

### THIRD YEAR

<b>Image Processing</b>	<b>COE310</b>
<b>Prerequisite: COE304</b>	<b>(3-2-0-2)</b>

The Origins of Digital Image Processing, applications, Fundamental Steps in Digital Image Processing, Components of an Image Processing System. Elements of Visual perception, Light and the Electromagnetic Spectrum, Image Sensing and Acquisition, Image Sampling and Quantization, Relationships between Pixels. Intensity Transformation Functions, Histogram Processing, Fundamentals of Spatial Filtering, Smoothing Spatial Filters, Sharpening Spatial Filters, Combining Spatial Enhancement Methods. Image Compression by Discrete Cosine Transform. A Model of the Image Degradation/Restoration Process, Noise Models, Restoration in the Presence of Noise Only, Minimum Mean Square Error (Wiener) Filtering, Constrained Least Squares Filtering, Geometric Mean Filter. Color Models, Color Transformations, Smoothing and Sharpening, Noise in Color Images, Color Image Compression.

***Practical part:** Reading image, display image, rotating, inversion, transformation, histogram processing, enhancement, filtering, and compression.*