DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Course ECE 66100 – Computer Vision

Type of Course Core course for the Computer Engineering option of the MSE program

Catalog Description This course deals with how an autonomous or a semi-autonomous system can be endowed with visual perception. The issues discussed include: vision psychophysics, image representation, edge detection, region-based segmentation, camera modeling, stereo vision, pose calculations, object recognition, optical flows, visual tracking, color vision, and beginning concepts of computational geometry. Students are expected to implement vision algorithms through programming assignments.

Credits 3

Contact Hours 3

Prerequisite Courses MA 35100

Corequisite Courses None

Prerequisites by Topics This course will assume a reasonable knowledge of linear algebra.

Textbook Lecture notes

Course Objectives This course provides an introduction to the fundamental concepts and standard algorithms in image processing and computer vision.

Lecture Topics
1. Introduction
2. Image representation
3. Edge detection
4. Hough transformation
5. Region-based segmentation
6. Camera modeling and calibration
7. Stereo vision
8. Geometrical moments
9. Visual tracking
10. Color vision

Computer Usage	Medium
Laboratory Experience	None
Design Experience	High
Coordinator	Yanfei Liu, Ph.D.
Date	03/02/2018