(Chapters 1, 2, 3, 4, 5, 6, 8, 10, 11, 21, 22, 29, 30, 31)

2. Jim Keogh: J2EE - The Complete Reference, Tata McGraw Hill, 2007.
   (Chapters 5, 6, 11, 12, 15)

Reference Books:

1. Y. Daniel Liang: Introduction to JAVA Programming, 7th Edition, Pearson Education, 2007.
2. Stephanie Bodoff et al: The J2EE Tutorial, 2nd Edition, Pearson Education, 2004.

MULTIMEDIA COMPUTING

Subject Code: 10IS754	**I.A. Marks : 25**
Hours/Week : 04	**Exam Hours: 03**
Total Hours : 52	**Exam Marks: 100**

PART – A

UNIT – 1 **7 Hours**

Introduction, Media and Data Streams, Audio Technology: Multimedia Elements; Multimedia Applications; Multimedia Systems Architecture; Evolving Technologies for Multimedia Systems; Defining Objects for Multimedia Systems; Multimedia Data Interface Standards; The need for Data Compression; Multimedia Databases.

Media: Perception Media, Representation Media, Presentation Media, Storage Media, Transmission Media, Information Exchange Media, Presentation Spaces & Values, and Presentation Dimensions; Key Properties of a Multimedia System: Discrete & Continuous Media, Independence Media, Computer Controlled Systems, Integration; Characterizing Data Streams: Asynchronous Transmission Mode, Synchronous Transmission Mode, Isochronous Transmission Mode; Characterizing Continuous Media Data Streams.

Sound: Frequency, Amplitude, Sound Perception and Psychoacoustics; Audio Representation on Computers; Three Dimensional Sound Projection; Music and MIDI Standards; Speech Signals; Speech Output; Speech Input; Speech Transmission.

UNIT – 2 **7 Hours**

Graphics and Images, Video Technology, Computer-Based Animation: Capturing Graphics and Images Computer Assisted Graphics and Image Processing; Reconstructing Images; Graphics and Image Output Options.

Basics; Television Systems; Digitalization of Video Signals; Digital Television; Basic Concepts; Specification of Animations; Methods of

Controlling Animation; Display of Animation; Transmission of Animation; Virtual Reality Modeling Language.

UNIT – 3 **7 Hours**

Data Compression – 1: Storage Space; Coding Requirements; Source, Entropy, and Hybrid Coding; Basic Compression Techniques; JPEG: Image Preparation, Lossy Sequential DCT-based Mode, Expanded Lossy DCT-based Mode, Lossless Mode, Hierarchical Mode

UNIT – 4 **6 Hours**

Data Compression – 2: H.261 (Px64) and H.263: Image Preparation, Coding Algorithms, Data Stream, H.263+ and H.263L; MPEG: Video Encoding, Audio Coding, Data Stream, MPEG-2, MPEG-4, MPEG-7; Fractal Compression.

PART - B

UNIT – 5 **6 Hours**

Optical Storage Media: History of Optical Storage; Basic Technology; Video Discs and Other WORMs; Compact Disc Digital Audio; Compact Disc Read Only Memory; CD-ROM Extended Architecture; Further CD-ROM-Based Developments; Compact Disc Recordable; Compact Disc Magneto-Optical; Compact Disc Read/Write; Digital Versatile Disc.

UNIT – 6 **6 Hours**

Content Analysis : Simple Vs. Complex Features; Analysis of Individual Images; Analysis of Image Sequences; Audio Analysis; Applications.

UNIT – 7 **6 Hours**

Data and File Format Standards: Rich-Text Format; TIFF File Format; Resource Interchange File Format (RIFF); MIDI File Format; JPEG DIB File Format for Still and Motion Images; AVI Indeo File Format; MPEG Standards; TWAIN

UNIT – 8 **7 Hours**

Multimedia Application Design : Multimedia Application Classes; Types of Multimedia Systems; Virtual Reality Design; Components of Multimedia Systems; Organizing Multimedia Databases; Application Workflow Design Issues; Distributed Application Design Issues.

Text Books:

1. Ralf Steinmetz, Klara Narstedt: Multimedia Fundamentals: Vol 1-Media Coding and Content Processing, 2nd Edition, PHI, Indian Reprint 2008.
(Chapters 2, 3, 4, 5, 6, 7, 8, 9)

2. Prabhat K. Andleigh, Kiran Thakrar: Multimedia Systems Design, PHI, 2003.
   (Chapters 1, 3, 7)

Reference Books:

1. K.R Rao, Zoran S. Bojkovic and Dragorad A. Milovanovic: Multimedia Communication Systems: Techniques, Standards, and Networks, Pearson Education, 2002.
2. Nalin K Sharad: Multimedia Information Networking, PHI, 2002.

ADVANCED SOFTWARE ENGINEERING

Subject Code: 10IS755	**I.A. Marks : 25**
Hours/Week : 04	**Exam Hours: 03**
Total Hours : 52	**Exam Marks: 100**

PART - A

UNIT – 1 **7 Hours**

Quality Management: Quality Concepts: Quality, Software quality; The software quality dilemma; Achieving software quality.

Review techniques: Cost impact of Software defects; Defect amplification and removal; Review metrics and their use; Reviews: A formal spectrum; Informal reviews; Formal technical reviews.

Software Quality Assurance: Background issues, Elements of SQA; SQA tasks, goals and metrics; Formal approaches to SQA; Statistical software quality assurance; Software reliability; The ISO 9000 Quality standards; The SQA plan.

UNIT – 2 **6 Hours**

Formal Modeling and Verification: The Cleanroom Strategy; Functional specification; Cleanroom design; Cleanroom testing; Formal methods concepts; Applying mathematical notation for formal specification; Formal specification languages.

UNIT – 3 **7 Hours**

Process Improvement, Configuration Management: Process and product quality; Process classification; Process measurement; Process analysis and modeling; Process change; The CMMI process improvement framework

Configuration management planning; Change management; Version and release management; System building; CASE tools for configuration management