THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Image Processing

ECE 5460

Credit Hours:
3.00 - 3.00

Course Levels:
Undergraduate (1000-5000 level)
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
Fundamentals and research directions in image processing: cameras, geometry, calibration, 2D and 3D image reconstruction, stereo, structure from motion, Radiometry, filtering, motion estimation, and applications.

Prerequisites and Co-requisites:
Prereq: 5200 (600), and Stat 3470 (427) or Math 530; or Grad standing in Engineering, Biological Sciences, Statistics, Bioinformatics, or Math and Physical Sciences.

Course Goals / Objectives:
- Learn the mathematical underpinnings of digital image processing
- Learn to design systems for image restoration, 3D model reconstruction, how to interpret and modify the radiometry parameters of an image, image filtering, and motion analysis
- Learn to develop image processing solutions through computer projects and real image experiments, documented with written reports
- Develop an image processing system to meet a broad set of design specifications, working in teams, and presenting the results in formal reports

Course Topics:

- Camera Models
- Camera Calibration
- Geometry of Multiple Views and Stereo
- Structure from Motion
- Radiometry, Shadows and Shading
- Introduction to Optical Flow and Segmentation
- Linear filters, edge detection and compression
- Computer projects

Designation:

Elective