**13EC4201-DIGITAL IMAGE PROCESSING**

**(ECE)**

**Lectures/Week:4Hrs. Sessional Marks:40**

**Univ. Exam. Duration:3Hrs Univ Exam.Marks:60**

**UNIT – I**

**Digital Image Fundamentals:** Digital Image Representation – Digital Image Processing System – Visual Perception – Sampling and quantization – Basic Relationship between pixels – Imaging geometry.

**UNIT – II**

**Image Transforms:** DiscreteFourier Transform – Properties of 2-D Fourier transform – 2-D Fast Fourier Transform – Walsh Transform – Hadamard Transform – DCT – Haar Transform – Slant Transform – Hotelling Transform.

**UNIT – III**

**Image Enhancement:** Back ground enhancement by point processing – Histogram Processing – Spatial Filtering – Enhancement in frequency Domain – Image Smoothing – Image Sharpening

**Colour Images:** Colour Image Processing – Pseudo colour image processing – Full colour image processing.

**UNIT – IV**

**Image Restoration:** Degradation model – Algebraic approach to restoration – Inverse filtering – Least Mean Square filters – Constrained Least Mean Square restoration – Inverse Restoration.

**Image Segmentation:** Detection of Discontinuities – Edge Linking – Boundary detection and Boundary Description – Thresholding – Region Oriented Segmentation.

**UNIT – V**

**Image Coding & Compression:** FidelityCriteria – Encoding Process – Transform Encoding – Redundancies and their removal methods – Image compression models and methods – Source coder and decoder – Error free compression – Lossy compression.

**TEXT BOOKS:**

1. Digital Image Processing – Rafael C. Gonzalez, Richard E. Woods, 3rd Ed, Pearson.
2. Fundamentals of Image Processing – A. K. Jain, Prentice Hall India.

**REFERENCE BOOKS:**

1. Digital Image Processing – William K. Pratt, John Wiley Publications
2. Digital Image Processing – K. R. Castleman, Pearson Publications
3. Fundamentals of Electronic Image Processing – Weeks Jr, SRIC/IEEE series, PHI.