



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal - 500 043, Hyderabad, Telangana

COURSE CONTENT

MULTI MEDIA SYSTEMS								
VII Semester: IT								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AITD23	Elective	L	T	P	C	CIA	SEE	Total
		3	-	-	3	40	60	100
Contact Classes: 48	Tutorial Classes: Nil	Practical Classes: Nil			Total Classes: 48			
Prerequisite: There is no prerequisite to take this course								

I. COURSE OVERVIEW:

The objective of this course is to provide students with the knowledge and understanding of media representation, storage, communication, and processing by digital means, with an emphasis on audio, still images, and video media. It includes an introduction to sampling theory and various representation techniques. This is used to describe and explain a variety of real devices, formats, and standards.

II. COURSE OBJECTIVES:

The students will try to learn

- How to describe a firm grounding in the fundamentals of the underpinning technologies in graphics, distributed systems and Multimedia.
- The principled design of effective media for entertainment, communication, training and education.
- The experience in the generation of animations, virtual environments and multimedia applications, allowing the expression of creativity.

III. COURSE OUTCOMES:

At the end of the course, students should be able to:

- CO1 Demonstrate Knowledge and Understanding of the concepts Temporal, Non-Temporal, and Hypertext, Hypermedia.
- CO2 Describe integrate audio, visual, and interactive elements into a comprehensive immersive experience.
- CO3 Analyze the ability to extend their basic in Multimedia systems architecture, USB port.
- CO4 Evaluate Current trends of AR and VR media delivery to propose options to potential clients, and discuss the benefits challenges and misconceptions involved with working in AR and VR.
- CO5 Evaluate various interaction schemes common to AR/VR experiences.
- CO6 Use immersive effects of visual and audio assets to AR/VR experiences and evaluate implementation method.

IV. COURSE CONTENT:

MODULE – I: INTRODUCTION TO MULTIMEDIA (10)

Concept of Non- Temporal and Temporal Media. Basic Characteristics of Non-Temporal Media; Images, Graphics, Text. Basic Characteristics of Temporal Media: Video, Audio, and Animation. Hypertext and Hypermedia. Presentations: Synchronization, Events, Scripts and Interactivity, Introduction to Authoring Systems.

MODULE – II: COMPRESSION TECHNIQUES (09)

Basic concepts of Compression. Still Image Compression: JPEG Compression. Features of JPEG2000. Video Compression: MPEG- 1&2 Compression Schemes, MPEG-4 Natural Video Compression. Audio Compression: Introduction to speech and Audio Compression, MP3 Compression Scheme. Compression of synthetic. Graphical objects.

MODULE – III: MULTIMEDIA SYSTEMS ARCHITECTURE (10)

General Purpose Architecture for Multimedia Support: Introduction to Multimedia PC/Workstation Architecture, Characteristics of MMX instruction set, I/O systems: Overview of USB port and IEEE 1394 interface, Operating System Support for Multimedia

Data: Resource Scheduling with real-time considerations, File System, I/O Device Management.

MODULE - IV MULTIMEDIA INFORMATION MANAGEMENT (10)

Multimedia Database Design, Content Based Information Retrieval: Image Retrieval, Video Retrieval, Overview of MPEG-7, Design of video-on-Demand Systems.

MODULE –V: INTRODUCTION TO VIRTUAL REALITY (09)

Tele-operation and Augmented Reality Systems Interface to the Virtual World-Input; Head and hand trackers, data globes, haptic input devices. Interface to the Virtual World- Output, Stereo display, head mounted display, auto- stereoscopic displays, holographic displays, haptic and force feedback.

V.TEXT BOOKS:

- 1 Andleigh and Thakrar, “Multimedia System Design”, PHI, 5th Edition, 2015.
- 2 David Hillman, “Multimedia Technology & Application”, Galgotia Publications, 6th Edition, 2018.

VI. REFERENCE BOOKS:

1. Multimedia Computing Communication and Application, Steinmetz, Pearson Education.
2. Virtual Reality Systems , John Vince, Pearsn Education.

VII. WEB REFERENCES:

1. http://classweb.ece.umd.edu/enee623.F2011/LectureNotes_EE623.pdf
2. <https://my.ece.utah.edu/~npatwari/ece5520/lectureAll.pdf>

VIII.MATERIALS ONLINE

1. Course template
2. Tech-talk topics
3. Assignments
4. Definition and terminology
5. Tutorial question bank
6. Model question paper – I
7. Model question paper – II
8. Lecture notes
9. Early lecture readiness videos (ELRV)
10. Power point presentations
11. E-Learning Readiness Videos (ELRV)