**Fall 2022 EEE 498 Emerging Technology in Automotives and Transportation**

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**Office Hours:**  TBD. Email for an appointment outside office hours through

**Class Meeting Info**: Tu. Th. 10:30 - 11:45 am

***Course******Objective***

This course is offered to upper-level undergraduate students to provide an introduction, and practice, to the emerging technology in today and future automotives and transportation. The topics include vehicle electrification and charging technologies, as well as technology involved in the vehicle intelligence and safety, as well as intelligent transportation systems.

***Course Outline***

**Electric Vehicles:**

Introduction

1. Introduction
2. Electric Motor
3. Power electronics:
4. Power Semiconductor:
5. Energy sources: Battery and Others

**EV Charging infrastructure**

1. EV charging technology
2. EV Equity

**Autonomous Vehicles**

1. Autonomous Vehicles Sensors:
   1. Image sensor
   2. Radar
   3. Lidar
   4. Accelerometer and others
2. Vehicle-to-Vehicle, Vehicle-to-Infrastructure Communications
3. Autonomous Vehicles Artificial Intelligence:
4. Control: lane keeping, sensor fusion
5. Mapping
6. Safety Metrics
7. Autonomous Vehicles: cyber security

**Intelligent Transportation Systems (ITS)**

1. Sensors
2. 5G and Roadside Units
3. Applications in ITS