Program :	**Diploma in Electronics Engineering / Electronics and Communication Engineering**
Course Code : **6042D**	Course Title: **Introduction to Multimedia**
Semester : **6**	Credits: **4**
Course Category: **Open Elective**	
Periods per week: **4 (L:4, T:0, P:0)**	Periods per semester: **60**

Course Objectives:

- To provide an insight on the fundamental elements of multimedia.
- To emphasis on learning the representations, perceptions and applications of multimedia.
- To understand the technologies and developments in the multimedia applications

Course Outcomes

On completion of the course, the student will be able to:

COn	Description	Duration (Hours)	Cognitive level
CO1	Explain various components and applications of multimedia	12	Understanding
CO2	Illustrate the considerations involved in managing text and audio in recording, compressing and transmitting over various media	20	Understanding
CO3	Make use of various image processing basics and compression methods in multimedia applications	13	Understanding
CO4	Illustrate various video compression standards and various animation methods	13	Understanding
	Series Test	2	

CO-PO Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2						
CO2	2						
CO3	2						
CO4	2						

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Course Outline:

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	**Explain various components and applications of multimedia**		
M1.01	Explain in details on various components of multimedia	3	Understanding
M1.02	Outline various multimedia applications for web and internet	3	Understanding
M1.03	Explain the needs and methods of transition from conventional to digital media	3	Understanding
M1.04	Explain the various stages of multimedia projects	3	Understanding
Contents: **Introduction to Multimedia** What is multimedia, Components of multimedia, Web and Internet multimedia applications, Transition from conventional media to digital media, Multimedia Information, Multimedia Objects, Multimedia in business and work, Convergence of Computer, Communication and Entertainment products. **Stages of Multimedia Projects** Multimedia hardware, Memory & storage devices, Communication devices, Multimedia software's, presentation tools, tools for object generations, video, sound, image capturing, authoring tools, card and page-based authoring tools.			
CO2	**Illustrate the considerations involved in managing text and audio in recording, compressing and transmitting over various media**		
M2.01	Explain the importance of text and ways in which text can be leveraged in multimedia presentations	4	Understanding
M2.02	Define hypermedia, hypertext, links, anchors, and nodes and be able to discuss both the potential and limitations of hypertext and hyper linking systems	4	Understanding
M2.03	Use digital audio to record, process, and edit sound	4	Understanding
M2.04	Use MIDI and understand its attributes, especially relative to digitized audio	3	Understanding
M2.05	Select an appropriate lossless or lossy algorithm for the given multimedia type	5	Understanding
	Series Test – 1	1	
Contents: **Computer Fonts and Hypertext** Usage of text in Multimedia, Families and faces of fonts, outline fonts, bitmap fonts			

International character sets and hypermedia and hypertext, Digital fonts techniques

Audio fundamentals and representations

Digitization of sound, frequency and bandwidth, decibel system, data rate, audio file format, Sound synthesis, MIDI, Digital Audio, audio file formats, Compression and transmission of audio on Internet

Multimedia data compression:

Compression, Compression ratio - lossless & lossy compression

Lossless compression algorithm: Huffman Coding, Run-Length Coding, Dictionary Based Coding, Arithmetic Coding, Sliding Window Compression.

Loss less compression of sound, loss compression& silence compression

CO3	**Make use of various image processing basics and compression methods in multimedia applications**		
M3.01	Describe the use of colours and palettes in multimedia	4	Understanding
M3.02	Compare various lossy and lossless image compression methods	3	Understanding
M3.03	Cite the various file types used in multimedia	3	Understanding
M3.04	Explain various image compression file formats	3	Understanding

Contents:

Image fundamentals and representations

Colour Science, Colour, Colour Models, Colour palettes, Dithering, 2D Graphics, Image Compression systems - Lossless - Huffman coding, Arithmetic and Lempel-Ziv coding, Lossy–Quantization, Delta modulation, DPCM, Image compression File Formats: GIF, JPEG, PNG, TIFF

CO4	**Illustrate various video compression standards and various animation methods**		
M4.01	Illustrate various video analog and digital technologies and displays	3	Understanding
M4.02	Compare various video compression formats	3	Understanding
M4.03	Choose the correct file types for animations from the acquired knowledge on the animation techniques of cell and computer animation	4	Understanding
M4.04	Explain the various methods of multimedia communication	3	Understanding
	Series Test – 2	1	

Contents:

Video and Animation

Video Basics , How Video Works, Broadcast Video Standards, Analog video, Digital video,Video Recording and Tape formats, Video Compression and File Formats. Video compression based on motioncompensation, MPEG-4

Animation: CellAnimation, Computer Animation, Morphing, Video Conferencing,Multimedia Broadcast Services, Indexing and retrieval of Video Database

Multimedia Networks:

Basics of Multimedia Networks, Multimedia Network Communications and Applications: Quality of Multimedia Data Transmission, Multimedia over IP, Multimedia over ATM Networks, Transport of MPEG-4, Media-on-Demand (MOD).

Text / Reference:

T/R	Book Title/Author
T1	Tay Vaughan, Multimedia making it work, Tata McGraw-Hill, 2008
T2	Rajneesh Aggarwal& B. B Tiwari, Multimedia Systems, Excel Publication, NewDelhi, 2007
T3	Ze-Nian Li and Mark S. Drew, Fudamentals of Multimedia, Pearson Education.
T4	Mark Nelson, Data Compression Hand Book, BPB.
R1	Li & Drew, Fundamentals of Multimedia, Pearson Education, 2009
R2	Parekh Ranjan, Principles of Multimedia, Tata McGraw Hill, 2007
R3	AnirbanMukhopadhyay and Arup Chattopadhyay, Introduction to Computer Graphics and Multimedia, Second Edition, Vikas Publishing House

Online Resources:

Sl. No	Website Link
1	https://nptel.ac.in/courses/117/105/117105083/
2	https://maiaangel03.wordpress.com/lesson-1-introduction-to-multimedia/
3	http://www.universityofcalicut.info/SDE/opencourses/introduction_to_multimedia_open_Vsem.pdf
4	http://ocw.ump.edu.my/course/view.php?id=200