

ME 4301 / MAE 5340 - Automotive Engineering

Course Syllabus for Fall 2009

Instructor: Dr. Robert L. Woods e-mail: Woods@uta.edu cell phone 817 996 0707
office: room 304a office hours: TTh 2-3 pm

Textbook: Automotive Handbook 7th Edition, published by Robert Bosch GmbH

Meeting time: T 6:30 – 9:20 pm room 200 Woolf Hall

Prerequisites: By permission of instructor

Goals for course: To consider several aspects related to automotive engineering.

Key Assignments: The “lecture” and semester project are designated as “Key Assignments” for ABET accreditation.

Course content and conduct:

This will be a seminar-based class. The instructor will give several lectures on the topics listed below, and each student will give a lecture on a topic of his choice. The students are required to have a semester project in which they study some aspect of automotive engineering in detail. They can work in groups and will be required to prepare a written report. In addition, the student will present some short subject or project to the class.

Grades will be based upon class attendance and participation, the prepared lecture, the short subject presentation, assigned homework, and the semester project report, and a final.

Lecture Topics (by Instructor)

Introduction, World Car concept, engine types and performance, drive train modeling and vehicle loading characteristics, fueling requirements, fuel injection systems, tire characteristics and modeling, suspension characteristics and handling, braking systems and requirements

Suggested Lecture Topics by Students (gathering of information from several sources):

Safety equipment (air bags, seat belts, crash testing), emissions (testing procedures, emission control systems), electric vehicles, alternative fuels, alternative power plants, fuel cells, turbocharging or supercharging, engine cooling and lubrication, engine efficiency, comparison of electric motor and combustion engine efficiencies, traditional or alternative transmissions, traditional and alternative body fabrication techniques, NVH considerations, aerodynamics, etc.

Suggested Short Subject Topics (hobby interest, information from one source, test data):

Drag racing, engine modifications, low riders, motorcycles, review of paper or magazine article, racing technologies, rolling resistance test of vehicle, coast-down determination of drag coefficient, vehicle performance analysis (top speed, etc.), brake system analysis, EPA driving cycle analysis, or subjects from the lecture topics above.

Suggested Semester Projects

Suspension system analysis, electric / hybrid electric vehicle analysis, intake / exhaust system simulation, four-wheel steer kinematics, aerodynamic analysis, vehicle dynamics, tire modeling, mathematical analysis of automotive systems, pneumatic brake servo for hand clutch, or subjects from the above lists.