

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 2 Computer Engineering

Subject Name Digital Image Processing

Sr.No	Course content
1.	Introduction : Fundamentals, Applications; Image processing system components, Image sensing and acquisition, Sampling and quantization, Neighbors of pixel adjacency connectivity, regions and boundaries; Distance measures.
2.	Image Enhancement: Frequency and Spatial Domain, Contrast Stretching, Histogram Equalization, Low pass and High pass filtering.
3.	Image Restoration: Noise models, mean, order—statistics, adaptive filters. Band reject, Band pass and notch filters.
4.	Colour Image Processing: Colour models; Pseudo colour, Image processing; colour transformation, segmentation.
5.	Wavelets and Multi-resolution Processing: Image pyramids, subband coding, Harr transform; multi resolution expression, Wavelet transforms.
6.	Image Compression: Fundamentals; models; error free and lossy compression; standards.
7.	Morphological Image Processing: Boundary extraction; region filtering; connected component extraction; convex hull; Thinning; Thickening; skeletons; pruning; image segmentation.

Reference Books:

1. Digital Image Processing, Second Edition by Rafael C. Gonzalez and Richard E. Woods, Pearson Education
2. Digital Image Processing by Bhabatosh Chanda and Dwijesh Majumder, PHI
3. Fundamentals of Digital Image Processing by Anil K Jain, PHI
4. Digital Image Processing Using Matlab, Rafael C. Gonzalez and Richard E. Woods, Pearson Education