



University of Engineering and Management  
Institute of Engineering & Management, Salt Lake Campus  
Institute of Engineering & Management, New Town Campus  
University of Engineering & Management, Jaipur



<b>Course Code</b>	:	<b>MINOR501C</b>
<b>Course Title</b>	:	Steganography and Digital Watermarking
<b>Number of Credits</b>	:	3 (L: 3; T: 0; P: 0)
<b>Course Category</b>	:	CBS
<b>Pre-requisites</b>	:	Image and Video Processing, Linear Algebra
<b>Course Objective</b>	:	The objective of course is to provide an insight to steganography techniques. Watermarking techniques along with attacks on data hiding and integrity of data is included in this course.



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## Course Outcomes:

After completion of course, students would be able to:

- CO1 Learn the concept of information hiding.
- CO2 Survey the current techniques of steganography and learn how to detect and extract hidden information.
- CO3 Learn watermarking techniques and through examples.
- CO4 Acquire the knowledge and skill in preserving authentication of Information.

Module/ Topic	Sub- Topic	Lecture Hour
1.	<b>Steganography:</b> Overview, History, Methods for hiding (text, images, audio, video, speech etc.). <b>Steganalysis:</b> Active and Malicious Attackers, Active and passive Steganalysis.	8
2.	Frameworks for secret communication (pure steganography, secret key, public key steganography), Steganography algorithms (adaptive and non-adaptive).	8

Module/ Topic	Sub- Topic	Lecture Hour
3.	<b>Steganography techniques:</b> Substitution systems, Spatial Domain, transform domain techniques, Spread spectrum, Statistical steganography.	6
4.	<b>Detection, Distortion, Techniques:</b> LSB Embedding, LSB Steganalysis using primary sets.	6

Module/ Topic	Sub- Topic	Lecture Hour
5.	<b>Digital Watermarking:</b> 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.	9

Module/ Topic	Sub- Topic	Lecture Hour
6.	Recent trends in Steganography and digital watermarking techniques. Case study of LSB Embedding, LSB Steganalysis using primary sets.	5





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### Text Books/References:

1. Peter Wayner, "Disappearing Cryptography – Information Hiding: Steganography & Watermarking", Morgan Kaufmann Publishers, New York, 2002.
2. Ingemar J. Cox, Matthew L. Miller, Jeffrey A. Bloom, Jessica Fridrich, TonKalker, "Digital Watermarking and Steganography", Margan Kaufmann Publishers, New York, 2008.
3. Information Hiding: Steganography and Watermarking-Attacks and
4. Countermeasures by Neil F. Johnson, Zoran Duric, Sushil Jajodia.
5. Information Hiding Techniques for Steganography and Digital Watermarking by Stefan Katzenbeisser, Fabien A. P. Petitcolas.

### Online Resources:

1. [Applied Cryptography | Coursera](#)