Year & Sem:	Course Code: ME3611	Course Name: **Image Processing**	No. of Credits: 4	L	T&PS	P
				2	2	0

DIGITAL IMAGE FUNDAMENTALS Elements of digital image processing systems - Elements of visual perception - Image sampling and quantization, - Matrix and singular value representation of discrete images. **IMAGE TRANSFORMS AND EDGE DETECTION** Transformation-1D DFT, 2D DFT, Cosine, Sine, - Hadamard, Haar, Slant, KL, SVD transforms and their properties. Edge detection - Roberts operator, - Sobel operator - Prewitt operator. **IMAGE ENHANCEMENT** Histogram modification and specification techniques - Image smoothing - Image sharpening - Generation of spatial masks from frequency domain specification - Nonlinear filters, Homomorphic filtering - False color, Pseudocolor and color image processing. **IMAGE RESTORATION AND COMPRESSION** Image degradation models - Unconstrained and constrained restoration - Inverse filtering - Least mean square filter, Pattern classes - Optimal statistical classifiers. Runlength - Huffman coding - Shift codes - Arithmetic coding, bit plane coding, transform coding, JPEG Standard, - Wavelet transform - Predictive techniques - Block truncation coding schemes - Facet modeling. **MACHINE VISION** Machine Vision – Sensing - Low and higher level vision - Image acquisition and digitization - Cameras, CCD,CID, CPD, etc., - Illumination and types - Image processing and analysis - Feature extraction - Applications

References/Text Books:

1. Anil K. Jain, Fundamentals Of Digital Image Processing, Prentice Hall of India, New Delhi, 1997.
2. Rafel C.Gonzalez and Richard E.Woods, Digital Image Processing, Addison Wesley, New York, 1993.
3. Vernon, D., Machine Vision - Automated Visual Inspection and Robot Vision, Prentice Hall International Ltd., New York, 1991.

Lecture Plan: Unit-I & -II syllabus for MID-I, Unit-III & -IV syllabus for MID-II and Unit-V & -VI syllabus for MID-III examinations.

Video Lectures (Web Links):

1.
2.

Study Materials (Web Links):

1.
2.

Problems & Solutions (Web Links):

1.
2.

Assignments (Web Links):

1.
2.