

CIS6005	MULTIMEDIA SECURITY		L	T	P	J	C
			2	0	0	4	3
Pre-requisite		Syllabus version					
		1.0					
Course Objectives:							
1. Provide a framework to conduct research and development using multimedia security techniques. 2. Impart the knowledge of implementation on digital watermarking and multimedia security techniques. 3. Design a customary multimedia security system to suit real world applications.							
Expected Course Outcome:							
1. Learn the basic watermarking techniques to design a good digital mark. 2. Study the digital authentication and authorization schemes to evaluate security issues related to electronic documents, image and video. 3. Analyze the basic characteristics of digital watermarking to perform the theoretical analysis and performance measures. 4. Acquire the concepts of steganography to access the sensitive information concealing of file, message, image, or video within another file. 5. Obtain a suitable least significant bits construction and dynamic embedding with one-dimensional cellular automata to resist differential attack and support parallel computing. 6. Examine the multimedia encryption techniques to address the open issues related to confidentiality of the media content. 7. Develop a multimedia system including include multimedia compression techniques and standards, multimedia interfaces, video indexing and retrieval techniques.							
Student Learning Outcomes (SLO):							
Student Learning Outcomes (SLO):		1, 2,9, 14					
Module:1	Introduction to Digital Watermarking	5 hours					
Digital Watermarking Basics: Models of Watermarking, Basic Message Coding, Error Coding, Digital Watermarking Theoretic Aspects: Mutual information and Channel Capacity, Designing a good digital mark, Theoretical analysis of Digital watermarking							
Module:2	Watermarking Schemes	3 hours					
Spread Spectrum Watermarking, Transform Domain Watermarking, Quantization Watermark- ing							
Module:3	Media-Specific Digital Watermarking	4 hours					
Video Watermarking, Audio Watermarking, Binary Image Watermarking, Robustness to Temporal and Geometric Distortions, Affine resistant transformations							
Module:4	Steganography	5 hours					
Introduction- Digital Image formats- Modern Steganography, Steganography Channels Steganog- raphy Goals							
Module:5	Steganography Schemes	6 hours					
Image : Substitution, Bit Plane Coding, Transform Domain, Audio: Data Echo Hiding, Phase Coding, Video: Temporal technique, Spatial technique							

Module:6	Multimedia Encryption	2 hours	
Introduction, Goals, Desired Characteristics, Performance metrics.			
Module:7	Multimedia Techniques	3 hours	
Chaos based, Block based, Transform based techniques			
Module:8	Contemporary Issues:RECENT TRENDS	2 hours	
	Total Lecture hours:	30 hours	
Text Book(s)			
	1. Shih, F. Y. (2017). Digital watermarking and steganography: fundamentals and techniques. 2. CRC press. 3. Nematollahi, Mohammad Ali, Vorakulpipat, Chalee, Rosales, HamurabiGamboa (2017). Digital Watermarking: Techniques and Trends, Springer, Signals and Communication 4. Pande, Amit, Zambreno, Joseph (2013). Embedded Multimedia Security Systems, Springer, Image Processing 5. Singh, Amit Kumar, Mohan, Anand (2019). Handbook of Multimedia Information Security: Techniques and Applications, Springer, Security and Cryptology.		
Reference Books			
1.	Cox, I., Miller, M., Bloom, J., Fridrich, J., Kalker, T. (2007). Digital watermarking and steganography. Morgan kaufmann.		
2	Yi, Xun, Paulet, Russell, Bertino, Elisa (2014). Homomorphic Encryption and Applications, Springer, Security and Cryptology.		
Mode of assessment:			
Recommended by Board of Studies		13.05.2016	
Approved by Academic Council		No. 41	Date 17.06.2016