Course Type	Course Code	Name of Course	L	T	P	Credit
DE	NCSD514	**Multimedia Systems & Security**	3	0	0	3

Course Objective
To provide fundamental knowledge related to Multimedia Systems, and to know how the security may be incorporated with Multimedia Systems.
Learning Outcomes
Upon successful completion of this course, students will: • Enhance the ability to understand different Multimedia related applications. • Know how to ensure the security with Multimedia based applications. • To realize the security features in real time scenario. • This course will also provide a strong foundation for research in this particular area.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Multimedia Fundamentals and Representation: Introduction to Multimedia, Multimedia Data Representation, Classification of Multimedia Systems, Image Representation and Enhancement, Color Models, Fundamental Concepts in Video, Basics of Digital Audio.	8	· To provide the course outline. · To give some view of different multimedia formats
2	Multimedia Coding Techniques: Lossless Compression Algorithms: Run-Length Coding, Variable-Length Coding (Huffman Coding, Adaptive Huffman Coding), Arithmetic Coding, Adaptive Arithmetic Coding, Dictionary-Based Coding, Context-based Coding, CALIC, Lossy Compression Algorithms: Vector Quantization, Standard Image Compression Techniques (JPEG, JPEG 2000), Video Compression Technique (MPEG), Audio Coding.	12	· To understand different approaches for data compression · To learn some standard data compression algorithms like JPEG, MPEG
3	Multimedia Communication and Retrieval: Media Distribution across Internet, Mobile Multimedia Service over Wireless Networks, Content Based Image Retrieval	7	· To know some multimedia communication techniques · To learn multimedia retrieval process like CBIR
4	Multimedia Security: Performance Requirement of Multimedia Content Encryption, Modes of Block Ciphers, Complete, and Partial Encryption, Compression-Combined Encryption, Perceptual Encryption, Key Management, Typical Attacks on Multimedia Encryption, Multimedia Encryption in Typical Applications, Steganography, Digital Image Watermarking, Image Authentication, Visual Cryptography, Multimedia Forensics, Video Surveillance Systems, DRM	15	· To know the security requirements for multimedia data · To understand different security mechanism and · To learn security based some Multimedia applications.
	Total	42	

Text Books:

1. Ze-Nian Li, and Mark S. Drew, "Fundamentals of Multimedia", PHI Learning.
2. Fred Halsall, "Multimedia Communications: Applications, Networks, Protocols and Standards", Pearson.
3. ShiguoLian, "Multimedia Content Encryption: Techniques and Applications", CRC Press

Reference Books:

1. Khalid Sayood, "Introduction to Data Compression", Elsevier Publication.
2. Latest publications in multimedia related conferences and journals.