



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Automotive Powertrain Laboratory

MECHENG 5531

Credit Hours:

3.00

Course Levels:

Undergraduate (1000-5000 level)

Graduate

Course Components:

Lecture

Lab

Course Description:

This course focuses on analysis and testing of advanced automotive systems. These systems include advanced powertrain components like turbocharged GDI engines, electric powertrain components like electric motors, and autonomous vehicle sensing technologies like radar and lidar. Students will conduct labs and use supplied data to conduct analysis typical of practicing automotive engineers.

Prerequisites and Co-requisites:

Prereq: 3870, or Grad standing in Engr, or permission of instructor.

Course Goals / Objectives:

- To relate theoretical knowledge on internal combustion engines to practice
 - Develop a working understanding of the underlying technologies of autonomous vehicles
 - To understand and have familiarity with advanced technology vehicles with electric powertrains
 - To analyze, interpret, and communicate data from vehicle experiments
 - To develop an understanding and appreciation of the role of electronic control in modern vehicles
 - To design and conduct experiments on automotive systems using modern experimental equipment
 - To understand the calibration process and trade-offs in automotive development
 - To develop an appreciation for the important role and impact of automotive technology on society
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Course Topics:

- Basic Engine Performance
 - SI Engine Breathing
 - SI/CIDI Engine Combustion
 - SI/CIDI Emissions Formation
 - SI Engine AFR Control
 - SI/CIDI Emissions Control
 - Hybrid Powertrain
 - Alternative Fuels
 - Electrical Powertrain Components
 - Engine Calibration
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Designation:

Elective