MCA IV-Semester

MCA 401: DATA WAREHOUSING AND DATAMINING

UNIT – I

Data Warehousing & OLAP Technologies, Basic Data Mining Tasks: Classification-Regression-Time series Analysis-Prediction-Clustering-Summarization-Association rules-Sequence discovery – Data mining Versus Knowledge discovery in databases-the development of Data Mining-Data Mining issues-Data mining Metrics-Social Implications of Data Mining-The future. Data Preprocessing.

UNIT II

Basic Data mining Tasks, Principles of dimensional modeling-design decisions, Dimensional Modeling basics, E-R Modeling versus Dimensional modeling-use of case tools-The star schema-Review of a simple STAR schema, inside a Dimension table, inside the fact table, the fact less fact table, Data Granularity. Star Schema keys-primary keys, surrogate keys, foreign keys. Advantages of star schema. Dimensional Modeling: Updates to the dimensional tables-Miscellaneous Dimensions-The Snowflake schema-Aggregate fact tables-Families of stars.

UNIT-III

Classification: Introduction-Issues in classification-Statistical Based Algorithm-Regression-Bayesian Classification-Distance based algorithm-Simple approach-K nearest approach-Decision tree based algorithms-ID3-C4.5 & C5.0-CART-Scalable DT Techniques-Nueral network based algorithms-Propagation-NN Supervised Learning-Radial basis function works-Perceptrons-Rule based algorithms.

UNIT – IV

Clustering: Introduction-Similarity & distance measures-outliers-Hierarchial algorithms-agglomerative algorithms-Divisive clustering-Partitional algorithms-Minimum spanning tree-Squared error clustering algorithm-K-means clustering-nearest neighbour algorithm-PAM algorithm-Bond energy algorithm-Clustering with Genetic algorithms-Clustering with neural networks-Clustering large databases-BIRCH- DBSCAN-CURE algorithm-Clustering with categorical attributes.

UNIT - V

Associate Rules:- Introduction-Large item sets-Basic Algorithms-Apriori Algorithm-Sampling algorithm-Partitioning- Parallel and Distributed algorithms-Data Parallelism-Task parallelism-Comparing Approaches- Incremental Rules-Advanced Association Rule Technique-Generalized association rules-Multiple level association rules-Multiple –level Association rules-Quantitative association rules-Using multiple minimum supports-Measuring the Quality of a Rules. Mining objects-spatial, multimedia & text mining.

Text Books:

1. Data Mining – Introductory & Advanced topics by Margaret H. Dunham,. Pearson Education publishers.
2. Data mining concepts & techniques-Jiawei Han & Micheline Kamber
3. Fundamentals of Data warehousing –Paul raj Ponniah

Reference Books:

1. Data Mining – Concepts and Techniques by Han and Kamber,2001, Morgan Kaufmann Publishers
2. Oracle 8i – Data Warehousing by Cohen, Abbey, Taub, Tata McGraw Hill

MCA 402: SYSTEMS PROGRAMMING

UNIT I

Background introduction, system software and machine architecture, SIC, RISC, and CISC architecture. Assembler: basic assembler functions, machine dependent and independent assembler features, assembler design options, and implementation examples.

UNIT II

Loading and linkers basic loader junction, machine dependent and independent loader features, loader design options and implementation examples.Macro processors, basic macro processor functions machines – independent macro processor features, macro processor design options, implementation examples.

UNIT III

Compilers: basic compiler functions, machine dependent and independent compiler features, compiler design options and implementation examples. Other system software: text editors and interactive debugging systems

UNIT-IV

Introduction to Device Drivers, Design issues-Types of Drivers, Character driver-1 and Design issues, Character Driver-2- A/D converter and its design issues, Block driver-1 and its design issues- RAM DISK driver-Anatomy-Prologue of drivers and programming Considerations.

UNIT-V

Introduction to Linux- Linux Architecture- X-windows- Linux administration tools - Commands to use Linux OS- Executing Linux Shell scripts – Shell Programming concepts-Shell scripts.

Text Books:

1. Leland .Beck, System Software: An Introduction to systems programming :3/e, Pearson Educations Asia,2003.
2. George pajari, Writing Unix Drivers, Addison – Wesley,1991.
3. Richard Petersen, Linux complete Reference, McGraw Hill Education (India) Private Limited; 6 edition (21 November 2007

Reference Books:

1. Dhamdhere, System programming and operation Systems Book 2/E, Tata Mc Graw, Hill, 1999
2. A.V. Aho, Ravi Sethi and J D Ullman , “compilers, Techniques and Tools”, Addison
   Wesley, 1986.

3. Jhon J. Donovan, System Programming Tata Mc Graw Hill 2005.

MCA 403 A: WEB PROGRAMMING

UNIT-I

Introduction to Internet-Browser Architecture-IE, Chrome-Search Engines-Introduction to HTML-5-HTML-5 Tags-Audio, Video Tags – HTML-5 Forms-Controls-CSS Styling-CSS Tags-Attributes.

UNIT-II

Java Script-JQuery- JavaScript Programming Scripts- Control structures-Functions-Document, Browser, Date, Math, String objects-Events- JQuery Libraries-JQuery Objects, Functions – JQuery Events-Animations.

UNIT-III

AJAX Concepts- Simple AJAX objects-Ajax Libraries-Examples, Webservers IIS, Tomcat-Hosting Website in a Webservers

UNIT-IV

Introduction to PHP-Control Structures-Arrays-Functions-Database connectivity-Introduction to ZEND Framework and applications

UNIT-V

Introduction to Java Servlets, Servlet classes and interfaces - Java Database Connectivity- Introduction to JSP-Java Server Page scriptlets -JSP Objects-JSP Web applications

Text Books:

1. Deitel, Deitel and Goldberg Internet & World Wide Wide how to program"by End.
   Pearson Education
2. Ivan Bayross, Webenavled commercial Application Development in Java 2.0 BPB.
3. Nicholas C. Zakas.,Jeremy McPeak,Joe Fawcett, Professional AJAX,2nd Edition, Willey publishing
4. HTML 5 Black book, Kogent Learning Solutions Inc.

REFERENCE BOOKS:

1. Raj Kamal Internet and web Technologies, Tata Mc Graw Hill, 2002.
2. Chirs Bates, Web Programming, John Wiley, 2nd Edition
3. E.V.Kumar and S.V.Subramanyam, Web Services. Tata Mc Graw Hill, 2004.

MCA 403B - Artificial Intelligence

UNIT – I

Introduction about Artificial Intelligence (AI): Problem and search – what is AI technique. Criteria for success; problems, problem space and search – Defining the problem as a state space search, Production systems, Problem characteristics. Production system characteristics.

UNIT- II

Heuristic search techniques; Knowledge representation – Knowledge representation issues, Using predicate logic, Resolution principle; Representing knowledge using rules – Forward Vs backward reasoning Symbolic reasoning under uncertainty – Non monotonic reasoning. Statistical reasoning.

UNIT – III

Different knowledge representation schemes – Semantic nets. Marvun Minsjy's frames, Conceptual dependency theory, Scripts; Understanding – what is understanding? What makes understanding hard? Understanding as constraint satisfaction Waltz's algorithm.

UNIT – IV

Natural language processing – Overview of linguistics. Grammars and languages, Basic parsing techniques, Transitional networks, Semantic analysis and representation structures, Natural language generation, Natural language systems; General concepts in knowledge acquisition - Types of learning, General learning model, Performance measures; Early work in machine learning – Perceptions, Genetic algorithms, Intelligent editors.

UNIT – V

Expert system architecture – Characteristic features of expert systems, history, Applications, Rule based system architecture, Expert system shells; Pattern recognition – The recognition and classification process, Learning classification patterns, Recognizing and understanding speech; Perception and Action; Features of AI Programming language PROLOG.

Text Books:

1. Elaine Rich and Kevin Knight " Artificial Intelligence", Tata Mc Graw – Hill, 2nd Edn, 2002
2. Dan W.Patterson,"Introduction to Artificial Intelligence & Expert Systems".1999.

Reference Books:

1. Swart Russell and Peter Norving, Artificiao Intelligence, Pearson Education.2nd Edition.
2. Patrick Henry Winston, "Artificial Intelligence" 3rd Edn,PHI,1999.
3. George F.Luger,"Artificial Intelligence – 3structures and strategies for complex Problem

solving" Pearson Education, 4th Edn,2001.
4. Nils Jenison, Artificial Intelligence,Morgan Kaufmann,2000.

MCA 403 C - SOFTWARE TESTING

UNIT-I

Building a software Testing strategy, software Test Design Techniques, software Testing tools and selection of Test Automation products.

UNIT-II

Software Testing Life cycle and software testing process, testing Effort estimation and test planning, software test effort estimation technique.

UNIT-III

Pre-Development testing: requirements and Design phase, Best practices in program phase: UNIT Testing, System Testing and integration testing, case study on acceptance testing.

UNIT-IV

Implementing and Effective Test Management Process, Building and Effective test organization, performance issues and optimization techniques.

UNIT - V

Testing of web Based Applications, Testing of Embedded software systems, testing Applications for security, testing Metrics and Bench Marks.

Text book:

1. Renu Rajani and pradeep Oak,, software testing, tata Mc Graw Hill.

References:

MCA 404 A: E-COMMERCE

UNIT – I

Electronic Commerce: Electronic Commerce Framework; Electronic Commerce and Media Convergence; The Anatomy of E-Commerce Application; Electronic Commerce Organization Applications- The Network Infrastructure for Electronic Commerce: Market Forces Influencing the I- Way; Components of the I Way; Network Access Equipment; the Last Mlle: Local Roads and Access Ramps; Global Information Distribution: Networks: Public Policy Issues Shaping the I-Way. Case study: B2B ecommerce

UNIT – II

The Internet as a Network Infrastructure: The Internet Terminology; Chronological History of the Internet NSFNET: Architecture and Components: Globalization of the Academic Internet; Internet Governance: The Internet Society –An Overview of Internet

Applications –Electronic Commerce; World Wide Web(WWW) as the Architecture: Web Background: Hypertext Publishing; Technology behind the Web: Security and the Web-Consumer-Oriented Electronic Commerce: Oriented Applications; Mercantile Process

Models Mercantile Models from the Consumer's Perspective; Mercantile Models from the Merchant's Perspective.

Case study: E-Commerce/High Security (Pci)

UNIT – III

Electronic Payment Systems: Types of Electronic Payment Systems; Smart Cards and Electronic Payment Systems; Credit Card-Based Electronic Payment systems: Risk and Electronic Payment Systems Designing Electronic Payment systems – Inter organizational Commerce and EDI: Legal, security, and Privacy Issues:EDI and Electronic Commerce – EDI Implementation, MIME, and Value- Added Networks : Standardization and EDI;EDI Software Implementation: EDI Envelope for Message Transport: Value- Added Networks (VANs); Internet – Based EDI.Case study: Social Media Marketing

UNIT – IV

Intra organization Electronic Commerce: Internal Information System: Macro forces and Internal Commerce; Work-Flow Automation and Coordination; Customization and Internal Commerce; Supply Chain Management (SCM) – The Corporate Digital Library: Dimensions of Internal Electronic Commerce Systems; Making a Business Case for a Document Library; Types of Digital Document Library; Types of Digital Documents; Issues behind Document Infrastructure; Corporate Data Warehouses.Case study: Email Marketing, Email Personalization

UNIT - V

M-Commerce: Introduction to Mobile Commerce, Limitations, history, applications, architecture, transaction models, payment methods, advantages, disadvantages Case study: Mobile app marketing case study: O2 Priority Moments gets small businesses on side

Text book:

1. Ravi Kalakota and Andrew B.Whinston.Frontiers of Electronic Commerce, Pearson Education.

REFERENCE BOOKS:

1. Henry Chan, Raymond Lee. Tharan Dillan and E.Chany,E-Commerce, Wiley,2003.
2. Danjel Minoli and Emuna Mimoli, Web Commrece Technology, Tata MicGraw Hill, 1999.
3. Marilyn Greenstein and Todd M Feinman, aElectronic Commerce, TaraMcGraw Hill Edition.
4. Craig Patridge, Gigaibit Networking, Addison – Wesley, 1994
5. PaulM-Commerce: Book Your Business with the Power of Mobile Commerce

MCA 404 B - Cyber Security

UNIT I

FUNDAMENTALS OF CYBER SECURITY: Introduction-Cyber Security and its problem-Intervention Strategies: Redundancy, Diversity and Autarchy.

UNIT II

ISSUES IN CYBER SECURITY: Private ordering solutions, Regulation and Jurisdiction for global Cyber security, Copy Right-source of risks, Pirates, Internet Infringement, Fair Use, postings, criminal liability, First Amendments, Data Loss.

UNIT III

INTELLECTUAL PROPERTY RIGHTS: Copy Right-Source of risks, Pirates, Internet Infringement, Fair Use, postings, Criminal Liability, First Amendments, Losing Data, Trademarks, Defamation, Privacy-Common Law Privacy, Constitutional law, Federal Statutes, Anonymity, Technology expanding privacy rights.

UNIT IV

PROCEDURAL ISSUES: Duty of Care, Criminal Liability, Procedural issues, Electronic Contracts & Digital Signatures, Misappropriation of information, Civil Rights, Tax, Evidence.

UNIT V

LEGAL ASPECTS OF CYBER SECURITY: Ethics, Legal Developments, Late 1990 to 2000,Cyber security in Society, Security in cyber laws case. studies, General law and Cyber Law-a Swift Analysis.

Text book:

1. Jonathan Rosenoer,"Cyber Law: The law of the Internet", Springer-Verlag, 1997.

REFERENCE BOOK:

1. Mark F Grady, Fransesco Parisi, "The Law and Economics of Cyber Security",
   Cambridge University Press, 2006.

MCA 404C - Neural Networks

UNIT I

INTRODUCTION: Neural network, Human Brain, Models of a Neuron, Neural networks viewed as Directed Graphs, Network Architectures, Knowledge Representation, Artificial Intelligence and Neural Networks, LEARNING PROCESS, Error Correction learning, Memory based learning, Hebbian learing.

UNIT II

LEARNING PROCESS: Competitive, Boltzmann learning, Credit Assignment Problem, Memory, Adaption, Statistical nature of the learning process, SINGLE LAYER PERCEPTRONS – Adaptive filtering problem, Unconstrained Organization Techniques, Linear least square filters, least mean square algorithm, learning curves, Learning rate annealing techniques, perception – convergence theorem, Relation between perception and Bayes classifier for a Gaussian Environment.

UNIT III

MULTILAYER PERCEPTRON – Back propagation algorithm XOR problem, Heuristics, Output representation and decision rule, Computer experiment, feature detection, BACK PROPAGATION - back propagation and differentiation, Hessian matrix, Generalization, Cross validation, Network pruning Techniques, Virtues and limitations of back propagation learning, Accelerated convergence, supervised learning.

UNIT IV

SELF ORGANIZATION MAPS – Two basic feature mapping models, Self organization map, SOM algorithm, properties of feature map, computer simulations, learning vector quantization, Adaptive patter classification, Hierarchal Vector quantilizer, contexmel Maps.

UNIT V

NEURO DYNAMICS – Dynamical systems, stavility of equilibrium states, attractors, neurodynamical models, manipulation of attractors' as a recurrent network paradigm

HOPFIELD MODELS – Hopfield models, computer experiment

TEXT BOOK:

1. Neural networks A comprehensive foundations, Simon Hhaykin, Pearson Education 2nd Edition 2004

REFERENCE BOOKS:

1. Artificial neural networks - B.Vegnanarayana Prentice Halll of India P Ltd 2005
2. Neural networks in Computer intelligence, Li Min Fu TMH 2003
3. Neural networks James A Freeman David M S kapura Pearson Education 2004

MCA 405 A: ACCOUNTING AND FINANCIAL MANAGEMENT

UNIT I

Accounting Concepts – Double Entry System – Journal – Ledger – Trial Balance – Subsidiary Books – Final accounts

UNIT II

Cost Accounting: Nature and significance – Cost classification and Analysis – Marginal Costing

UNIT III

Budget – Budgetary control – standard costing – Finance Function

UNIT IV

Financial Decision Making – Financial Analysis – Working Capital Management – Capital Budgeting.

UNIT V

Funds flow Analysis – Cash flow Analysis - Ratio Analysis-

Text Books:

1. Rajeswara Rao K and Prasad G, Accounting & Finance (MCA), Jai Bharat Publishers, Guntur
2. Jain and Narang, *Accountany Vol.* Kalyani Publishers.
3. Jain and Narang, *Cost Accounting*, Kalyani Publishers.
4. Sharma R K, and Gupta S K, *Management Accounting*, Kalyani Publishers.
5. Pandey I M, *Financial Management*, Vikas Publication.

Reference Books:

1. Grewal Ts. *Introduction to Accountancy,* S Chand & Company Ltd, 1999.
2. Khan M K. and Jain P K, *Financial Management, 3rd* edition, Tata McGraw-Hill, 1999.
3. Van Horne J C, *Financial management and Policy,* 12th edition, PHI, 2002.
4. Khan M K, and Jain R K, *Management Accounting,* 3rd edition, Tata McGraw-Hill, 1999.

MCA 405B - Accounting Essentials for Computer Applications

UNIT I

Introduction to accounting Packages Ms Excel as Accounting tool Features of MS Excel Function wizard Different categories of functions Date, numeric string, Accounting and Misc. Functions. An overview of Accounting functions Auditing Tool in MS Excel.

UNIT II

Annual budgeting applications of spreadsheet preparation of cash budget preparation of Production budget - preparation of Flexible Budget Preparation of projected profit and loss statement and proforma balance sheet. Introduction to Tally, Tally Features.

UNIT III

Cost Volume Profit Applications of Computer spreadsheet Pricing and product decisions including special order pricing, product addition and deletion and make or buy decisions.

UNIT IV

Financial accounting software package features of an accounting package voucher Entry Ledger preparation of Trail Balance, Profit and Loss Account and Balance using Tally. Sheet under specific package environment. Inventory accounting software package Basic Features Economic order quantity Maintenance of stock levels Stock valuation and reporting using Tally.

UNIT - V

Problems of Accounting Software Packages Security Problems Power problems Data integrity problems Computer virus problems of system adoptions.

Text books :

1. Horngreen Introduction to Management Accounting, Prentice Hall
2. Smith, J.L. Keith, R.M. and Stemphens, W. L. Managerial Accounting, McGraw Hill

Reference Books

1. Guy Hart Davis, The ABCs of Microsoft Office, BPB Publications
2. Computer Accounting with Tally 7.2 Paperback – 2006 by Firewall Media
3. Implementing Tally 9/7.2/6.3 A.K.Nandhini ,K.K.Nandhini-First Edition 2007 BPB publications