ECE 4367: Image Processing

Credit / Contact hours: 3 / 3

Course coordinator:


Catalog description: Imaging fundamentals. Linear operations in both spatial and frequency domains. Image enhancement and restoration techniques. Analysis and coding of images.

Pre-requisite: ECE 3323

Designation: Elective

Course learning outcomes: Upon completion of this course, students should be able to do the following:

1. Identify the characteristics of an image that can be changed by digital image processing
2. Enhance images in the spatial and frequency domain.
3. Apply morphological operators for image processing tasks.
4. Apply standard image segmentation techniques
5. Apply knowledge gained to devise and implement a solution to a current, real problem and present and demonstrate their findings

Student outcomes addressed: a, b, c, e, g, j, and k.

Topics covered:
Review of elementary digital signal processing concepts - 2 hrs.
Human visual perception, Image formation - 2 hrs.
Image enhancement and restoration - 12 hrs
Morphological image processing - 4 hrs.
Multi-resolution processing and wavelets - 4 hrs.
Image segmentation and registration - 7 hrs.
Image and video coding/compression - 2 hrs.
Contemporary topics in image processing - 1 hrs.
Review, project presentation and exams - 8 hrs.