CP454: MULTIMEDIA SYSTEMS
CREDITS = 5 (L=3, T=0, P=2)

Course Objective:
To familiarize the students with various approaches, methods and techniques of Multimedia Systems

Teaching and Assessment Scheme:

Teaching Scheme			Credits	Marks Distribution				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	CE	ESE	CE	
3	0	2	5	70	30	30	20	150

Course Contents:

Sr. No.	Topics	Teaching Hours
1	**Multimedia Communications:** Introduction, Multimedia information representation, Multimedia networks, Data Strems, Asynchronous, synchronous and isochronous transmission mode, Multimedia applications, Application and networking terminology, Multimedia information representation, Properties of Multimedia System, Digitization, Text and Images, Audio and video, Digital Video/Audio/Image coding standards.	08
2	**Text & Image Compression Systems**: Compression principles, Entropy and Source Encoding, Static Huffman Coding, Dynamic Huffman Coding, Arithmetic Coding, LZW Coding , File formats: BMP,GIF,TIFF,JPEG etc. ,Redundancy In Image, Lossless and Lossy Image Compression Techniques, Measurements Quality of Reconstructed Image (MSE, SNR, PSNR) , JPEG image compression.	10
3	**Audio-Video Compression**: Audio Compression, PCM, DPCM, ADPCM, Adaptive Predictive Coding, Linear Predictive Coding, Code-Excited Coding, Perceptual Coding, MPEG Audio Coder, Digital Video Coding Fundamentals, Video Compression Principles, Video Compression Standards, H.261, H.263, MPEG, MPEG-1, MPEG-2, MPEG-4.	08

4	**Multimedia communication system**:	
	Application subsystem, Transport subsystem, Quality of service and resource management, Multimedia database system, Video on demand system, distributed Video on demand system, high speed network for Video on demand: SONET, ATM, ADSL and HFC, Multimedia operating system.	06
5	**3D Animation**:	
	Introduction, Modeling : Polygon and Splines, Animation techniques : Key Frame Animation, Forward Kinematics, Inverse Kinematics, Shape Deformation, Rendered Animation, Morphing, Character Animation, Facial Animation.	10
6	**3D Modeling and Animation tool**:	
	Blender.	03
	TOTAL	**45**

List of References:

1. Fred Halsall.,"Multimedia Communications- Applications, Networks, Protocols & Standards", Pearson
2. K.R. Rao, Zoran S.B. & Dragorad A.M ,"Introduction to Multimedia Communications" ,Wiley Publications
3. Michael O'Rourke ,"Principles of Three dimensional computer animation", W W Norton & Company
4. Ralf Steinmetz & Klara Nahrstedt, "Multimedia computing, communications & applications", Perason
5. David Salomon, "Data Compression :The Complete Reference", Springer International Edition
6. Jason Osipa, "Facial modeling and animation: stop staring", Wiley India Pvt. Ltd.

Course Outcome (COs):

After learning the course the students should be able to:

1. Understand multimedia communication systems
2. Develop compression algorithms for Text, Image and Video
3. Understand different animation techniques
4. Use modeling and animation tools
5. Develop multimedia applications using various tools
6. Develop applications to demonstrate various stages of multimedia