

M.C.A. (Masters in Computer Applications)

Group V: Applications of Information Technology

CS 7071 BIOINFORMATICS

Module – I

Bioinformatics: An Introduction: Introduction, Bio informatics Application, Major Database in Bio informatics, Molecular Biology and Bio informatics. Control Dogma of Molecular Biology.

Genome Analysis and Gene Mapping: Introduction, Genome Analysis, Genome Mapping, Genetic Mapping and Linkage Analysis, Cloning the Entire Genome, Genome Sequencing.

Module – II

Alignment of Pairs of Sequence: Introduction, Biological Motivation and alignment Problems, Methods of Sequence Alignment, Using Scoring Matrix, Measuring Sequence Detection Efficiency.

Module – III

Alignment of Multiple Sequence and Phylogenetic Analysis: Introduction, Methods of Multifile sequence alignment, Evaluating of Multiple Alignment, Application of Multiple Alignment, Phylogentic Analysis, Method of Phylogentic analysis, Problem of Phylogenetic Analysis.

Module – IV

Tools for similarity search and Sequence Alignment: Introduction, Working with FASTA, Working with BIASTA, Filtering and Gapped BLAST, FASTA and BLAST Algorithm comparison.

Profile and Hidden Markov Models: Introduction, Using Profile, Hidden Marker Models (HMMs)

Module – V

Gene Identification, Predication and Gene Expression: Introduction, Basis of Gene Prediction, Pattern Recognition, Gene Prediction Methods, Gene Prediction Tools, Clustering Gene Expression Profile.

Module – VI

Protein Classification and Structure Visualization: Introduction, Overview of protein structure, Proticn Structure Visualization, Structure based Protien classification, Protien

Structure database, Protein Structure alignment, Tools for Plotting Protein – Ligand Interaction.

Module – VII

Protein Structure Prediction: Introduction, Protein Identification and Characterization, Primary Structure analysis and Prediction, Secondary Structure analysis and Prediction, Modify, Profile, Pattern and Fingerprint Search, Methods of Sequence based protein Prediction, Methods of 2D Structure Prediction, Protein Function Prediction.

Text Book:

1. S. C. Ratogi, N. Mendiratha , P Rastogi, “Bioinformatics Methods and Applications”, PHI, New Delhi , 2005.

Reference Books:

1. D. E. Krane & M. L. Ragmer - Fundamental of Concept of Bioinformatics, Pearson Education, New Delhi – 2003.
2. V. R. Srinivas – Bioinformatics : A Modern Approach, PHI, New Delhi – 2005
3. A. M. Lesk – Introduction to Bioinformatics, Oxford (Indian Edn) New Delhi – 2004

CS 7072 MULTIMEDIA AND ANIMATION

Module I

Introduction: Multimedia Elements and Applications, Multimedia Systems Architecture, Defining Objects for Multimedia Systems, Multimedia Data Interface Standards, Multimedia databases

Module II

Compression and Decompression: Types of Compression, Binary Image Compression Schemes, CCITT Group 3 1-D, 2-D, 3-D, JPEG, Video Image Compression, MPEG, Motion Compensation, Vector Quantization, Audio Compression, Adaptive DPCM

Module III

Data and File formats: Rich Text formats, TIFF, Resource Interchange File Format (RIFF), MIDI File format, RDIB file format, TWAIN

Module IV

Multimedia Input Output Technology: Electronic Pen, Video and Image Display Systems, Print Output Technology, Image Scanners, Video Images and Animation, Full motion video

Module V

Multimedia Application Design: Multimedia Application Classes, Types of Multimedia Systems, Virtual Reality, Application Workflow Design Issues

Module VI

Multimedia Authoring: Multimedia Authoring Systems, Hypermedia Application Design Considerations, Linking and Embedding, CORBA

Module VII

Multimedia Content Development Tools: HTML, XML, Macromedia Flash, Shockwave, Modelling and Animation concepts

Text Books:

1. Andleig P. K.& Thakrar K.- Multimedia Systems Design, Prentice Hall of India, New Delhi , India 2004

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2. Parekh R.-Principles of Multimedia, Tata McGraw Hill, New Delhi , India , 2004

CS 7073 VIRTUAL REALITY & MODELING

Module - I

Introduction, What Is Virtual Reality, Goals and Applications of Virtual Reality ,Two Pillars of VR: Presence and 3D Multimodal Interaction , Building a Virtual Reality System

Module - II

Object Modeling, Scene Construction , Object Placement , Multiple Frames of Reference ,Re-Expressing Coordinates ,Function and Behavior Modeling

Module - III

Performance Estimation and System, Tuning with LOD Models, Presence/Special Effects, Using Images and Textures.

Module - IV

Creating the Virtual Reality ,Output Display, The Human Visual System, Human Depth Perception and Stereoscopy, Visual Display System, Human Aural System, Aural Display Systems, Haptics, Stimulation of Other Modalities ,Sensors and Input, Trackers, Event Generators, Sensor Errors and Calibration

Module - V

3D Multimodal Interaction Design, 3D Multimodal, Structured Approach to Interaction/Interface, Metaphors , Interface Design, Multimodality

Module – VI & VII

Handling Collision, Collision Detection with Line Segments, Collision Among Polygonal Models, Bounding Volumes , Building a Bounding Volume, Bounding a Volume Hierarchy, Collision Among Bounding Volumes, Virtual Characters , Form of a Character , Motion Control, Forward Kinematics, Inverse Kinematics

Text Book:

1. Kim, G. J.- Designing Virtual Reality Systems The Structured Approach, First Edition, Springer Publications
2. Andleig P. K., Thakrar K.- Multimedia Systems Design, Prentice Hall of India, New Delhi, India 2004

CS 7074 E-COMMERCE

Module-I

Introduction to Electronic Commerce : Electronic Commerce, Scope of Electronic Commerce, Definition of Electronic commerce, Electronic Commerce and Tmade cycle, Electronic Market, Electronic Data Interchange, Internet Commerce.

Module-II

Business Strategy in an Electronic Age : Value Chain, Supply Chains, Porter's Value Chain Model Inter organizational Value chains Competitive advantage, Competitive strategy, Porter's Model, First Mover advantage, Competitive advantage using e-commerce.

Module-III

Business Strategy: Introduction to Business Strategy, Strategic implications of IT, Technology, Business Environment, Business Capability, Existing Business strategy, Strategy Formulation and Complementation Planning, e-commerce implementation, e-commerce & evaluation.

Case Study : Case Study, e-commerce in passenger Air Transport.

Module-IV

Business to Business Electronic Commerce: Inter-organisational Transactions.

Electronic Market : Markets, Electronic Markets, Usage of electronic markets, Advantages and Disadvantages of electronic market.

Future of electronic markets : Electronic Data Interchange (EDI), Introduction, Definition, Benefits, Examples, EDI Technology, EDI Communications, EDI implementation, EDI Security, EDI Business.

Module-V

Inter Organizational : e-commerce, Transaction, Purchasing on line.

Business to Consumer Electronic Commerce: Consumer Trade Organizations, Internet e-commerce, e-shop, e-commerce Technology, Advantages & Disadvantages.

Module-VI & VII

Electronic Data Interchange (EDI) : Introduction, Definition, Benefits, Examples, EDI Technology, EDI Communications, EDI implementations, EDI Security, EDI and Business.

Inter Organizational e-commerce : Transactions, Purchasing on line.

Internet : Internet, TCP/IP, Internet Components.

Page on the Web : TAIL Basic, introduction.

Elements of E-Commerce : Elements, e-shop, Online Payments, Internet e-commerce security.

E-Business : Introduction, Grocery Supplies, Internet Banking, Online share sealing, Gambling on the Net, e-diversity.

Text Book :

1. David Whiteley -E-COMMERCE Strategy, Technologies and Applications, TMH ,2000

Reference Book :

1. Ravi Kalakota & Andre B. Whinston -“Electronic Commerce A Manager’s Guide” , Pearson Education Asia.

CS 7075 SUPPLY CHAIN MANAGEMENT

Module-I

Supply Chain Management: An Overview

Introduction to Supply Chain Management: Introduction, What is Supply Chain Management?, Why is Supply Chain Management Important?, The Origins of Supply Chain Management, Important Elements of Supply Chain Management, , Future Trends in Supply Chain Management.

Module-II

Purchasing Issues in Supply Chain Management

Purchasing Management: Introduction, The Role of Purchasing in an Organization, The Purchasing process, Sourcing Decisions: The Make-or-Buy Decision, Roles of Supply Base, Supplier Selection, How many Suppliers to Use, Purchasing Organization: Centralized versus Decentralized Purchasing, International Purchasing/Global Sourcing.

Creating and Managing Supplier Relationships: Introduction, Developing Successful Partnerships, Supplier Evaluation and Certification, Supplier Development, Supplier Awards, Supplier Relationship Management Software.

Module-III

Strategic Sourcing for Successful Supply Chain Management:-Introduction, Developing Successful Sourcing Strategies, Supply Base Reduction Programs, Evaluating and Selecting Key Suppliers, Strategic Alliance and Supplier Certification Programs, Outsourcing Programs, Early Supplier Involvement, Supplier Management and Alliance Development, Managing and Developing Second-Tier Supplier Relationships, Use of e-procurement Systems, Rewarding Supplier Performance, Benchmarking Successful Sourcing Practices, Using Third-Party Supply Chain Management Services, Assessing and Improving the Firm's Purchasing Function.

Module-IV

Operations Issues in Supply Chain Management

Demand Forecasting and Collaborative Planning, forecasting, and Replenishment: Introduction, Matching Supply and Demand, Forecasting Techniques, Qualitative Methods, Quantitative Methods, Forecast Accuracy, Collaborative Planning, Forecasting, and Replenishment, Software Solutions.

Module-V

Enterprise Resource Planning Systems:- Introduction, The Development of Legacy Materials Requirement Planning Systems, The Development of Enterprise Resource Planning Systems, The Rapid Growth of Enterprise Resource Planning Systems, Implementing Enterprise Resource Planning Systems, Advantages and Disadvantages of Enterprise Resource Planning Systems, Enterprise Resource Planning Software Applications, Enterprise Resource Planning Software Providers.

Module-VI

Process Management:Just-in-Time and Total Quality Management Issues in Supply Chain Management: Introduction, Just-in-Time and Supply Chain management , the Elements of Just-in-Time, total Quality Management and Supply Chain Management, Total Quality Management and Supply Chain Management.

Distribution Issues in Supply Chain Management

Domestic and International Transportation: Introduction, The Impact of Transportation on Supply Chain Management, The Fundamentals of Transportation, Warehousing, International Transportation Issues, Transportation Management, e-Commerce and Transportation.

Module-VII

Customer Relationship Management :- Introduction, Defining Customer Relationship Management, Customer Relationship Management's Role in Supply Chain Management, Key Tools and Components of Customer Relationship Management, Designing and Implementing a Successful Customer, Relationship Management Program, Some Customer Relationship Management Application Providers, Future Trends in Customer Relationship Management,

Facility Location Decision:- Introduction, Location Strategies, Critical Location Factors, Facility Location Models, Helpful On-Line Information for Location Analysis, Business Clusters.

Service Response Logistics :- Introduction, An Overview of Service Operations, Supply Chain Management is Services, The Primary Concerns of Service Response Logistics.

Text Book:

1. J. D. Wisner, G. Keong Leong & K. Tan- Principles of Supply Chain Management, 1st Edn., Thomson Education, New Delhi, 2007