Department Of Electronics & Communication Engineering

Lesson Plan

Semester: 7th   **Year: 4th**
Subject Title: Digital Image Processing   **Subject Code: ECP-17A**

Lecture No.	Topics To Be Covered	Mode of Delivery	CO's Covered	Remarks
L1	**UNIT I: Digital image processing fundamentals:** Introduction	White board & Marker	CO1	
L2	Fundamental Steps in Digital Image Processing	Video lecture		
L3	Image Sampling and Quantization	White board & Marker		
L4	Numerical Problems	White board & Marker		
L5	Relationships between pixels (Numericals)	White board & Marker		
L6	Color Fundamentals	White board & Marker		
L7	Color models	Powerpoint Presentation		
L8	**Unit II: Image Enhancement:** Basics of intensity Transformations	White board & Marker	CO2	
L9	Histogram processing (with Examples)	White board & Marker		
L10	Numerical Problems on Histogram equalization & normalization	White board & Marker		
L11	Spatial Domain filtering – Basics of Spatial Filtering	White board & Marker		
L12	Smoothing and Sharpening Spatial Filtering	Powerpoint presentation		
L13	Numerical Problems on Spatial Filtering	White board & Marker		
L14	Frequency Domain Filtering	Powerpoint Presentation		
L15	Sampling & Fourier Transform of sampled functions	White board & Marker		
L16	2-D Sampling, Smoothing and Sharpening frequency domain filters	Powerpoint Presentation		
L17	Ideal, Butterworth and Gaussian filters.	White board & Marker		
L18	Numerical Examples	White board & Marker		

L19	**Summarize all concepts of Unit 1 & 2**	Powerpoint Presentation	CO1 &2	
L20	**Unit III**: **Image Enhancement:** Basics of intensity Transformations	White board & Marker		
L21	Image Compression models	Powerpoint presentation		
L22	Error Free Compression – Huffman Coding (Numericals)	White board & Marker		
L23	Arithmetic Coding (Numericals)	White board & Marker		
L24	LZW Coding (Numericals)	White board & Marker		
L25	Numericals on Error-free compression models	White board & Marker		
L26	Lossy Compression: Block transform coding	Powerpoint presentation	CO3	
L27	Numericals on lossy compression models	White board & Marker		
L28	**Morphological Image Processing:** Introduction	White board & Marker		
L29	Erosion and Dilation, Opening and Closing	Powerpoint presentation		
L30	Hit or Miss Transformations, Boundary Extraction	Video Lecture		
L31	Image Segmentation: Fundamentals of image segmentation	White board & Marker		
L32	Point, Line, and Edge Detection	Video Lecture		
L33	Numerical Problems	White board & Marker		
L34	**Unit IV**: **Video Processing**, video formation	Video Lecture		
L35	Video Frame classifications- I, P and B frames	Video Lecture		
L36	Application of motion estimation in video coding	Powerpoint presentation	CO4	
L37	Patterns and Pattern classes	Powerpoint presentation		
L38	Recognition based on matching	White board & Marker		
L39	**Summarize all concepts of Unit 3 & 4**	White board & Marker	CO3 &4	
L40	**Discuss previous year's question papers**	White board & Marker		

Text Books:
1. Rafael C. Gonzales, Richard E. Woods, "Digital Image Processing", Third Edition, Pearson Education, 2018.

References:
1.Rafael C. Gonzalez, Richard E. Woods, Steven L. Eddins, "Digital Image Processing Using MATLAB", Third Edition Tata Mc Graw Hill Pvt. Ltd., 2011
2. Anil Jain K. "Fundamentals of Digital Image Processing", PHI Learning Pvt. Ltd., 2011.
3. M. Tekalp, Digital Video Processing. Signal Processing Series, Prentice Hall, 1995.
4. Malay K. Pakhira, "Digital Image Processing and Pattern Recognition", First Edition, PHI Learning Pvt. Ltd., 2011.