**School of Engineering Technology**

**College of Technology**

**Eastern Michigan University**

**Course Title:** Unmanned Vehicle Systems

**Course Number:** CET 273

**Semester and Year:** Fall 2018

**Credit Hours:** 3

**Instructor:** Jonathon Lin

**Office:**  Sill 109B

**Office Hours:** M 3-6pm, T 2-5pm

**Text:** Handouts

**Course Description:**

This course provides hands-on opportunity for students to assemble/design their own autonomous vehicle systems. Students will work as teams to practically learn how to collaborate and work with each other to create and build their own UVS with both autonomous and remote control navigation, telemetry, imaging, weather logging, and autopilot mission.

**Course Objectives:** After completing this course students should be able to:

1. Understand the fundamentals of autonomous vehicles and their developing trends.

2. Learn Python programming, C programming, OpenCV program, and TensorFlow program.

3. Build autonomous vehicle systems with remote control and autonomous navigation.

3. Design and implement algorithms to electric cars and golf cart fully autonomously with no human intervention.

4. Design and implement automated steering mechanism, speed control mechanism, and brake mechanism for the golf cart.

5. Design and implement dashboard system, software interface, and etc.

**Course Content:** The following topics will be covered in this course:

Python programming

C programming

OpenCV program

TensorFlow program

Machine learning

Raspberry Pi microprocessor

Arduino microprocessor

Various sensors:

Wireless RF transceiver

Joystick

Camera

Etc.

RC car assembly

Golf cart control subsystems

Machine learning

**Grading Criteria:**

Lab projects: 30%

Term project: 30%

Weekly quizzes 15%

Two exams: 25%

**Letter Grade:**

A 94-100% C 74-76%

A- 90-93% C- 70-73%

B+ 87-89% D+ 67-69%

B 84-86% D 64-66%

B- 80-83% D- 60-63%

C+ 77-79% F 59 & Below

**Tentative Lab Projects**

Install various platforms such as Python, OpenCV, TensorFlow, machine learning

Python programming fundamentals

Construct RC car

Working with golf cart

Working with Raspberry Pi to control a RC car

Working with Arduino, joystick, FPV camera to control a RC car

Objects recognition

Lane detection and control

Contest