EAS 6138 - Gasdynamics

Prerequisites

EAS 4103 or EML 5714 or any course in one-dimensional compressible flow.

Course Objective

The objective of this course is to explore concepts related to Gasdynamics and compressible flows. The course will use the basic understanding of one dimensional isentropic flow as the starting point and expand into more advance concepts of compressible flows. The skills developed in this class are important to a variety of mechanical and aerospace engineering applications.

Topics

Below is an approximate list of the topics that will be covered in this class.

- Review of Gas Thermodynamics
- Wave propagation
- Shock Tubes
- Oblique shocks and wedge flows
- Thin airfoil theory
- Linearized flow equations
- Potential Flow
- Transonic flows
- Method of characteristics
- Compressible Boundary Layers
- Multi-dimensional compressible flow
- Air breathing propulsion – Ramjet & Scramjet
- Hypersonics
- Special Topics Numerical Methods

Text and Other Resources

- **Class Text:** Elements of Gasdynamics, by H. Liepman and A. Roshko, Dover Publications. .
- **Supplemental Text:**
  - Zucrow and Hoffman, "Gas Dynamics," Volume 1, Wiley, 1976
  - Anderson, "Modern Compressible Flow," McGraw Hill, 1990
  - Schreier, "Compressible Flow," Wiley, 1982

Course web page

- Maintained through UF and can be found by signing into Sakai at lss.at.ufl.edu

Grade Determination

Homework	Not Graded
Paper Review (assigned)	20%
Exams (take-home)	40%
Project (see note below)	40%
Total	100%

Project: Discuss any project idea that you may have that is suitable for this course. This should be finialized by the middle of the semester. Topics may be relevant to your research, you may write your own code to design a nozzle or use CFD software to solve a problem of your interest.

Instructor Information

Dr. Subrata Roy
Professor, Department of Mechanical and Aerospace Engineering
NEB 435
Office Hours: TBD
Phone: 352-392-9823
Email: roy@ufl.edu

Personal Responsibility

You are personally responsible for all information disseminated during the lectures. This means knowing all homework due dates, knowing when exams will be given, where they will be given, what material they will cover, and knowing all material, handouts, and announcements made in the lectures, whether or not you were present. Thus, if you miss a lecture, it is your responsibility to obtain all information presented during that lecture. "I missed that information" or "I was unaware of that information" will not be accepted as valid excuses.

Late / Makeup Work

Students are permitted one late HW submission, provided the HW is handed in prior to the posting of the solution. ***The request for this extension must be made to the instructor before the due date of the assignment.*** Make-up exams will not be given. If a student has a legitimate reason for missing an examination or assignment, the course grade will be determined from the remainder of the other course assignments.

Academic Honesty

All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a student at the University of Florida and to be honest in all work submitted and exams taken in this class and all others.

Accommodations for Disabilities

Students with disabilities who are requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodations.

Other Student Resources

University Counseling Center - (352) 392-1575 - http://www.counsel.ufl.edu/default.asp
Mental Health Services - (352) 392-1171 - http://www.health.ufl.edu/shcc/smhs.htm
Alachua County Crisis Center - (352) 264-6789
ASME web site on ethics - http://www.asme.org/ethics/