CVM UNIVERSITY
Aegis: Charutar Vidya Mandal (Estd.1945)

FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2020-21

Programme: **Bachelor of Engineering (Information Technology)**

Semester: **VI**

Course Code: **102060621**

Course Title: **Multimedia Systems and Applications**

Course Group: **Open Elective - II**

Course Objectives: Multimedia has become an indispensable part of modern computer technology. In this course, students will be introduced to principles and current technologies of multimedia systems. Issues in effectively representing, processing, and retrieving multimedia data such as signal, graphics, image and video will be addressed. The students will gain hands-on experience in those areas by implementing some components of multimedia streaming system in laboratories. Latest Web technologies and some advanced topics in current multimedia research will also be discussed.

Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
				Theory		J/V/P*		Total
Lecture	Tutorial	Practical		Internal	External	Internal	External	
3	0	0	3	40/14	60/21	NA	NA	100/35

* **J**: Jury; **V**: Viva; **P**: Practical

Detailed Syllabus:

Sr.	Contents	Hours
1	**Introduction and Multimedia Data Representations**: Introduction to Multimedia, Multimedia: Past, Present and Future, Multimedia Software Tools, Multimedia Presentation, Multimedia Sharing and Distribution, Signal, Image, Graphics and Video Data Representations.	08
2	**Multimedia Data Compression:** Storage Space; Coding Requirements; Source, Entropy, and Hybrid Coding; Lossless Compression Algorithms, Lossy Compression Algorithms, Image Compression Standards, Video Compression Techniques, MPEG Video/Audio coding, Fractal Compression.	10
3	**Multimedia Communications and Networking:** Network Services and Protocols for Multimedia Communications, Internet Multimedia Content Distribution, Multimedia Over Wireless and Mobile Networks.	10
4	**Cloud Computing for Multimedia Services:** Cloud Computing Overview, Multimedia Cloud Computing, Computation Offloading for Multimedia Services, Interactive Cloud Gaming.	09

5	**Multimedia Application Design:** Multimedia Application Classes; Types of Multimedia Systems; Virtual Reality Design; Components of Multimedia Systems; Organizing Multimedia Databases; Application Workflow Design Issues; Distributed Application Design Issues.	**08**
	Total	**45**

Reference Books:

1	Ze-Nian Li, and Mark S. Drew, Fundamentals of Multimedia, 2nd Edition, Pearson Prentice Hall, 2014
2	K. Rammohanarao, Z. S. Bolzkovic, D. A. Milanovic, Multimedia Communication Systems, 1st edition, Prentice Hall, May 2002.
3	Fred Halsall, Addison-Wesley, Multimedia Communications: Applications, Networks, Protocols and Standards, 2001.
4	Yao Wang, Joern Ostermann, and Ya-Qin Zhang, Video Processing and Communications, Prentice Hall, 2002.
5	Stephen McGloughlin, Multimedia: Concepts and Practice, Prentice Hall, 2000.

Supplementary learning Material:	
1	NPTEL and Coursera Video Lectures

Pedagogy:

- Direct classroom teaching
- Audio Visual presentations/demonstrations
- Assignments/Quiz
- Continuous assessment
- Interactive methods
- Industrial/ Field visits

Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						**R**: Remembering; **U**: Understanding; **A**: Applying; **N**: Analyzing; **E**: Evaluating; **C**: Creating
R	**U**	**A**	**N**	**E**	**C**	
10%	30%	20%	20%	10%	10%	

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.

Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Understand the fundamentals of multimedia, media and data streams, sound/audio, image, graphics, and video.	**25**
CO-2	Learn topics in data compression including coding requirements, source, entropy, and hybrid coding, JPEG, H.261 (px64), MPEG, MP3 and etc.	**30**
CO-3	Explore the domain of networking and cloud computing services for Multimedia data processing.	**20**

CO-4	Learn Multimedia applications including digital libraries, system software, toolkits, and virtual reality design.	**25**

Curriculum Revision:	
Version:	1.0
Drafted on (Month-Year):	June-2020
Last Reviewed on (Month-Year):	-
Next Review on (Month-Year):	June-2025