Fundamentals of Software Engineering, PHI, New Delhi.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years VIII SEMESTER
IT-805: Control Systems

Aim of Course: Aim of Course: To study mathematical modeling of physical control systems in form of differential equations and transfer functions.

Objectives:

The course is designed to make students:

- To study the concept of time response and frequency response of the system
- To understand the basics of stability analysis of the system
- To learn basic control system design methods, including root locus diagrams and frequency response methods.
- Understand the principles and objectives underlying feedback control.

Course Contents:

UNIT I

Open loop and closed loop control systems, criteria specification of closed loop systems and methods to solve them. Fundamental concepts of servomechanisms Missile launching and guidance system automatic aircraft landing systems and rocket autopilot system.

UNIT II

Mathematical modeling standard and state space analysis of mechanical and electrical systems Transient and steady state response of systems. Effects of proportional integral and derivative control actions on system performance. Steady state error in unity feedback control systems

UNIT III

Control system design using root locus method. Bode diagram ; all pass and minimum phase systems. Polar plots log magnitude Vs phase plots experimental determination of transfer function.

Correlation between time and frequency response. Nyquist stability criterion and assessment of relative stability gain margin and phase margin

UNIT IV

Realization of basic compensators cascade compensation time domain and in frequency domain tuning of PID controllers

UNIT V

Fundamentals of digital control systems the Z transform and its applications in digital control system.

Reference Books:

1. I. J. Nagrath and M. Gopal, Control Systems Engineering, (Third Edition)
2. K Ogata, Modern Control Engineering. Fourth Edition, PHI

**INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE**

M. Tech. (IT) 5 ½ Years

X SEMESTER

JANUARY – MAY 2013

Sub. Code	Subject Name	Credit
IT-1001	Formal Language Theory	4
IT-1002	Parallel Processing	4
IT-1003	Research in computing	6
IT-1004	Comprehensive Viva	4
IT-1005	Project	6

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE

M. Tech. (IT) 5 ½ Years X SENESTER

IT-1001: Formal Language Theory

Aim of Course: To make students know about the basic concepts of Computation through formal languages and grammars with their implementation in language processing including compilers and Natural Language Processing.

Objectives:

The course is designed to make students:

- Understand regular expressions, which are used to specify string patterns in many contexts, from office productivity software to programming languages.
- Study finite automata, another formalism mathematically equivalent to regular expressions, Finite automata are used in circuit design and in some kinds of problem-solving.
- Learn Context-free grammars that used to specify programming language syntax.
- Understand various phases of compilers theoretically as well as practically so as to have the actually feeling of its working.
- Understand basic concepts of natural language processing.

Course Contents:

UNIT I

Introduction to Formal Languages – Strings, Operations on String, Operations on language. Introduction to Grammars: - Definition, Chomsky classification of grammars, grammars and languages.

Context-Free Languages – Context Free grammars, Leftmost derivations and Rightmost Derivations, Derivation Trees. Parsing – Parsing and Ambiguity, Chomsky Normal Form, Cocke-Kasami-Younger Algorithm.

UNIT II

Theory of Automata: - Finite Automata, Deterministic Finite Automata (DFA), Languages and DFAs. Non-Deterministic Finite Automata - Definition, Equivalence of Deterministic and Nondeterministic Finite Automata. Minimization of Finite Automata – Definition and Construction

UNIT III

Regular Expressions - Definition, Connection between Regular Expressions and Regular Languages, Obtaining regular expressions from finite automata. Regular Grammars - Regular Grammars – Right and Left Linear Grammars, Equivalence between Regular Languages and Regular Grammars.

UNIT IV

Application of Formal Language Theory in Compiler Design: - Language Processors, Types of compilers, and phases of compilation process. Lexical Analysis, Bottom-up parsing and Top down parsing techniques.

UNIT V

Natural Language Processing – Introduction, Morphology and Finite State Transducers, Context Free grammars for English Language, Parsing with Context Free Grammar.

Reference Books:

1. K.L.P. Mishra, N. Chandrasekaran, Theory of Computer Science (Automata, Languages and Computation), Prentice Hall of India.
2. Alfred V. Aho, Ravi Sethi, Jeffery D. Ullman, Compilers: Principles, Techniques, and Tools, Addison Wesley Longman
3. Daniel Jurafsky and James H. Martin, Speech and Language Processing: An Introduction to Natural Language Processing Computational Linguistics, and Speech Recognition, Prentice- Hall, 2000. (http://www.cs.colorado.edu/_martin/slp.html)
4. Hopcraft and Ullman, Introduction to Automata Theory, Languages and Computation, Narosa Publishing House.
5. Moll, Arbib and Kfoury, An Introduction to Formal Language Theory, Springer-Verlag.
6. Peter Linz, An Introduction to Formal Languages and Automata, Narosa Publishing House.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
M. Tech. (IT) 5 ½ Years X SENESTER
IT-1002: Parallel Processing

Aim of Course: To make students acquainted with parallel processing machines and programming techniques for effective use of them.

Objectives:

The course is designed to make students:

- Learning fundamental parallel processing concepts
- Learning parallel machine structure.
- Learning parallel algorithm design.
- Learning of interconnecting networks for parallel machine
- Programming using threads.
- Data flow and Wave front system

Course Contents:

UNIT I

Introduction to Parallel Processing: Parallelism in uni-processor System, Parallel Computer Structures, Architectural Classification Schemes, Parallel Processing Applications (Assignment).

Program and Network Properties: Conditions of Parallelism, Program Partitioning and Scheduling, Program Flow Mechanisms , System Interconnection Architecture

UNIT II

Pipeline Computers and Vectorization Methods: Vector Super Computers , Early Vector Processors, Recent Vector Processors, Vector Processing Requirements.

UNIT III

Structures and Algorithms for Array Processors: SIMD Array Processors , SIMD Interconnection networks, Parallel Algorithms for Array Processors , Associative Array Processors, Massively Parallel Processors, Performance Enhancement Methods

UNIT IV

Multiprocessor Architecture and Programming: Interconnection Networks, Functional Structures, Parallel memory Organization, Multiprocessor Operating System, Exploiting Concurrency for Multiprocessing.

UNIT V

Multiprocessing Control and Algorithms: Interprocesses Communication Mechanisms, System Deadlocks and Protection, Multiprocessor Scheduling Strategies, Parallel Algorithms for Multiprocessors

Reference Books:

1. Kai Hwang & A. Briggs, Computer Architecture and Parallel Processing, McGraw Hill [TB1]
2. Kai Hwang, Advanced computer Architecture-Parallelism, Scalability, Programmability, McGraw Hill [TB2]
3. Michael J. Quinn, Parallel Computing-Theory and Practice, McGraw Hill
4. J.M. Crichton , An Introduction to Distributed and Parallel computing, Prentice Hall
5. A.S. Tanenbaum, Modern Operating System, Prentice Hall.