GUJARAT TECHNOLOGICAL UNIVERSITY

INFORMATION & COMMUNICATION TECHNOLOGY (32)
MULTIMEDIA COMPUTING
SUBJECT CODE: 2183201
B.E. 8th SEMESTER

Type of course: UG

Prerequisite: Basics of Network

Rationale: NA

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks			Practical Marks			
				ESE (E)	PA (M)		ESE (V)		PA (I)	
					PA	ALA	ESE	OEP		
3	0	2	5	70	20	10	20	10	20	150

Content:

Sr. No.	Content	Total Hrs	% Weightage
1	**Introduction To Multimedia Systems** Define Multimedia Signal, Elements Of Multimedia Communication Systems, Challenges Involved With Multimedia Communication, Types Of Multimedia(Image, Text, Audio, Video)	8	10
2	**Image Compression Systems** Fundamentals of Image, Redundancy In Image, Lossless And Lossy Image Compression Techniques, Measurements Quality of Reconstructed Image (MSE, SNR, PSNR) , Huffman Coding, GIF,TIFF,JPEG	12	20
3	**Text Compression** Compression Principles, Entropy And Source Encoding, Static Huffman Coding, Dynamic Huffman Coding, Arithmetic Coding, LZW Coding,	12	20
4	**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	12	20
5	**APPLICATIONS OF MULTIMEDIA NETWORKS**	4	10

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
5	**15**	**15**	**15**	**10**	**10**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Title: Multimedia Communications: Application ,Network, Protocols and Standards
   Author: Fred Halsall
   Publisher: Pearson Education Asia

2. Title: Digital Image processing
   Author: Rafael C. Gaonzalez and Richard E. Woods
   Publisher: pearson Education
3. Title: Data Compression : The Complete Reference
   Author: David Salomon
   Publisher: Springer International Edition

Course Outcome:

After learning the course the students should be able to: Understand basics of multimedia computing, Different Audio-Video Compression Techniques and Application of Multimedia Networks.

List of Experiments:

Program should be done based on different topics of syllabus.

Design based Problems (DP)/Open Ended Problem: Apply different techniques for Image compression, Text Compression and Audio-Video Compression.

List of Open Source Software/learning website: Scilab.

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.