Course Type	Course Code	Name of Course	L	T	P	Credit
DE	ECD404	Digital Image Processing	3	0	0	9

Course Objective

The objective of this course is to develop an understanding of basic processing on digital images that is needed in many applications of modern world.

Learning Outcomes

Upon successful completion of this course, students will:
- Acquire basic knowledge of digital images processing.
- Develop the understanding of acquisition and manipulations in digital images.

Pre requisite

Digital Signal Processing, Signals and Systems.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	**Introduction and Digital Image Fundamentals:** Image sensing and acquisition, sampling and quantization, basic relationship between pixels.	4	Develop the understanding of digitization in an image and basic nomenclature of Digital images.
2	**Image Enhancement:** Image enhancement in spatial domain and frequency domain.	11	Learn the basic processing of digital images for enhancement purpose.
3	**Image Restoration:** Restoration in presence of noise in spatial domain and frequency domain. Inverse filtering, MMSE filtering.	9	Learns the concept of restoration in digital images.
4	**Image Compression:** Compression models, Lossless compression, Lossy compression, Image compression standards.	9	Learns some basic algorithms for digital image compression used in modern world.
5	**Multiresolution Processing:** Multiresolution expansions, Wavelet transform in one and two dimensions, Fast wavelet transform..	9	Understand the use of multi-resolution analysis in digital images

Textbook:

1. Gonzalez R. C., Woods R. E., *Digital Image Processing*, Prentice Hall, New Jersey, USA.

Reference Books:

1. Jayaraman S., Esakkirajan E., Veerakumar T., *Digital Image Processing*, TMH Education Pvt. Ltd. New Delhi.
2. Castleman K. R., *Digital Image Processing*, Pearson Education, India.