MULTIMEDIA SYSTEMS
(Professional Elective-IV)

Course Code : 15IT1105

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Course Outcomes:

At the end of the Course, the Student will be able to:

CO 1 Identify basic multimedia content types.

CO 2 Describe transmission of Audio and Video

CO 3 Explain data compression algorithms.

CO 4 Discuss basics of video compression.

CO 5 Identify different multimedia networks.

UNIT-I **(10 Lectures)**

INTRODUCTION TO MULTIMEDIA:

What is Multimedia? Multimedia and Hypermedia, WorldWide Web, Overview of Multimedia Software Tools. Graphics and Image Data Representations: Graphics/Image Data Types.

COLOR IN IMAGE AND VIDEO:

color science, color models in images, color models in video.

UNIT-II **(8 Lectures)**

FUNDAMENTAL CONCEPTS IN VIDEO AND DIGITAL AUDIO:

Types of video signals, analog video, digital video, digitization of sound, MIDI, quantization and transmission of audio.

UNIT-III **(10 Lectures)**

MULTIMEDIA DATA COMPRESSION:

Lossless compression algorithms: Run-Length Coding, Variable Length Coding, and Dictionary Based Coding. Lossy compression algorithms: Quantization, Transform Coding, Wavelet-Based Coding, Arithmetic Coding.

UNIT-IV (13 Lectures)

BASICS OF VIDEO COMPRESSION:

Introduction to Video Compression, Video Compression with Motion Compensation Search for Motion Vectors

VIDEO CODING:

Overview of MPEG-1, MPEG-2 and MPEG-4. Motion compensation in MPEG-1, MPEG-2 Profiles, Object-based Visual Coding in MPEG-4, Synthetic Object Coding in MPEG-4.

UNIT-V (9 Lectures)

MULTIMEDIA NETWORKS:

Basics of Multimedia Networks, Quality of Multimedia Data Transmission.

MULTIMEDIA COMMUNICATION:

Multimedia over IP, Multimedia over ATM Networks, Transport of MPEG-4, Media-on Demand (MOD).

TEXT BOOK:

Ze-Nian Li and Mark S.Drew, "Fundamentals of Multimedia", 1st Edition, PHI/Pearson Education,2009.

REFERENCES:

1. Nigel Chapman and Jenny Chapman, "Digital Multimedia", 3rd Edition, Wiley Dreamtech, 2009.
2. Steve Heath, "Multimedia and Communications Technology", 2nd Edition, Elsevier (Focal Press), 1999.
3. Steinmetz, Ralf, Nahrstedt, "Multimedia Applications", 1st Edition, Springer, 2004.
4. Weixel, "Multimedia Basics", 2nd Edition, Thomson Press, 2006.