MEEG 5833 – Aerospace Propulsion – MSE Program

Course Policy and Objectives

Dr. Larry A. Roe

1) Textbook: Mechanics and Thermodynamics of Propulsion, 2nd ed., by Hill and Peterson.

2) Prerequisites: Courses in thermodynamics and fluid mechanics. It will be assumed that you know the material contained in these courses.

3) Assignment Schedule: The schedule identifies the material to be studied **prior** to each meeting. The lecture will be designed around the assumption that you have read the material. A significant amount of the assigned reading will **not** be reviewed during class lectures.

4) Tests: Tests will cover the assigned material whether or not discussed in class. The tests will be proctored; you will be responsible for identifying an acceptable proctor and making arrangements for exam times and locations.

5) Homework: Homework assignments are to be completed for the class meeting specified at the time of assignment. In general, these assignments may include problems from the text, other problems, and computer projects. The homework will not be collected for grading, but will be discussed in class and is your best preparation for the exams. There is a design problem which was originally a group project for the live classroom course. You are expected to complete that design project and submit it for grading at the end of the term.

6) Grades: The course grade will be based on tests and the design project. The weighting will be as follows: tests (2) - 70 percent; semester design project - 30 percent.

7) Scheduling: Note that there are 34 recorded lectures and 8 weeks in the course. An average of 4.5 lectures per week will keep you on track. The first exam is at the end of Chapter 4, which should occur near the beginning of week four if you are on schedule. Since many of our MSE students have significant conflicting events to deal with, I am flexible on the actual scheduling of the exams.

8) Objective: The objective of this course is to apply advanced fluid mechanical principles, including subsonic and supersonic compressible flows, flows with reaction, and shocks, to propulsion systems and to examine various aerospace propulsion alternatives.

Course Topics

Combustion	Fluid mechanics of ideal gases
Boundary layers	Aerothermodynamics
Airbreathing engines	Inlets
Combustors	Nozzles
Ramjet design	Turbojets
Turbofans	Turbomachinery
Spacecraft missions	Advanced propulsion systems