

Year: B. Tech III (Semester VI)

Subject Name: Steganography and Digital Watermarking
Type of course: Minor (Group: Cyber Security)

Subject Code: BTEA19653

Teaching and Examination Scheme:

Teaching Scheme				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
3	0	0	3	60	25	15	00	00	100

CA1: Continuous Assessment (assignments / projects / open book tests / closed book tests) CA2: Sincerity in attending classes / class tests / timely submissions of assignments / self-learning attitude / solving advanced problems TEE: Term End Examination TEP: Term End Practical Exam (Performance and viva on practical skills learned in course) CA3: Regular submission of Lab work / Quality of work submitted / Active participation in lab sessions / viva on practical skills learned in course.

Contents:

Sr. No.	Contents	Total Hours
1.	Steganography: Overview, History, Methods for hiding (text, images, audio, video, speech etc.). Steganalysis: Active and Malicious Attackers, Active and passive Steganalysis.	08
2.	Secret Communication: Frameworks for secret communication (pure steganography, secret key, public key steganography), Steganography algorithms (adaptive and non-adaptive).	09
3.	Steganography techniques: Substitution systems, Spatial Domain, transform domain techniques, Spread spectrum, Statistical steganography.	07
4.	Detection, Distortion, Techniques: LSB Embedding, LSB Steganalysis using primary sets.	07
5.	Digital Watermarking: Introduction, Difference between Watermarking and Steganography, Classification (Characteristics and Applications), types and techniques (Spatial-domain, Frequency-domain, and Vector quantization-based watermarking), Watermark security & authentication.	09
6.	Recent trends in Steganography and digital watermarking techniques. Case study of LSB Embedding, LSB Steganalysis using primary sets.	05

Suggested Specification table with Marks (Theory): (For B. Tech only)

Distribution of Theory Marks



R Level	U Level	A Level	N Level	E Level	C Level
20	20	15	5	-	-

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

Reference Books:

Sr. No.	Title of book /article	Author(s)	Publisher and details like ISBN
1	Disappearing Cryptography – Information Hiding: Steganography & Watermarking	Peter Wayner	Morgan Kaufmann Publishers
2	Digital Watermarking and Steganography	Ingemar J. Cox, Matthew L. Miller, Jeffrey A. Bloom, Jessica Fridrich, TonKalker	Morgan Kaufmann Publishers
3	Information Hiding: Steganography and Watermarking-Attacks and Countermeasures	Neil F. Johnson, Zoran Duric, Sushil Jajodia.	
4	Information Hiding Techniques for Steganography and Digital Watermarking	Stefan Katzenbeisser, Fabien A. P. Petitcolas	

Note: Students should refer to the latest editions of books

Course Outcomes (CO):

Sr. No.	CO statements	Marks % weightage
CO-1	Explain the concept of information hiding.	20%
CO-2	Survey of current techniques of steganography and describe how to detect and extract hidden information.	40%
CO-3	Describe watermarking techniques.	40%

List of Open learning website:

1. Cyber Security, https://swayam.gov.in/nd2_cec20_cs09/preview.
2. Introduction to Cyber Security, https://swayam.gov.in/nd2_nou20_cs01/preview

