AFFILIATED INSTITUTIONS

ANNA UNIVERSITY, CHENNAI

REGULATIONS - 2009

CURRICULUM II TO IV SEMESTERS (FULL TIME)

M.TECH. MULTIMEDIA TECHNOLOGIES

SEMESTER II

SL. NO	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1	MU9321	Graphics Design and Multimedia Presentation	3	0	0	3
2	MU9322	Multimedia Server Management	3	0	0	3
3	MU9323	Digital Image Processing	3	0	0	3
4	MU9324	Applied Cryptography	3	0	0	3
5	MU9325	Multimedia Databases	3	0	0	3
6	E1	Elective – I	3	0	0	3
PRACTICAL						
7	MU9326	Graphics Laboratory	0	0	3	2
TOTAL			**18**	**0**	**3**	**20**

SEMESTER III (3+1)

SL. NO	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1	MU9331	3D Modeling and Rendering	3	0	0	3
2	E2	Elective – II	3	0	0	3
3	E3	Elective – III	3	0	0	3
PRACTICAL						
4	MU9332	Project Work (Phase – I)	0	0	12	6
TOTAL			**9**	**0**	**12**	**15**

SEMESTER IV (0+1)

SL. NO	COURSE CODE	COURSE TITLE	L	T	P	C
PRACTICAL						
1	MU9341	Project Work (Phase – II)	0	0	24	12
TOTAL			**0**	**0**	**24**	**12**

TOTAL NO. OF CREDITS : 65

ELECTIVES

SL. NO	COURSE CODE	COURSE TITLE	L	T	P	C
1	MU9351	Audio-Video Broadcasting Systems	3	0	0	3
2	MU9352	Web Programming	3	0	0	3
3	MU9353	Creativity, Innovation and Product Development	3	0	0	3
4	SE9251	Software Agents	3	0	0	3
5	MU9354	Non-Linear Editing	3	0	0	3
6	CS9267	Visualisation Techniques	3	0	0	3
7	MU9355	User Interface Design	3	0	0	3
8	SE9261	Language Technologies	3	0	0	3
9	CS9264	Data Warehousing and Data Mining	3	0	0	3
10	MU9356	Mobile and Pervasive Computing	3	0	0	3
11	MU9357	Service Oriented Architecture	3	0	0	3
12	NI9322	Web Design and Management	3	0	0	3
13	MU9358	Human Resource Management	3	0	0	3

MU9321 GRAPHICS DESIGN AND MULTIMEDIA PRESENTATION LT P C
3 0 0 3

UNIT I INTRODUCTION 6
I/O devices – I/O primitives –Attributes of output primitives– DDA – Bresenham technique – Circle drawing algorithms – Interactive input methods.

UNIT II 2D GRAPHICS 9
2D Transformations – Window View port mapping – Clipping algorithms – polygons – Splines – Bezier carves – Basics.

UNIT III 3D GRAPHICS 12
3D concepts – Representations – 3D transformation - Projections – Hidden surface removal – Visualization and rendering – Color models – Textures.

UNIT IV OVERVIEW OF MULTIMEDIA 9
Introduction to Multimedia - Multimedia Hardware & Software – Components of multimedia – Multimedia Authoring and tools – Multimedia Project development.

UNIT V MULTIMEDIA SYSTEMS AND APPLICATIONS 9
Multimedia Communication Systems – Database Systems – Synchronization issues – Presentation requirements – Applications – Video conferencing – Virtual reality – Interactive Video – Media on Demand.

TOTAL : 45 PERIODS

REFERENCES

1. Donald Hearn, M. Pauline Baker, “Computer Graphics – C Version”, second edition, Pearson Education, 2006.
2. Ralf Steinmetz, Klara Steinmetz, “Multimedia Computing, Communications & Applications” Pearson Education, 2004.
3. Tay Vaughan, “Multimedia Making It Work”, McGraw Hill, 7 th edition, 2006.
4. J. D. Foley, A. VanDam, S. K. Feiner, J. F. Hughes, “Computer Graphics Principles and Practice”, Addison and Wesley Publications, 2002.
5. Ze-Nian Li, Mark S. Drew, “Fundamentals Of Multimedia ”, PHI, 2004.

MU9322 MULTIMEDIA SERVER MANAGEMENT LT P C
3 0 0 3

UNIT I MULTIMEDIA SERVER APPLICATIONS AND ENVIRONMENTS 9
Introduction - multimedia server environment – requirements – client environment – network environment - ATM model - multimedia server architecture and components – hardware – software – server topology.

UNIT II SCHEDULING 9
Client Session Scheduling – QoS specification – capacity estimation – logical channel setup – client request Scheduling – client scheduling issues – VCR control operations – batching policies – time-varying workloads - scheduling in system components.

UNIT III THE STORAGE SUB SYSTEM 9

Storage management overview – storage system architecture – placement of multimedia data in storage devices – retrieval – issues in I/O scheduling - single disk issue - multiple disk organization – NAS architecture – management – SAN architecture – management – issues - storage hierarchy.

UNIT IV CACHE MANAGEMENT 9

Caching overview – objectives – data prefetching - relationships to buffering and caching – cache management policies - memory cache – caching policies - caching among disks - distributed disk caching - storage networks - management of storage networks.

UNIT V RELATED ISSUES 9

Performance evaluation - affinity routing - load balancing – network backup services – back up clients - performance gains as a result of network backups –deadline driven scheduling & unconstrained data placement - fault tolerance issues in media servers.

TOTAL : 45 PERIODS

TEXT BOOKS

1. Dinker Sitaram, Asit Dan, "Multimedia Servers - Applications, Environments and Design", Morgan Kaufmann Publishers, 2000.
2. Ali Dashti, Seon Ho Kim, Cyrus Shahabi, and Roger Zimmermann "Streaming Media Server Design", IMSC Press Multimedia Series, 2003.
3. Ulf Troppens, Rainer Erkens, Wolfgang Müller, and Rachael Waddington, "Storage Networks Explained: Basics and Application of Fibre Channel SAN, NAS iSCSI and InfiniBand", John Wiley and sons, 2004.

REFERENCES

1. W.Curtis Preston, "Using SANs and NAS", O'Reilly Media, Inc., 2002.
2. S.Ghandeharizadeh, S. Kim, C. Shahabi and R. Zimnorman, "Multimedia Information Storage Management", Kluwer Academic Press, 1996.
3. C. K. Wong, "Algorithmic Studies in mass Storage Systems", Computer Science Press, New York, 1983.

MU9323 DIGITAL IMAGE PROCESSING LT P C
3 0 0 3

UNIT I FUNDAMENTALS OF IMAGE PROCESSING 9

Introduction – Elements of visual perception, Steps in Image Processing Systems – Image Acquisition – Sampling and Quantization – Pixel Relationships – Colour Fundamentals and Models, File Formats. Introduction to the Mathematical tools.

UNIT II IMAGE ENHANCEMENT AND RESTORATION 9

Spatial Domain Gray level Transformations Histogram Processing Spatial Filtering – Smoothing and Sharpening. Frequency Domain: Filtering in Frequency Domain – DFT, FFT, DCT, Smoothing and Sharpening filters – Homomorphic Filtering., Noise models, Constrained and Unconstrained restoration models.

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UNIT III IMAGE SEGMENTATION AND FEATURE ANALYSIS 9

Detection of Discontinuities – Edge Operators – Edge Linking and Boundary Detection – Thresholding – Region Based Segmentation – Motion Segmentation, Feature Analysis and Extraction.

UNIT IV MULTI RESOLUTION ANALYSIS AND COMPRESSIONS 9

Multi Resolution Analysis: Image Pyramids – Multi resolution expansion – Wavelet Transforms, Fast Wavelet transforms, Wavelet Packets.

Image Compression: Fundamentals – Models – Elements of Information Theory – Error Free Compression – Lossy Compression – Compression Standards – JPEG/MPEG.

UNIT V APPLICATIONS OF IMAGE PROCESSING 9

Representation and Description, Image Recognition- Image Understanding – Image Classification – Video Motion Analysis – Image Fusion – Steganography – Colour Image Processing.

TOTAL : 45 PERIODS

REFERENCES

1. Rafael C.Gonzalez and Richard E.Woods, “Digital Image Processing”, Third Edition, Pearson Education, 2008.
2. Milan Sonka, Vaclav Hlavac and Roger Boyle, “Image Processing, Analysis and Machine Vision”, Third Edition, Third Edition, Brooks Cole, 2008.
3. Anil K.Jain, “Fundamentals of Digital Image Processing”, Prentice-Hall India, 2007.
4. Madhuri A. Joshi, ‘Digital Image Processing: An Algorithmic Approach”, Prentice-Hall India, 2006.
5. Rafael C.Gonzalez , Richard E.Woods and Steven L. Eddins, “Digital Image Processing Using MATLAB”, First Edition, Pearson Education, 2004.

MU9324 APPLIED CRYPTOGRAPHY LT P C
3 0 0 3

UNIT I 9

Classical Cryptography-The Shift Cipher, The Substitution Cipher, The Affine Cipher Cryptanalysis-Cryptanalysis of the Affine Cipher, Cryptanalysis of the Substitution Cipher, Cryptanalysis of the Vigenere Cipher, Shannon’s Theory.

UNIT II 9

Block Cipher and the Advanced Encryption Standard-Substitution -Permutation Networks, Linear Cryptanalysis, Differential Cryptanalysis , The Data Encryption Standard, The Advanced Encryption Standard, Modes of Operation ,Cryptography Hash Function -Hash Function and Data Integrity, Security of Hash Function ,Iterated Hash Functions, Message Authentication Codes.

UNIT III 9

The RSA Cryptosystem and Factoring Integer- Introduction to Public –key Cryptography, Number theory, The RSA Cryptosystem ,Other Attacks on RSA, The EL

Gamal Cryptosystem, Shanks' Algorithm, Finit Fields, Elliptic Curves over the Reals, Elliptical Curves Modulo a Prime, Signature Scheme –Digital Signature Algorithm.

UNIT IV **9**

Identification Scheme and Entity Attenuation-Challenge – and – Response in the Secret-key Setting, Challenge – and – Response in the Public key Setting, The Schnorr Identification Scheme, Key distribution-Diffie - Hellman Key, Predustribution, Unconditionally Secure key Predistribution, Key Agreement Scheme-Diffie-Hellman Key agreement, Public key infrastructure-PKI, Certificates, Trust Models.

UNIT V **9**

Secret Sharing Schemes-The Shamir Threshold Scheme, Access Structure and General Scret key sharing, Information Rate and Construction of Efficient Schemes, Multicast Security and Copyright production-Multicast Security, Braodcast Encryption ,Multicast Re-keying, Copyright Protection ,Tracing Illegally Redistribution keys.

TOTAL : 45 PERIODS

TEXT BOOK

1. Douglas R. Stinson ,"Cryptography Theory and Practice ", Third Edition, Chapman & Hall/CRC,2006

REFERENCES

1. Menges A. J , Oorschot P, Vanstone S.A,"Handbollk of Appliled Cryptography" CRC Press,1997.
2. William Stallings, "Cryptography and Network Security: Principles and Practices", Third Edition, Pearson Education,2006.
3. Wenbo Mao, "Modern Cryptography – Theory and Practice", Pearson Education, First Edition, 2006.
4. Charles B. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", Fourth Edition, Pearson Education, 2007.
5. Wade Trappe and Lawrence C. Washington, "Intrduction to Cryptography with Coding Theory" Second Edition, Pearson Education, 2007.

MU9325 **MULTIMEDIA DATABASES** **LT P C**
3 0 0 3

UNIT I **9**

Basics of Database Management Systems - Relational Model – SQL, Functional Dependencies - Normal Forms – Multivalued Dependencies, Join Dependencies – Examples - An introduction to Object-oriented Databases.

UNIT II **9**

Multidimensional Data Structures: k-d Trees - Point Quadtrees - The MX-Quadtree - R-Trees - comparison of Different Data Structures.

UNIT III **9**

Text/Document Databases - Precision and Recall - Stop Lists - Word Stems and Frequency Tables - Latent Semantic Indexing - TV-Trees - Other Retrieval Techniques

Image Databases - Raw Images - Compressed Image Representations - Similarity-Based Retrieval - Alternative Image DB Paradigms - Representing Image DBs with Relations - Representing Image DBs with R-Trees - Retrieving Images By Spatial Layout - Implementations.

UNIT IV **9**

Audio Databases - A General Model of Audio Data - Capturing Audio Content through Discrete Transformation - Indexing Audio Data. Video Databases - Organizing Content of a Single Video - Querying Content of Video Libraries - Video Segmentation

UNIT V **9**

Design and Architecture of a Multimedia Database - Organizing Multimedia Data Based on The Principle of Uniformity - Media Abstractions - Query Languages for Retrieving Multimedia Data.

TOTAL : 45 PERIODS

REFERENCES:

1. V. S. Subramanian, "Principles of Multimedia Database Systems", Elsevier Publishers, 1998.
2. Elmasri and ***Navathe*** Fundamentals of Database Systems, 4th Edition, Addison Wesley, 2003. S. Subramanian, "Principles of Multimedia Database Systems", Elsevier, 1998.
3. C. J. Date, "An Introduction to Database Systems", Seventh Edition, Pearson Education, 2000.
4. S. Khoshafian and A. B. Bakor, "Multimedia and Imaging Databases", Elsevier, 1996.
5. Kingsley C. Nwosu, "Multimedia Database Systems: Design and Implementation Strategies", Kluwer Academic Publishers, 1996.
6. Prabhakaran, "Multimedia Database Management Systems", Springer, 1st Edition, 1996.
7. Lynne Dunckley, "Multimedia Databases: An Object-Relational Approach"**,** Pearson Education, 2003.

MU9326 **GRAPHICS LABORATORY** **LT P C**
0 0 3 2

1. Line drawing algorithm, Circle drawing algorithms, Ellipse drawing algorithm
2. 2D transformations
3. Clipping algorithms
4. 3D Graphics using OpenGL, 3D viewing, 3D transformations
5. Developing interactive multimedia applications-Authoring a 2D presentation: (storyboard, design layout, collect the content, Presentation)
   Mini project using any of the popular authoring tools (say, flash, director, dreamweaver)
6. Creating simple 3D animations and visualizations.

TOTAL : 45 PERIODS

MU9331 3D MODELING AND RENDERING LT P C
3 0 0 3

UNIT I INTRODUCTION 9

3D rendering pipeline, 3D Geometric primitives – Bezier, B-Splines, NURBS, fractals, Particle systems, 3D transforms – Deform modifiers, Solid modeling – poly modeling, Surface modeling – tessellation - Extruded shapes - Mesh approximations to smooth objects – sphere, cylinder - Hierarchical modeling-Physically based modeling.

UNIT II TEXTURE MAPPING 9

Procedural and Bitmap textures - Texture mapping an image – Bump mapping – Environment mapping – Interpolation - Magnification and Minification, Mipmapped textures - Adding textures on to curved surfaces - Animated textures, Tiling - rendering textures.

UNIT III LIGHTS AND CAMERA 9

Shading models – Diffuse and secular reflections – Ambient light – Combining light contributions – Adding Color –Flat Shading – Smooth Shading -Phong, Gouraud. Camera Basics - Camera Movement - Directing the Camera.

UNIT IV RENDERING AND ANIMATION 9

Wire frame –Hidden surface removal– Ray tracing methods – Volume Rendering - Radiosity methods – Kinematics, Rigid body animation, collision detection.

UNIT V 3D GRAPHICS PROGRAMMING 9

3D Graphics programming using OpenGL and Java 3D or JOGL – Creating a 3D Scene by setting up objects – view - lights and other attributes.

TOTAL : 45 PERIODS

REFERENCES

1. F. S. Hill Jr., Stephen Kelly, “Computer Graphics Using OpenGL”, 3rd Edition, Pearson Education/PHI Learning, 2007.
2. Mark Giambruno, “ 3D Graphics and Animation”, 2nd Edition, New Riders Press, 2002.
3. Donald Hearn, M. Pauline Baker, “Computer Graphics – C Version”, Pearson Education/ PHI Learning, 2004.
4. Chen, Jim X., Chen, Chunyang, “Foundations of 3D Graphics Programming using JOGL and Java 3D, Springer, 2nd edition, 2008.
5. James D. Foley, Andries van Dam, K. Feiner, John F. Hughes, "Computer Graphics-principles and practice", Pearson Education, Second Edition, 2003.
6. Alan Watt, “3D Computer Graphics”, Addison Wesley/Pearson Ed.,, 3rd Edition, December 1999.

MU9351 AUDIO-VIDEO BROADCASTING SYSTEMS LT P C
3 0 0 3

UNIT I SUPPORTING TECHNOLOGIES 9

Quantities and Units – Information Theory and Error Correction – Coaxial Cable and Optical Fibres – TCP/IP Networking – SAN and NAS Technologies – Telco Technologies – Colour Displays and colorimetry.

UNIT II BROADCAST TECHNOLOGIES AND STANDARDS 9

Linear Digital Audio – Non Linear Audio Systems – Television Standards and Broadcasting Spectrum – Colour Encoding and decoding Systems – Timecode –Sound in Syncs – VBI Data Carriage – Digital Interfaces for Broadcast Signals – Storage File Formats – HDTV Standards – MPEG-2 – DVB standards –Data Broadcast – ATSC Video, Audio and PSIP Transmission – Interactive TV – Encryption systems.

UNIT III BROADCAST / STUDIO AND PRODUCTION COMPONENTS 9

Sound Origination Equipment – Lens Systems and Optics – Optical Sensors – Studio Cameras and Camcorders – VTR Technology – Television Standards Conversion – Television studio centers – Studio cameras ad lighting – Talkback and Communication Systems – Visual Effects –Editing, Mixers and Switchers – Sound Mixing and Control, Surround sound- Routers and Matrices – Transmission Systems..

UNIT IV BROADCAST SYSTEMS AND TRANSMITTER SYSTEMS HARDWARE 9

Broadcast mobile control rooms – Microwave links for OB and ENG – Battery Systems – Electrical Systems for Outside Broadcast – Radio frequency propagation – Thermionics, Power grid and linear beam tubes – Transposes – Satellite distribution – Microwave radio relay systems – Up-link Terminals – Intercity Links and switching centers – Masts, Towers and Antennas.

UNIT V TEST AND MEASUREMENT 9

Television Performance Measurements – Digital Video Systems Test and Measurement - Audio Systems Test and Measurement – Broadcast Engineering RF Measurements – Digital RF Measurements – Systems Monitoring and Management.

TOTAL : 45 PERIODS

REFERENCES

1. EPJ Tozer, "Broadcast Engineer's Reference Book", Elsevier, 2004.
2. Jerry C.Whitaker and K. Blair Benson, "Standard Handbook of Broadcast Engineering", TMH publications, 2004
3. Michael Talbot Smith, "Broadcast Sound Technology" Focal publisher, 2 nd Edition, 1995.

MU9352 WEB PROGRAMMING LT PC
3 0 0 3

UNIT I INTRODUCTION 9

Internet Principles – Basic Web Concepts – Client/Server model – Retrieving data from Internet – Scripting Languages – Perl Programming – Next Generation Internet – Protocols and applications.

UNIT II COMMON GATEWAY INTERFACE PROGRAMMING 9

HTML forms – CGI Concepts – HTML tags Emulation – Server–Browser communication – E–mail generation – CGI Client side Applets – CGI Server Side Applets – Authorization and Security – CGI programs using Perl.

UNIT III XML 9

Creating Markup with XML – Document Type Definition – Schemas – Document Object Model – Simple API for XML – Extensible Stylesheet languages – Formatting Objects – Xpath – XLink and XPointer – Introduction to SOAP – Case Studies – Custom markup languages.

UNIT IV SERVER SIDE PROGRAMMING 9

Dynamic Web Content – Server Side – Communication – Active and Java Server Pages – Firewalls – Proxy Servers – Web Service Implementation.

UNIT V ONLINE APPLICATIONS 9

Simple applications – On–line Databases – Monitoring User Events – Plug–ins – Database connectivity – Internet Information Systems – EDI application in business – Internet commerce – Customization of Internet commerce.

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Deitel and Deitel, Nieto, Sadhu, “XML How to Program”, Pearson Education publishers, 2001.
2. Eric Ladd, Jim O’ Donnel, “ Using HTML 4, XML and Java”, Prentice Hall of India – QUE, 1999.
3. Jeffy Dwight, Michael Erwin and Robert Niles, “Using CGI”, prentice Hall of India – QUE, 1999
4. Scot Johnson, Keith Ballinger, Davis Chapman, “Using Active Server Pages”, Prentice Hall of India, 1999.

MU9353 CREATIVITY, INNOVATION AND PRODUCT DEVELOPMENT LT P C
3 0 0 3

UNIT I INTRODUCTION 8

The process of technological innovation – factors contributing to successful technological innovation – the need for creativity and innovation – creativity and problem solving – brain storming different techniques.

UNIT II PROJECT SELECTION AND EVALUATION 8

Collection of ideas and purpose of project – Selection criteria – screening ideas for new products (evaluation techniques).

UNIT III NEW PRODUCT DEVELOPMENT 7

Research and new product development – Patents – patent search – Patent laws – International code for patents – Intellectual property rights (IPR).

UNIT IV NEW PRODUCT PLANNING 7

Design of proto type – testing – quality standards – marketing research – introducing new products.

UNIT V LABORATORY 15

Creative design – Model Preparation – Testing – cost evaluation – Patent application

TOTAL : 45 PERIODS

REFERENCES

1. Harry Nystrom, “Creativity and Innovation”, John Wiley & Sons, 1979.
2. Brain Twiss, “Managing Technological Innovation”, Pitman Publishing Ltd., 1992.
3. Harry B.Watton, “New Product Planning”, Prentice-Hall Inc., 1992.
4. P.N.Khandwalla, “Fourth Eye (Excellence through Creativity), Wheeler Publishing, Allahabad, 1992.
5. I.P.R. Bulletins, TIFAC, New Delhi, 1997.

SE9251 SOFTWARE AGENTS L T P C
3 0 0 3

UNIT I AGENTS – OVERVIEW 9

Agent Definition – Agent Programming Paradigms – Agent Vs Object – Aglet – Mobile Agents – Agent Frameworks – Agent Reasoning.

UNIT II JAVA AGENTS 9

Processes – Threads – Daemons – Components – Java Beans – ActiveX – Sockets – RPCs – Distributed Computing – Aglets Programming – Jini Architecture – Actors and Agents – Typed and proactive messages.

UNIT III MULTIAGENT SYSTEMS 9

Interaction between agents – Reactive Agents – Cognitive Agents – Interaction protocols – Agent coordination – Agent negotiation – Agent Cooperation – Agent Organization – Self-Interested agents in Electronic Commerce Applications.

UNIT IV INTELLIGENT SOFTWARE AGENTS 9

Interface Agents – Agent Communication Languages – Agent Knowledge Representation – Agent Adaptability – Belief Desire Intension – Mobile Agent Applications.

UNIT V AGENTS AND SECURITY 9

Agent Security Issues – Mobile Agents Security – Protecting Agents against Malicious Hosts – Untrusted Agent – Black Box Security – Authentication for agents – Security issues for Aglets.

TOTAL : 45 PERIODS

REFERENCES:

1. Bigus & Bigus, " Constructing Intelligent agents with Java ", Wiley, 1997.
2. Bradshaw, " Software Agents ", MIT Press, 2000.
3. Russel, Norvig, "Artificial Intelligence: A Modern Approach", Second Edition, Pearson Education, 2003.
4. Richard Murch, Tony Johnson, "Intelligent Software Agents", Prentice Hall, 2000.
5. Gerhard Weiss, “Multi Agent Systems – A Modern Approach to Distributed Artificial Intelligence”, MIT Press, 2000.

MU9354 NON-LINEAR EDITING LT P C
3 1 0 4

UNIT I FUNDAMENTALS 8

Evolution of filmmaking - linear editing - non-linear digital video - Economy of Expression - risks associated with altering reality through editing.

UNIT II STORYTELLING 12

Storytelling styles in a digital world through jump cuts, L-cuts, match cuts, cutaways, dissolves, split edits - Consumer and pro NLE systems - digitizing images - managing resolutions - mechanics of digital editing - pointer files - media management.

UNIT III USING AUDIO AND VIDEO 12

Capturing digital and analog video – importing audio – putting video on – exporting digital video to tape – recording to CDs and VCDs.

UNIT IV WORKING WITH FINAL CUT PRO 6 14

Working with clips and the Viewer - working with sequences, the Timeline, and the canvas - Basic Editing - Adding and Editing Testing Effects - Advanced Editing and Training Techniques - Working with Audio - Using Media Tools - Viewing and Setting Preferences.

UNIT V WORKING WITH AVID XPRESS DV 4 14

Starting Projects and Working with Project Window - Using Basic Tools and Logging - Preparing to Record and Recording - Importing Files - Organizing with Bins - Viewing and Making Footage - Using Timeline and Working in Trim Mode - Working with Audio - Output Options.

TOTAL : 60 PERIODS

REFERENCES:

1. Robert M. Goodman and Partick McGarth, “Editing Digital Video: The Complete Creative and Technical Guide”, Digital Video and Audio, McGraw-Hill 2003.

2. Keith Underdahl, “Digital Video for Dummies”, Third Edition, Dummy Series, 2001.
3. Final Cut Pro 6 User Manual, 2004.
4. Avid Xpress DV 4 User Guide, 2007.

CS9267 VISUALIZATION TECHNIQUES L T P C
3 0 0 3

UNIT I VISUALIZATION 9
Introduction – Issues – Data Representation – Data Presentation - Interaction

UNIT II FOUNDATIONS FOR DATA VISUALIZATION 9
Visualization stages – Experimental Semiotics based on Perception Gibson‘s Affordance theory – A Model of Perceptual Processing – Types of Data.

UNIT III COMPUTER VISUALIZATION 9
Non-Computer Visualization – Computer Visualization: Exploring Complex Information Spaces – Fisheye Views – Applications – Comprehensible Fisheye views – Fisheye views for 3D data – Non Linear Magnificaiton – Comparing Visualization of Information Spaces – Abstraction in computer Graphics – Abstraction in user interfaces.

UNIT IV MULTIDIMENSIONAL VISUALIZATION 9
One Dimension – Two Dimensions – Three Dimensions – Multiple Dimensions – Trees – Web Works – Data Mapping: Document Visualization – Workspaces.

UNIT V CASE STUDIES 9
Small interactive calendars – Selecting one from many – Web browsing through a key hole – Communication analysis – Archival analysis

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Colin Ware, “Information Visualization Perception for Design” Margon Kaufmann Publishers, 2004, 2nd edition.
2. Robert Spence “Information visualization – Design for interaction”, Pearson Education, 2 nd Edition, 2007

REFERENCES:

1. Stuart.K.Card, Jock.D.Mackinlay and Ben Shneiderman, “Readings in Information Visualization Using Vision to think”, Morgan Kaufmann Publishers.

MU9355 USER INTERFACE DESIGN LT P C
3 0 0 3

UNIT I INTRODUCTION 8

Human–Computer Interface – Characteristics Of Graphics Interface –Direct Manipulation Graphical System – Web User Interface –Popularity –Characteristic & Principles.

UNIT II HUMAN COMPUTER INTERACTION 7

User Interface Design Process – Obstacles –Usability –Human Characteristics In Design – Human Interaction Speed –Business Functions –Requirement Analysis – Direct – Indirect Methods – Basic Business Functions – Design Standards – General Design Principles – Conceptual Model Design – Conceptual Model Mock-Ups

UNIT III WINDOWS 12

Characteristics– Components– Presentation Styles– Types– Managements– Organizations– Operations– Web Systems– System Timings - Device– Based Controls Characteristics– Screen – Based Controls –– Human Consideration In Screen Design – Structures Of Menus – Functions Of Menus– Contents Of Menu– Formatting – Phrasing The Menu – Selecting Menu Choice– Navigating Menus– Graphical Menus. Operate Control – Text Boxes– Selection Control– Combination Control– Custom Control– Presentation Control.

UNIT IV MULTIMEDIA 9

Text For Web Pages – Effective Feedback– Guidance & Assistance– Internationalization– Accessibility– Icons– Image– Multimedia – Coloring.

UNIT V EVALUATION 9

Conceptual Model Evaluation – Design Standards Evaluation – Detailed User Interface Design Evaluation

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Wilbent. O. Galitz ,“The Essential Guide To User Interface Design”, John Wiley& Sons, 2001.
2. Deborah Mayhew, The Usability Engineering Lifecycle, Morgan Kaufmann, 1999Ben Shneiderman, “Design The User Interface”, Pearson Education, 1998.

REFERENCES:

1. Alan Cooper, “The Essential Of User Interface Design”, Wiley – Dream Tech Ltd., 2002. Sharp, Rogers, Preece, ‘Interaction Design’, Wiley India Edition, 2007

SE9261 LANGUAGE TECHNOLOGIES LT P C
3 0 0 3

UNIT I INTRODUCTION 9

Natural Language Processing – Linguistic Background- Spoken language input and output Technologies – Written language Input - Mathematical Methods - Statistical Modeling and Classification Finite State methods Grammar for Natural Language Processing – Parsing – Semantic and Logic Form – Ambiguity Resolution – Semantic Interpretation.

UNIT II INFORMATION RETRIEVAL 9

Information Retrieval architecture - Indexing- Storage – Compression Techniques – Retrieval Approaches – Evaluation - Search engines- commercial search engine features- comparison- performance measures – Document Processing - NLP based Information Retrieval – Information Extraction.

UNIT III TEXT MINING 9

Categorization – Extraction based Categorization- Clustering- Hierarchical Clustering- Document Classification and routing- finding and organizing answers from Text search – use of categories and clusters for organising retrieval results – Text Categorization and efficient Summarization using Lexical Chains – Pattern Extraction.

UNIT IV GENERIC ISSUES 9

Multilinguality – Multilingual Information Retrieval and Speech processing - Multimodality – Text and Images – Modality Integration - Transmission and Storage – Speech coding- Evaluation of systems – Human Factors and user Acceptability.

UNIT V APPLICATIONS 9

Machine Translation – Transfer Metaphor - Interlingua and Statistical Approaches - Discourse Processing – Dialog and Conversational Agents – Natural Language Generation – Surface Realization and Discourse Planning.

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Daniel Jurafsky and James H. martin, " Speech and Language Processing" , 2000.
2. Ron Cole, J.Mariani, et.al "Survey of the State of the Art in Human Language Technology", Cambridge University Press, 1997.
3. Michael W. Berry " Survey of Text Mining: Culstering, Classification and Retrieval", Springer Verlag, 2003.
4. Christopher D.Manning and Hinrich Schutze, " Foundations of Statistical Natural Language Processing ", MIT Press, 1999.

REFERENCES:

1. James Allen " Natural Language Understanding ", Benjamin/ Cummings Publishing Co. 1995.
2. Gerald J. Kowalski and Mark.T. Maybury, "Information Storage and Retrieval systems", Kluwer academic Publishers, 2000.
3. Tomek Strzalkowski " Natural Language Information Retrieval ", Kluwer academic Publishers, 1999.
4. Christopher D.Manning and Hinrich Schutze, " Foundations of Statistical Natural Language Processing ", MIT Press, 1999.

CS9264 DATA WAREHOUSING AND DATA MINING LT PC
3 0 0 3

UNIT I **9**

Data Warehousing and Business Analysis: - Data warehousing Components –Building a Data warehouse – Mapping the Data Warehouse to a Multiprocessor Architecture – DBMS Schemas for Decision Support – Data Extraction, Cleanup, and Transformation Tools –Metadata – reporting – Query tools and Applications – Online Analytical Processing (OLAP) – OLAP and Multidimensional Data Analysis.

UNIT II **9**

Data Mining: - Data Mining Functionalities – Data Preprocessing – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation.

Association Rule Mining: - Efficient and Scalable Frequent Item set Mining Methods – Mining Various Kinds of Association Rules – Association Mining to Correlation Analysis – Constraint-Based Association Mining.

UNIT III **9**

Classification and Prediction: - Issues Regarding Classification and Prediction – Classification by Decision Tree Introduction – Bayesian Classification – Rule Based Classification – Classification by Back propagation – Support Vector Machines – Associative Classification – Lazy Learners – Other Classification Methods – Prediction – Accuracy and Error Measures – Evaluating the Accuracy of a Classifier or Predictor – Ensemble Methods – Model Section.

UNIT IV **9**

Cluster Analysis: - Types of Data in Cluster Analysis – A Categorization of Major Clustering Methods – Partitioning Methods – Hierarchical methods – Density-Based Methods – Grid-Based Methods – Model-Based Clustering Methods – Clustering High-Dimensional Data – Constraint-Based Cluster Analysis – Outlier Analysis.

UNIT V **9**

Mining Object, Spatial, Multimedia, Text and Web Data:

Multidimensional Analysis and Descriptive Mining of Complex Data Objects – Spatial Data Mining – Multimedia Data Mining – Text Mining – Mining the World Wide Web.

TOTAL : 45 PERIODS

REFERENCES

1. Jiawei Han and Micheline Kamber “Data Mining Concepts and Techniques” Second Edition, Elsevier, Reprinted 2008.
2. Alex Berson and Stephen J. Smith “Data Warehousing, Data Mining & OLAP”, Tata McGraw – Hill Edition, Tenth Reprint 2007.
3. K.P. Soman, Shyam Diwakar and V. Ajay “Insight into Data mining Theory and Practice”, Easter Economy Edition, Prentice Hall of India, 2006.
4. G. K. Gupta “Introduction to Data Mining with Case Studies”, Easter Economy Edition, Prentice Hall of India, 2006.
5. Pang-Ning Tan, Michael Steinbach and Vipin Kumar “Introduction to Data Mining”, Pearson Education, 2007.

MU9356 MOBILE AND PERVASIVE COMPUTING LT P C
3 0 0 3

UNIT I **9**

Wireless networks- emerging technologies- Blue tooth, WiFi, WiMAX, 3G ,WATM.- Mobile IP protocols -WAP push architecture-Wml scripts and applications.

UNIT II **8**

Mobile computing environment—functions-architecture-design considerations ,content architecture -CC/PP exchange protocol ,context manager. Data management in WAE- Coda file system- caching schemes- Mobility QOS. Security in mobile computing.

UNIT III **8**

Handoff in wireless mobile networks-reference model-handoff schemes. Location management in cellular networks - Mobility models- location and tracking management schemes- time, movement ,profile and distance based update strategies. ALI technologies.

UNIT IV **10**

Pervasive Computing- Principles, Characteristics- interaction transparency, context aware, automated experience capture. Architecture for pervasive computing-
Pervasive devices-embedded controls.- smart sensors and actuators -Context communication and access services

UNIT V **10**

Open protocols- Service discovery technologies- SDP, Jini, SLP, UpnP protocols–data synchronization- SyncML framework - Context aware mobile services -Context aware sensor networks, addressing and communications. Context aware security.

TOTAL : 45 PERIODS

REFERENCES:

1. Ivan Stojmenovic , Handbook of Wireless Networks and Mobile Computing, John Wiley & sons Inc, Canada, 2002.
2. Asoke K Taukder,Roopa R Yavagal,Mobile Computing, Tata McGraw Hill Pub Co. , New Delhi, 2005.
3. Seng Loke, Context-Aware Computing Pervasive Systems, Auerbach Pub., New York, 2007.
4. Uwe Hansmann etl , Pervasive Computing, Springer, New York,2001.

MU9357 SERVICE ORIENTED ARCHITECTURE LT P C
3 0 0 3

UNIT I **9**

Software Architecture – Types of IT Architecture – SOA – Evolution – Key components – perspective of SOA – Enterprise-wide SOA – Architecture – Enterprise Applications – Solution Architecture for enterprise application – Software platforms for enterprise Applications – Patterns for SOA – SOA programming models

UNIT II **9**

Service-oriented Analysis and Design – Design of Activity, Data, Client and business process services – Technologies of SOA – SOAP – WSDL – JAX – WS – XML WS for .NET – Service integration with ESB – Scenario – Business case for SOA – stakeholder objectives – benefits of SPA – Cost Savings

UNIT III **9**

SOA implementation and Governance – strategy – SOA development – SOA governance – trends in SOA – event-driven architecture – software s a service – SOA technologies – proof-of-concept – process orchestration – SOA best practices

UNIT IV **9**

Meta data management – XML security – XML signature – XML Encryption – SAML – XACML – XKMS – WS-Security – Security in web service framework - advanced messaging

UNIT V **9**

Transaction processing – paradigm – protocols and coodination – transaction specifications – SOA in mobile – research issues

TOTAL : 45 PERIODS

REFERENCES:

1. Shankar Kambhampaly, "Service –Oriented Architecture for Enterprise Applications", Wiley India Pvt Ltd, 2008.
2. Eric Newcomer, Greg Lomow, "Understanding SOA with Web Services", Pearson Education.
3. Mark O' Neill, et al. , "Web Services Security", Tata McGraw-Hill Edition, 2003.

NI9322 **WEB DESIGN AND MANAGEMENT** **LT P C**
3 0 0 3

UNIT I SITE ORGANIZATION AND NAVIGATION **9**

User centered design – Web medium – Web design process – Evaluating process – Site types and architectures – Navigation theory – Basic navigation practices – Search – Site maps.

UNIT II ELEMENTS OF PAGE DESIGN **9**

Browser compatible design issues - Pages and Layout – Templates – Text – Color – Images – Graphics and Multimedia - GUI Widgets and Forms – Web Design patterns

UNIT III SCRIPTING LANGUAGES **10**

Client side scripting: XHTML – DHTML– JavaScript– XML Server side scripting: Perl – PHP – ASP/JSP Designing a Simple web application

UNIT IV PRE-PRODUCTION MANAGEMENT **8**

Principles of Project Management – Web Project Method – Project Road Map – Project Clarification – Solution Definition – Project Specification – Content – Writing and Managing content.

UNIT V PRODUCTION, MAINTENANCE AND EVALUATION 9

Design and Construction – Testing, Launch and Handover – Maintenance – Review and Evaluation – Case Study.

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Themas A. Powell, "The Complete Reference – Web Design", Tata McGraw Hill, Third Edition, 2003.
2. Ashley Friedlein, "Web Project Management", Morgan Kaufmann Publishers, 2001.
3. H. M. Deitel, P. J. Deitel, A. B. Goldberg, "Internet and World Wide Web – How to Program", Third Edition, Pearson Education 2004.

REFERENCES:

1. Joel Sklar, "Principles of Web Design", Thomson Learning, 2001.
2. **Van Duyne, Landay, and Hong** "The Design of Sites: Patterns for creating winning web sites", 2nd Edition, Prentice Hall, 2006.
3. Lynch, Horton and Rosenfeld, "Web Style Guide: Basic Design Principles for Creating Web Sites", 2nd Edition, Yale University Press, 2002.

MU9358 HUMAN RESOURCE MANAGEMENT LT P C
3 0 0 3

UNIT I PERSPECTIVES IN HUMAN RESOURCE MANAGEMENT 9

Evolution of human resource management – the importance of the human factor – objectives of human resource management – role of human resource manager – human resource policies – computer applications in human resource management.

UNIT II THE CONCEPT OF BEST FIT EMPLOYEE 9

Importance of human resource planning – forecasting human resource requirement – internal and external sources. Selection process-screening – tests - validation – interview - medical examination – recruitment introduction – importance – practices – socialization benefits.

UNIT III TRAINING AND EXECUTIVE DEVELOPMENT 9

Types of training, methods, purpose, benefits and resistance. Executive development programmes – common practices - benefits – self development – knowledge management.

UNIT IV SUSTAINING EMPLOYEE INTEREST 9

Compensation plan – reward – motivation – theories of motivation – career management – development, mentor – protégé relationships.

UNIT V PERFORMANCE EVALUATION AND CONTROL PROCESS 9

Method of performance evaluation – feedback – industry practices. Promotion, demotion, transfer and separation – implication of job change. The control process – importance – methods – requirement of effective control systems grievances – causes – implications – redressal methods.

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Decenzo and Robbins, Human Resource Management, Wilsey, 6th edition, 2001.
2. Biswajeet Pattanayak, Human Resource Management, Prentice Hall of India,2001.

REFERENCES:

1. Human Resource Management, Eugence Mckenna and Nic Beach, Pearson Education Limited, 2002.
2. Dessler Human Resource Management, Pearson Education Limited, 2002.
3. Mamoria C.B. and Mamoria S.Personnel Management, Himalaya Publishing Company, 1997.
4. Wayne Cascio, Managing Human Resource, McGraw Hill, 1998.
5. Ivancevich, Human Resource Management, McGraw Hill 2002.