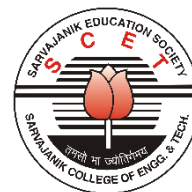




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**Sarvajanik College of Engineering and Technology**  
**Bachelor of Technology**



**B. Tech. Semester VII**

**Subject Name:** Steganography and data hiding

**Subject Code:** BTEC15701

**Type of course:** OE

**Prerequisite:** Digital Signal and Image Processing

**Rationale:** This course will help to strengthen the knowledge of various data hiding techniques and analyze the robustness of the security of data and documents.

**Teaching and Examination Scheme:**

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

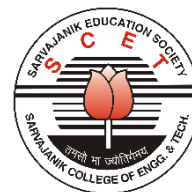
**CA1:** Continuous Assessment (assignments/projects/open book tests/closed book tests **CA2:** Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems **TEE:** Term End Examination **TEP:** Term End Practical Exam (Performance and 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

**Content:**

Sr. no.	Topics	Teaching Hrs.	Module % Weightage
1.	<b>Introduction:</b> Information hiding, steganography, and watermarking; History of Watermarking and Steganography; Importance of Digital Watermarking and Steganography; Applications of Watermarking and Steganography; Properties of watermarking system, Steganography and Stegnalysis system.	7	15
2.	<b>Perceptual Models:</b> Communication based models of watermarking; Geometric models of watermarking, Modeling watermark detection by correlation	6	15
3.	<b>Watermarking with Side Information</b> Informed Embedding, Watermarking using side information, Practical application of watermarking with side information.	7	15
4.	<b>Robust Watermarking and Watermark Security</b> Various approaches of robust watermarking, Robustness to Volumetric Distortions, Robustness to temporal and geometric distortion, security requirement, watermark security and cryptography	7	15
5.	<b>Content Authentication</b> Exact Authentication, Selective Authentication, Localization, Restoration	6	10



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<b>6.</b>	<b>Steganography:</b> Overview of Steganography, Text and Image Steganography: Data hiding in Raw images, LSB embedding. Data hiding in palette images- Palette format, Hiding by decreasing color depth, GIF Shuffle. Data hiding in JPEG images:	6	20
<b>7.</b>	<b>Steganalysis:</b> Principle, Approaches, ROC analysis, Sample pair analysis, Attacks using histogram characteristics function, Spatial domain steganalysis, Feature selection criteria	6	10

**Suggested Specification table with Marks (Theory/Practical):**

<b>% Distribution of Marks</b>					
<b>R Level</b>	<b>U Level</b>	<b>A Level</b>	<b>N Level</b>	<b>E Level</b>	<b>C Level</b>
30	30	20	10	10	-

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

**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.

**Reference Text Books:**

<b>Sr. No.</b>	<b>Title of book /article</b>	<b>Author(s)</b>	<b>Publisher and details like ISBN</b>	<b>Year of publication</b>	<b>Publication Edition</b>
<b>1.</b>	Digital Watermarking and steganography	I.J.Cox, M.L.Miller	Amsterdam Morgen Kaufmann Publisher	2007	2 <sup>nd</sup>
<b>2.</b>	Steganography in Digital Media	J.Fridrich	Cambridge University Press	2009	3 <sup>rd</sup>

**Course Outcome:**

<b>Sr. No.</b>	<b>CO Statement</b> <b>After learning this subject students will be able to</b>	<b>Marks % weightage</b>
<b>CO-1</b>	Differentiate among Steganography, Watermarking and Steganalysis	25
<b>CO-2</b>	Explain the importance of geometric models of watermarking and dirty paper codes.	20
<b>CO-3</b>	Apply concept of robust watermarking security and content authentication in real life applications.	20
<b>CO-4</b>	Analyze the concept of text and image steganography.	20
<b>CO-5</b>	Describe spatial domain techniques and attacks on steganalysis techniques.	15



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**Mapping with POs:**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO 12
<b>CO-1</b>	3	2	1	2	2	-	2	-	-	-	2	-
<b>CO-2</b>	3	2	1	1	1	2	2	-	-	-	2	-
<b>CO-3</b>	3	2	2	3	3	3	2	-	-	-	2	-
<b>CO-4</b>	3	3	3	2	3	3	3	-	3	3	2	3
<b>CO-5</b>	3	2	2	2	2	2	3	-	-	2	2	-