

## Semester-VI

### Multimedia Technology (IT (ID) – 6004)

Course Code	IT (ID) – 6004	Credits-4	L-3, T-1, P-0
Name of the Course	Multimedia Technology		
Lectures to be Delivered	52 (1 Hr Each) (L=39, T=13 for each semester)		
Semester End Examination	Max Marks: 100	Min Pass Marks: 40	Maximum Time: 3 hrs
Continuous Assessment (based on sessional tests (2) 50%, Tutorials/Assignments 30%, Quiz/Seminar 10%, Attendance 10%)			Max Marks: 50

#### Instructions

- 1. For Paper Setters:** The question paper will consist of five sections A, B, C, D and E. Section E will be Compulsory, it will consist of a single question with 10-20 subparts of short answer type, which will cover the entire syllabus and will carry 20% of the total marks of the semester end examination for the course. Section A, B, C and D will have two questions from the respective sections of the syllabus and each question will carry 20% of the total marks of the semester end examination for the course.
- 2. For Candidates:** Candidates are required to attempt five question in all selecting one question from each of the section A, B, C and D of the question paper and all the subparts of the questions in section E. Use of non-programmable calculators is allowed.

#### Section A

**Introduction:** Motivation, Module Overview, Evolution of Multimedia, Structure and components of Multimedia. Application Domains, Internet and Multimedia, Multimedia and Interactivity, Primary User-Interface Hardware: Mouse. Keyboard, Joystick. Primary Visual Interface Items: Window, Buttons, Textbox, Icons. Basic Metaphors: Side – Show, Book, Hypertext, Hypermedia, Browsers and helper Application overview, User Interface Design Issues.

**Technology:** Sound and Audio, Psycho acoustics – Frequency and amplitude sensitivity of hearing music and noise, stereo effects. Masking, Frequency domain compression of analog sound signal, digitization of audio signal - sampling and coding, digital audio signal processing, architecture of a sound card, elementary concept of music, pitch and voice, staff notation and scoring, electronic music and synthesizer, MIDI interface, protocol and data format.

#### Section B

**Image & Graphics:** Principles of raster graphics, Computer Visual Display concepts, Resolution, colour and pallets, Refresh rates an graphic accelerators, Digital image Representation and formats, Graphic drafting Tools, Image processing and enhancement, Colour printer principles, Image scanner principle, File formats, Digital still Camera and photography.

**Animation and special effects:** animation principles, Survey of animation tools, Special Visual Effects wiping, morphing etc.

**Video Technology:** Analog Video, Principles Broadcast standards, CCD Camera, Recording formats and standard, Digital Video, Principles, PC video and Videoconference standards, TV Cards Frame Grabber Principles, IDTV and HDTV principles, Motion Picture to Video Conversion.

## Section C

**Data Compression:** Data Compression Requirement, Information Theory based and frequency domain based and compression, Basic Compression Techniques: DPCM, Runlength Coding, Huffman Coding, JPEG/ISO, Real-time encoding and CCITT H.261 (px64) standard, MPEG-I & II, DVI.

**Multimedia Document and Interchange formats:** Hypertext, HTML, MHEG and Hypermedia, SGML, Open document Architecture (ODA), Quick Time Movie film format, Open Media framework (OMFI)

## Section D

**Synchronization:** Temporal Dependence in Multimedia presentation. Inter-object and Intra-object Synchronisation, Time Abstraction for authoring and visualization, Reference Model and Specification.

**Application Development:** Product development overview, Life cycle Models, Human Roles and Teamwork, Product Planning, Basic Authoring Paradigms: Story Scripts, Authoring Metaphors and authoring languages, Content Analysis: Message, platform, Metaphor and Navigation, cost-quality tradeoffs, Intellectual Property Right and Copyright issues.

## Books:

1. Multimedia Systems Design, P.K.Andleigh and K.Thakrar, Prentice hall PTR, 1996.
2. Multimedia Computing, Communications and Applications, Ralf Steinmetz and Klara Nashtedt, Prentice Hall 1995.
3. Creating Multimedia Presentations, Douglas E.Wolfgram, Que. Crop., 1994.
4. Multimedia Authoring: Building and Developing Documents, Scott Fisher, AP Professional, 1994.
5. Multimedia systems, Ed. By John F.K.Buford, Addison – Wesley Publishing Co., 1994.
6. Multimedia Technology & Applications, David Hillman, Galgotia Publications.
7. Multimedia Systems, Rajneesh Agrawal, Excel Books.
8. Digital Multimedia, Nigel Chapman & Jenny Chapman, Wiley Publications.
9. Fundamentals of Computer Graphics and Multimedia, D.P.Mukherjee.